

Mitigation Talks

Series on Nationally Determined Contributions

July–September 2017

Volume 1 | Issue 1

Contents

From Series Editor's desk 1

DIPLOMACY

Towards Implementing the Landmark Paris Agreement 2
Neha Pahuja

PERSPECTIVES

Leading India through the Climate Financial Restructuring 4
Swati Agarwal and Tamiksha Singh

Technology Roadmap for NDC Implementation 5
Manish Kumar Shrivastava

MITIGATION BRIEFS

Transformative Policy Interventions: Learnings from India 7
Manu Maudgal

INDIA FOCUS

Aligning Poverty Reduction Programmes with SDGs and India's NDCs to Combat Climate Change 9
S Vijay Kumar and Manish Kumar Shrivastava

EDITOR

Neha Pahuja



The Energy and Resources Institute

From Series Editor's Desk

The year 2015 witnessed two landmark international events: the historic climate change agreement under the United Nations Framework Convention on Climate Change (UNFCCC) in Paris in December 2015 and the adoption of the Sustainable Development Goals (SDGs) in September 2015. The Paris Agreement acts as a framework for a global response on climate change and aims at keeping the rise in global temperatures well below 2°C with each country submitting its Nationally Determined Contributions (NDCs) outlining its intent to take climate action in the form of post-2020 goals. Procedural details, including modalities, are being discussed now and will culminate before the implementation of NDCs begins in 2020. At the same time, a set of 17 Sustainable Development Goals (SDGs) and 169 targets are aimed at setting the development agenda till 2030. Formulating policies and designing actions is the first step in achieving goals under either of the two global regimes. It will be efficient and effective if done in an integrated manner in order to maximize the synergies between the two set of goals, as the idea of sustainable development is closely linked to climate change and vice versa; developmental policies can be designed to have climate co-benefits and vice versa.

This series of *Mitigation Talks* discusses issues that are crucial for developing countries, especially in the context of effective implementation and means of implementation of the NDCs and synergies of NDCs with SDGs. In this series, there will be a regular article focussing on international climate policy in the Diplomacy section. In this issue, we focus on the implications of the indication by US President Donald Trump to withdraw from the Paris Agreement. There will be a regular Perspectives section where we will discuss implementation or means of implementation issues, such as Climate Finance, Technology Cooperation, and the role of gender in the implementation of climate action. In this issue, we focus on a possible approach to strategize a technology roadmap for NDC implementation and the need for restructuring of climate finance for effective implementation of climate action. There will be a regular Mitigation Briefs section where we will discuss a best practice or a case study of climate action in any country. In this issue, we focus on a successful framework applied in India to ensure availability, accessibility, and affordability of energy-efficient devices. The example of energy-efficient LED lighting is also discussed in this section. India Focus, the last regular section, will include articles focussing on domestic developmental policies of India and their alignment with SDGs and NDCs. In this issue, we briefly touch upon the policies focussing on poverty alleviation.

Towards Implementing the Landmark Paris Agreement

Neha Pahuja, Fellow, TERI

E-mail: neha.pahuja@teri.res.in

The Paris Agreement was a landmark achievement drawing conclusion to decades of vigorous and at times, tumultuous negotiations. It set an ambitious goal of keeping the increase in temperature well below 2°C. Many consider this as a suboptimal outcome. However, it was reached through an optimal consensus amongst almost all countries with little compromise from all. The agreement gave new hope to the bright prospects of future generations to come in the form of a belief that world leaders are committed to limiting rising sea levels, intense droughts, acute food shortages, more destructive storms and floods, and other catastrophic effects. Almost all countries put forward their Nationally Determined Contributions (NDCs) as a start towards meeting this goal. A prerequisite for the Agreement to enter into force was that it should be ratified by at least 55 Parties to the Convention and cover at least an estimated 55 per cent of the total global greenhouse gas (GHG) emissions. The Paris Agreement had support from 147 Parties and covered around 66 per cent of total GHG emissions. In October 2016, the threshold for entry into force of the Paris Agreement was achieved and the Paris Agreement entered into force on November 4, 2016.

