

## Strengthening India's Position in Climate Change Negotiations

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We thank Navroz Dubash and Radhika Khosla (NDRK henceforth) for going through our paper "Paris Agreement: Differentiation without Historical Responsibility?" (EPW, 9 April 2016 - KPJP henceforth) and commenting on it. Their comments give us an opportunity to clarify some issues. We answer 3 (three) main issues raised by NDRK in their article "Recovering Key Strategic Concepts in India's Climate Policy" (Dubash Navroz and Khosla Radhika, EPW, 11 June 2016). They feel that: a) our arguments on historical responsibility undermine Paris agreement; b) our argument that India needs to bring global environment's sink capacity in to discussion weakens India's negotiating position. c) Including co-benefits will strengthen India's position.

First of all, we state upfront that Paris agreement with all its flaws is better than no agreement. It pushed forward the concept of each country committing to its own Intended Nationally Determined Contribution (INDC) towards Greenhouse gases (GHGs) reduction could be a game changer, if proposed ambitiously by all and subsequently pursued seriously by all countries.

EPW provides a "unique platform for intellectual engagements and fertilization of ideas" as pointed out by its former executive editor and editor (Alam Aniket and Reddy Rammanohar, 2016). Our article was to put forth some ideas that strengthen India's position, showing their relevance by back of the envelope calculations. These ideas are based on extensive quantitative work done by both of us. For example see Parikh Jyoti and Painuly Jyoti (1994), Arrow K and Parikh J et al (1996), Murthy, Panda and Parikh J (1997), Nag B and Parikh J (2005), Parikh Jyoti and Ghosh Probal (2009), Parikh J et al, (2009), Parikh Jyoti and Baruah Litul, (2012) and Parikh Kirit et al (2014).

### Paris Agreement and Historic Responsibility for Climate Change

In our paper, we had argued that since it is the stock of GHGs in the atmosphere that causes global warming, a country's responsibility should depend on its contribution to that global stock of emissions. Before the Paris agreement, the benchmark year for counting emission was 1850, i.e. prior to industrial revolution. Unfortunately, Paris agreement did away with historical responsibility ignoring science that suggests that cumulated emissions over a century and a half are responsible for climate change. So **accepting** the Paris agreement, in KPJP, we calculate contributions only **from 1990 onwards** as no country can claim that it was unaware of the threat of climate change because the preparation for the Rio Earth Summit of 1992 started in 1990, which was also the reference year considered by the UNFCCC climate convention.

The Paris Agreement does talk about Common but Differentiated Responsibility (CBDR). So one needs to define differential responsibility taking this much history in to account.

NDRK argue that we are "playing the game according to the rules we wish had been agreed upon, not the rules we ultimately were able to negotiate". First of all Paris Agreement is not cast in stone as it leaves much to be clarified and negotiated. What we have shown is that even if one does not consider historic emissions from 1850 onwards, when industrial revolution began, we can consider "accumulated liability" from 1990 onwards as a basis for CBDR. This can be a legitimate argument for taking forward the Paris Agreement, while still leaving room for India to grow.

If we do not save even this much history from 1990 onwards, pretty soon fingers will be pointed to increasing emissions of India even forgetting that India needs to grow and that cumulated emissions from the developed countries from 1990 onwards are still very large.

### Equal Per Capita Right to Global Environment's Absorptive Capacity

NDRK also question our assumption of equal per capita right to the absorptive capacity of global environment. They point out that countries who have larger areas of forests would claim larger shares. We point out that while reporting

to the UNFCCC, all countries do take into account sequestration and impact of land use change. Also global estimates show that forests have not absorbed much carbon over 1990 to 2010. FAO (2010) estimates that carbon stock of forests including in biomass, dead wood, litter and soil, has fallen from 673 GT in 1990 to 652 GT in 2010 though there could be differences at country level. Thus allocating rights based on forest area would make small difference in our “back of the envelope” calculations in India’s share of global sink capacity, which includes oceans etc.