Further, countries also agreed to undertake regular stocktaking to assess whether countries will be able to reach their commitment and to what extent are the efforts of countries enabling to keep the GHG emissions trajectory on track with the above-mentioned goal. The achievement of these goals will depend on: i) effective implementation and ii) enabling means of implementation or support. Measuring, reporting and verification (MRV) of policies and actions is a key tool for enabling countries to assess the effectiveness of their implementation plans in achieving the intended NDC goals, the contribution to their sustainable development objectives, as well as, report progress in INDC implementation to UNFCCC as per the Paris Agreement. Amongst means of implementation are existing international mechanisms, such as the Green Climate Fund (GCF) and the Climate Technology Centre and Network (CTCN) and new market-based or non-market based mechanisms which will play an important role in supporting the implementation of these NDCs. Besides international mechanisms, domestic policy instruments will also be required. The period till 2020 would be therefore be crucial for: i) domestic preparation

for implementing NDCs in an efficient and effective manner post 2020, and ii) international negotiations to develop modalities, procedures, and guidelines to enable implementation of Paris Agreement. This will require greater research and analysis to understand various options, their social, economic, and environmental impacts, and necessary means of implementation, including national and international policy instruments and mechanisms.

After the Paris Agreement came into force, it was expected that future of climate regime will move forward with increasing ambition, as aggressively as it can get, to deal with climate change, to protect the rights of future generations. It was just then that Donald Trump, the President of the United States of America, indicated his intent to withdraw from the historic Paris Agreement, which he subsequently acted upon. This came as a major blow to the efforts of world leaders, negotiators, and think tanks, amongst others who worked painstakingly to hammer out finer details of the Agreement. His indication has broken the hard gained trust of counterpart world leaders amongst Parties as President Trump has regressed to a decade old US position to hide behind growing economies, such as India and China. His limited understanding of the Agreement is strikingly evident from the fact that he thinks the Paris Agreement is not a 'fair' deal. Even when each country, including the US, had given their own country-driven idea of fairness while submitting their INDCs. Even when the US was central to propagating this idea in negotiations in Warsaw in 2013 and thereafter! Yes, developing countries have been demanding support in terms of finance, technology, and capacity building, so that they are able to transition to a sustainable growth trajectory at a faster rate and are able to cope with the disproportionate adverse impacts of climate change on their citizens. This is because developing countries think that it is only 'fair' to seek support from the large developed economies who have been the largest historical emitters and who possess the requisite technologies, finance, and capacity already. It is only because US emits around 25 tonnes of CO_{2e} of GHG emissions as compared to the developing country average of 3 tonnes.

The inaction of US, as proved by the recent domestic push for coal, will have visible global effects, besides affecting its domestic environment. This will drastically

Leading India through the Climate Financial Restructuring

Swati Agarwal, Associate Fellow, TERI

Tamiksha Singh, Research Associate, TERI

E-mail:swati.agarwal@teri.res.in

As 2020, the year the Paris Agreement enters into force, approaches, countries gear up to deliver on their climate commitments and implement respective NDCs. Climate finance is becoming increasingly critical to effectively address climate change through scale-up of climate programmes and schemes; and in sustaining the momentum for undertaking climate action. Large-scale investments are vital for such a transition of countries to a low carbon development path and crucial for creating green infrastructure.

In the past few years, a number of different approaches have been adopted around the world—and in India—to accelerate innovations in climate finance. ‘Financial Restructuring’ is increasingly becoming a popular phrase for climate investors. Over the years, the landscape of climate finance has rapidly evolved from an era of ‘conventional financial support to developing countries’ to a time where developing countries are now actively sourcing innovative domestic and private sector finances. This shift has also come on account of the faltering climate finance commitments by the developed country counterparts. For instance, the voluntary commitments that were made in Copenhagen in 2009, which led to setting up of a dedicated climate fund called the Green Climate Fund (GCF), witnessed only 10 per cent of the commitments being realized. Till June 2017, only 10.13 bn USD, of the total 100 bn USD, voluntary commitments have been contributed to the Fund. The developing countries have begun to feel the adverse impact of climate change and have realized that it is in their own interest to undertake climate action and create low carbon infrastructure at this stage, when much of their development is yet to happen. Outside of the United Nations Framework Convention on Climate Change (UNFCCC), several multilateral institutions have supported climate change mitigation and adaptation related programmes, within which a total corpus of approx 30 bn USD is available for funding. In addition, there are also institutions that have been set up for the dedicated purpose of funding climate change activities through bilateral channels like the German based International Climate Initiative (ICI), the Norwegian Agency for Development Cooperation (NORAD) and several more such institutions. While the conventional channels of finance for climate are active in their own way, the landscape of climate financing is looking to build in new complexities, structures, actors, and definitions.

From specialized funds, such as the National Clean Energy and Environment Fund (NCEEF) to Green Bonds, to specialized investors like the pension fund, insurance industries, mutual funds, to stylized definitions, such as Green Finance, to sector-specific financial solutions; several ideas have been proliferating globally in recent years. Moreover, as the landscape of climate finance continues to proliferate, it is imperative for national governments to clearly identify the needs, the nature of requirements, and test the models of finance that may or may not work in a specific country context. For example, in India, the role of public finance is seen to be a crucial element for leveraging the larger financial sector for investing in climate actions. Be it through the fiscal signaling for renewable energy through imposing a cess on coal at approx. 6.2 USD per tonne of coal, to prioritizing renewable energy as a priority sector lending by the Reserve Bank of India (RBI), to providing national guidelines for Green Bonds, several innovative fiscal schemes have been employed at the national level to provide the necessary push. Given this, the response of private sector is also generating a lot of innovative thinking. All over the world, it is little known which model works and why, by both domestic governments and the global private players. It is important for governments and the public sector to understand and identify the type of private finance available, the most relevant corresponding actors, the barriers, and the drivers or motivation for such finance.

India has put forth a very ambitious NDC and domestic policies have been giving positive signals to private sector to aggressively undertake climate action. This implies that the total requirement for funding for India is likely to rise in the coming years from the estimated 2.5 trillion USD as submitted in its INDC. While funding support is provided domestically through concessional finance, cross subsidization for clean sectors through National Clean Energy and Environment Fund (NCEEF), and finance for R&D, etc., has been instrumental in driving private sector finance. However, there are two impending challenges and these are as follows:

- The first one is related to the issue of access. Access to climate finance from multilateral, bilateral, and other channels have not been well understood by various stakeholders.

- The second is the lack of knowledge sharing on emerging models of innovative finance from across the world.

For this, it is absolutely imperative to decode the complex landscape of climate finance, understand the role of primary actors, nature and structure of available financing, including the ones flowing from international and domestic private investors, such as pension funds, mutual funds, insurance industry, etc. For effectiveness of climate finance flows, it is also critical to understand the challenges and barriers faced by the private sector and the ways in which they can be

overcome through fiscal and other policy developments. The Energy and Resources Institute (TERI), in its ongoing research, builds on the very rationale of the need for decoding climate finance flows in the country, along with evaluating global financial structures and models from the lens of impact, innovation, replicability, and scalability in India. This will help in building a robust financial mechanism around climate programmes within the country which will not only help in streamlining and prioritizing finance for the country's needs but also provide it immunity from faltering climate commitments by developed nations in the area of public climate finance.

Technology Roadmap for NDC Implementation

Manish Kumar Shrivastava, Fellow, TERI

E-mail: mshrivas@teri.res.in

Technology-based transformations will play a central role in implementing the NDCs and in turn, achieving the goals of the Paris Agreement. The Technology Executive Committee (TEC) of the UNFCCC has identified technology roadmaps (TRMs) as an important tool to visualize and implement such transformations. It defines a TRM as "specific technology development and transfer activities, providing a common (preferably quantifiable) objective, time-specific milestones and a consistent set of concrete actions; developed jointly with relevant stakeholders, who commit to their roles in the TRM implementation".^{1,2} A prerequisite for using TRM techniques is identification and prioritization of technologies. Technology Need Assessments (TNAs) or similar exercises are the commonly used tools for identification of technologies. However, the TEC also observes that technologies selected in TNAs are often inadequately accompanied by information about the business case for technology projects and programmes.³ In the context of NDCs, this observation calls for fresh reflections on the following three questions:

- How should technologies be identified and prioritized for Nationally Determined Contributions (NDCs)?
- What should be the business case for technologies in the context of NDCs?
- What should be the essential components of a TRM?