NDRK while objecting to equal per capita allocation refer to studies by WBGU ((2009) and EcoEquity and Stockholm Environment Institute (2016). It is interesting to note that WBGU argues for equal per capita allocation of global environmental space starting from 1990. WBGU allocates 156 Gt of CO<sub>2</sub> emissions to India over 2010 and 2050. We at IRADe have carried out detailed modeling study to assess the implications for India to live within this allocated carbon space while meeting its aspirations for rapid human development. For example, we include universal energy access of 1 kWh of electricity per day to all households, 6 cylinders of LPG per family per year, pucca housing, elimination of poverty, health care, increase in mean years of schooling, etc. by 2030, (Parikh Kirit et al, 2014). Though India can leave within this budget it involves significant additional energy sector investment.. Similarly, the EcoEquity study referred to by NDRK considers that emissions of those whose per capita income is less than US\$ 7500, should not be considered while allocating responsibility. India’s per capita income has been way below this figure!

### **Ignoring Co-benefits?**

NDRK take one sentence out of context that the “notion of co-benefits is not strictly applicable to conditions in India” and say that we reject the idea of co-benefits. The very next sentence in our article clarified the context. “The co-benefits of reducing CO<sub>2</sub> emissions by greater use of renewables replacing coal based power plants to generate power are less local pollution and creation of employment.” It is obvious we were comparing the co-benefits from renewable power with those from coal based power. The power sector is the most relevant sector accounting for a 44% of India’s GHG emissions including LULUCF in 2010 (MOEFCC, 2015) and has to take major actions to fulfill India’s INDC commitments made at Paris. Here jobs and pollution exposure generated per kWh needs to be considered.

Most economic actions involve some externalities. If beneficial to society one can call it co-benefits but if harmful one can call it co-cost. Methods have been developed to assess some of these (Parikh J and Parikh K, 1997). No one can reject the notion of externalities in this general sense. In fact, the whole climate change issue arose because externalities of using fossil fuels were neglected for too long.

In our article we had compared the co-benefits of employment and local air pollution from solar power and that from coal power and shown that in India’s conditions, solar power does not provide more employment and that the cost of taking care of local air pollution from coal based plant would not compensate for higher cost of solar plant.. It would have been good if we had more quantitative analysis. W Till they are provided by those who argue for it, we had to resort to back of the envelope analysis.

The conclusions we draw is that “thus the co-benefits should be compared with co-costs. For India it is not obvious that co-benefits significantly reduce co-costs”. In fact, co-costs may be substantially higher.

NDRK question the assessment of costs of meeting INDCs as stated in India’s official document. They also point out that “Energy security” is an important co-benefit. In the scenarios we have developed at our institute, IRADe (Integrated Research and Action for Development) we assess the cost of mitigation to be US\$ 1.9 trillion at 2007 prices in Purchasing Power Parity US dollars till 2030. This is the difference between the GDP trajectories in the Dynamics As Usual and INDC scenarios both of which meet the same energy needs so that the energy security objective is already factored in. Our model accounts for energy security in terms of changing import bill, rebound effects, macro-economic consequences and satisfies multiple objectives of various human development indicator targets. One has to keep in mind that the Governments targeted 100 GW of solar capacity by 2022 is available for at most 8 hours a day and not on all days. The 60 GW of targeted wind capacity is highly variable due to variability in wind. See figures 2 and 3 in KPJP (2016). Thus, benefits and costs should be compared in terms of kWh generated from coal and solar while discussing the relative differences in co-benefits and co-costs while also including other options such as natural gas or hydro power.

### **Policy Analysis in a Multiple Objective Framework**

NDRK also argue that we should examine policy options from a multiple objectives prospective. We agree. In fact, one could go further and argue that different policies also interact so one should assess not just a policy measure but a whole

set of policies together in a dynamic framework. That is, we require trajectory till 2030 for any meaningful discussion of INDC. The analysis IRADe did for MOEFCC on possible INDCs (IRADe, 2016) and their consequences was based on such a model that was top-down in the sense that it covered the whole economy and bottom-up because it provided alternative technologies on both supply and demand sides. Moreover, it is a multi-period model so that if you invest lot of money in renewables your economic growth rate is affected in subsequent periods. It also differentiates different classes of rural and urban consumers so that their welfare can be assessed.