Identification of Technologies

Countries all over the world seem to have a priority list of technologies, irrespective of a formal technical study. Two aspects imply further scrutiny of any prioritized list of technologies in the context of NDCs. First, the five-year cycle

of 'progressive revision' of NDCs necessitate a temporal perspective on technology prioritization, going beyond the prevailing decision-making heuristics relying on the feasibility studies of currently available technologies. Consideration of futuristic technologies is as important as diffusion of mature and most efficient technologies, as future technologies may have bearing upon the revised NDC targets. Over the last two decades, research and development on many technologies has put forward a set of possible new climate-friendly technologies on the horizon, albeit with a great deal of uncertainty regarding the timeline for reliability as well as viability of their deployment. Hence, temporal trade-offs between current and future technologies may require that technology action plans, over a period of time, should consider the ease of switch from one technological system to another. A corollary to this is that the progressive revisions of NDCs may also be indexed to the progress on development and diffusion of these technologies. Second, the imperatives of aligning climate actions with SDGs imply a preference for technologies scoring high on SDG co-benefits. It is important not only for the reason that NDCs are to be implemented in the context of sustainable development and climate change as one of the SDGs, but also to strengthen the synergies between the institutional architecture of the two global regimes, particularly on means of implementation. It may be assumed here that national priorities and circumstances are subsumed in NDCs and national targets pertaining to SDGs.

A Business Case

A business case implies theoretical proof of commercial viability of a technology. Should this also be the case in

the context of NDCs (and Sustainable Development Goals [SDGs])? Commercial viability of futuristic technologies, for example, is difficult to demonstrate. Examples of increased commercial viability and diffusion of technologies in a shorter period of time, such as the UJALA scheme for diffusion of LED bulbs,⁴ suggest that acceleration of technology diffusion to achieve higher goals requires a 'governance case'. This public procurement centric model of aggregation of demand and cooperation among actors have played an important role. In some other cases, such as promotion of wind energy in India, a long-term governance case, based on international cooperation and national-level assistance and facilitation to industry have played an important role.⁵ Essentially, the objective function of decision making is not to select a technology which makes economic sense but to define a network of actors and a set of actions so that a selected technology begins to make economic sense as soon as possible. This 'governance case' should include sufficient flexibilities to accommodate future technologies that may substitute the present technologies. Of course, such flexibilities may not be possible in all the cases. For example, a given governance model may work for different home appliances and lighting systems but the model for a large ultra-super critical technology-based thermal power plant may not work for a large solar thermal technology-based power plant supported by different storage technologies. Seen from this perspective, the idea of a TRM, where relevant stakeholders commit to implementing different roles is close to the idea of multi-level inter-generational governance, which is also a defining characteristic of the global climate regime.

Implementation of the Paris Agreement implies global and national technological transformations. While the trajectories of these two levels of transformations will have different characteristics, they will greatly influence each other. Synchronization between the institutions, interests, and barriers that determine the two trajectories, therefore will be instrumental in implementing the Paris Agreement. The 'governance case' for identified technologies therefore, needs to be situated in the global context of technological change and cooperation, particularly the impact of NDC implementation by other countries and the role of UNFCCC mechanisms, such as the GCF (Green Climate Fund) and CTCN (Climate Technology Centre & Network).

A TRM for NDC

According to the International Energy Agency, a TRM is sequential elaboration of goal related to a technology followed by defining milestones, gaps, and barriers, in achieving the milestones and accordingly determination of roles and responsibilities of different actors with a provision of tracking the progress and revising the TRM. A TRM for NDCs, however, as explained earlier in the article, needs to integrate it with climate change and SDG co-benefits, inter-generational forecasting of technologies, institutions of global governance of climate change, and role of international cooperation. Accordingly, a TRM for NDC should provide the following:

- A list of current and future technologies that score high on climate change and the SDG agenda.
- A structured scenario of how various competing technologies may play out in the future and what should be the governance structure, elaborating the roles of different stakeholders in regulating the interplay of competing technologies and removal of barriers in greater diffusion.
- Sectoral dynamics of actors involved in determining demand and supply of specific technologies ensuring that when a futuristic technology substitute becomes available, the same governance structure is able to promote its diffusion with minimum modifications. Transition from CFL to LED bulbs is a good example of such futuristic technological substitutions. Of course, such flexibility may not be possible where the new technological substitutes are fundamentally different in terms of scale or system or otherwise. For example, a TRM for a centralized nuclear reactor would be completely different from a TRM for distributed renewable energy systems, even though both are considered cleaner substitutes for coal-based power generation. Hence, a TRM should consider not only futuristic technologies which may become substitute or complementary systems but also distinguish between centralized and decentralized technologies as well as their governance cases.
- A description of interventions, including international cooperation, at different temporal and diffusion milestone intervals at national and international levels, necessary for rapid development and diffusion of selected technologies.