In a programming model while one maximizes one objective other objectives are embodied as constraints. Thus in all our analyses, ambitious targets for human development as described above were imposed as requirements. So we do account for multiple objectives.

As an example of how a single policy even when analyzed in a multiple objective framework can be misleading, consider the analysis of cooking fuel provision in Khosla et al (2015). They compare GHG emissions from different cooking fuels one of which is induction cookers. The GHG emissions from induction cookers will depend on how electricity is generated and what is the share of fossil fuel in that generation. If power is generated by renewable fuels the emissions from induction cookers will be negligible. This is not accounted for in Khosla et al. Moreover, it is a static frame of one year and does not provide a trajectory till 2030.

### **Does this Compromise or Strengthen India's Negotiating Position?**

NDRK find deeply problematic that our questioning of co-benefits of renewable energy versus coal, deprives "India of a key strategic concepts for international negotiation". They do not explain how. Nor do they explain what these concepts are. In fact, we think it strengthens India's case for more financial assistance and may even reduce pressure on India to reduce emissions aggressively and stress the need for better and faster technology development.

We have seen in the past that Global Environment Fund (GEF) provided only for additional or incremental costs. Claiming lots of co-benefits without detailed and quantitative work will only undermine the efforts India is putting and also reduce the level of financial help we can get. We believe our analysis strengthens India's case for finance and technology and does not weaken it. What weakens it is mentioning 'co-benefits' without quantifying them. One of us is reminded of the comments made by Nitin Desai in the early eighties. When high cost of nuclear power was being justified on the ground of its spin-off benefits, Nitin Desai asked why not we pursue the spin-off benefits themselves. For example, reduction in urban air pollution or indoor air pollution due to cooking should be addressed directly and not as a co-benefit to GHG problem and recognize that there are many sources of air pollution. Emissions from burning coal in power plants contribute a small part. IITK study suggests that road dust contributes 38% of air pollution, transport sector 20%, biomass and waste burning 12% and industry including power generation 11% of PM 2.5 pollution in Delhi. Moreover, increasingly, coal plants will be shifted away from urban areas for their health impact.

We are in fact generous in our modeling approaches where any cost effective measures or investments made for indoor or urban air pollution are not considered as part of additional cost of GHG mitigation.

We believe that India must take strong and ambitious actions in a co-operative spirit. However, given the levels of India's emissions a lot would be needed from the developed world to make a dent on 2 °Centigrade global target let alone 1.5 °Centigrade target mentioned in the Paris agreement.

Therefore, India needs to keep up the pressure on the developed countries to deliver far more.

Science tells that it is the accumulated GHG stock in the atmosphere that leads to climate change. While calculating the responsibility of countries one needs to allocate rights in the absorptive capacity of global environment as well. In all the talk of equity and climate justice, this issue is not discussed. Science is getting trumped by diplomacy. Net emissions accounting for global sink capacity is an important and the correct explanatory narrative, which unfortunately is not yet globally discussed systematically. More precise estimates need to be made. We hope our broad-brush estimate has brought out the importance of it. We hope that IPCC (Inter-governmental Panel on Climate Change) will address the issue of allocating sink capacity, which is not factored while determining contributions by different countries.

Even if one were to accept NDRK's suggestion of rewarding those who emit more with higher share of absorptive capacity, India's share in global accumulated GHGs and its responsibility for the threat of climate change will be negligible. NDRK seem to want India to have the same responsibility as others.

We had concluded our article by saying “While India could have promised greater reduction in its emission intensity, it should do so only if other major emitters promise deeper cuts in their emissions and provide finance and technology. “ We fail to see how this loses the “Key Strategic Concepts in India’s Climate Policy”.

We end this conversation by saying that in India, we need consensus building also on domestic front and not just by arguing in Paris corridors. It is here that quantified co-benefits may help.

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