Endnotes

- 1 Background paper on technology roadmaps, Technology Executive Committee, TEC/2013/5/5. Available at <http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TEM_TEC_meetings/d8024d9b950f43d594fc17fd22b5477a/df75c7bbbd2e4daa8f2f8eba203d33de.pdf>
- 2 Background paper on technology roadmaps, Technology Executive Committee, TEC/2013/5/5. Available at <http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TEM_TEC_meetings/d8024d9b950f43d594fc17fd22b5477a/df75c7bbbd2e4daa8f2f8eba203d33de.pdf>
- 3 TEC (2015), Good Practices of Technology Needs Assessments, Technology Executive Committee (TEC) Subsidiary Body for Scientific and Technological Advice, Forty-third session, Paris, 1–4 December 2015. Available at <http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TEC_documents/ff2506265909481299786ef1e703bb99/01e45b9f64524bd-da2185b65b04542fb.pdf>.
- 4 <http://www.ujala.gov.in/>
- 5 Chaudhary, A, Krishna, C and Sagar, A. 2015. "Policy making for renewable energy in India: Lessons from wind and solar power sectors". Climate Policy 15(1): 58–87.

Transformative Policy Interventions: Learnings from India

Manu Maudgal, EESL

E-mail: mmaudgal@gmail.com

Implementing the Paris Agreement requires early uptake of advance climate-friendly technologies. If early investments are not made in energy efficiency and non-fossil power generation, the economy runs the risk of getting locked in emission-intensive infrastructure. Especially, attracting investments towards energy efficiency is a challenge, fundamentally so because improved energy efficiency requires sustained interventions and will only deliver after a time lag. Recent experiences from India suggest that possibly an answer has been found. The approach follows the maxim—If you cannot beat'em, join'em. Under this approach the explicit focus is more on binging on new 'energy efficient' devices by aggregating demand, than a 'reduced calorie' energy diet.

Given the large-scale investments that are required for climate action in the coming decade, understanding what enables climate finance through innovative business models is important. This article explores the building blocks essential to leverage the large-scale climate investments for widespread uptake of energy-efficient technology. The Indian experience in this context is useful, as India over the past few years has experimented with lighting successfully, initially through CFLs and now LED.

Problem

All sorts of efficient lighting solutions/products are available yet convincing customers is fundamentally difficult because customers don't want to pay before experiencing the benefit and manufacturers want to be paid before the customer experiences any savings. This is an impasse that impedes widespread adoption of efficient lighting. It is important to break this impasse. Assuming that energy saved through efficient lighting is seen as avoided operating costs; financiers may be able to monetize the savings. It is important to review if entry of a financial institution break the log-jam? And, if yes, by how much? The answer to this is elusive because each customer is unique and so is the underlying lighting solution. Moreover, customers do not track existing consumption, much less savings or accuracy of savings predictions. Clearly, to ensure the financial viability of such projects, the devil lies in the methodology to monitor and measure the savings.

Bachat Lamp Yojana (BLY) Experience: Circa 2007/12

The Bachat Lamp Yojana, introduced by the Bureau of Energy Efficiency (BEE) in 2010, is a public-private partnership programme to hasten market transformation towards energy-efficient lighting in domestic households.

Under the programme, households were charged Rs 15 per CFL (compact fluorescent lamps), which was a substantial discount from the CFL market price of around Rs 120. The difference in costs was recovered through the Clean Development Mechanism (CDM) revenue which flowed from Annex-I countries under the Kyoto Protocol Framework. Typically, the life of these lamps was better than those sold in the open market (10,000 hours or more) and the tendered cost of these lamps was less than Rs 100, with the market price being close to Rs 200. The BLY initiative paved the way for the use of deemed savings monitoring and measurement wherein all lamps were 'deemed' to have been used for 3.5 hours a day.

The programme went on to be the world's largest registered Programme of Activity (PoA) under a public-private partnership arrangement and resulted in avoided installed capacity of around 500 MW per year.

Under the BLY scheme, the main cash flows arose from CDM credits. However, the uncertainty surrounding the Kyoto Protocol crashed the CDM credits market and also resulted in tapering off investments to the BLY scheme.

Unnat Jyoti by Affordable LEDs for All (UJALA) Experience: Circa 2014-till date

UJALA is the world's largest zero-subsidy LED bulb programme for domestic consumers. The programme started where BLY left, building on key factors, such as the deemed savings approach.

UJALA is a market-driven initiative, with minimal intervention from the government. It is an example of a self-sustaining initiative that has not only surpassed traditional benefits, like energy savings and reduced carbon emissions, but has also generated employment and has led to other

macro benefits, such as stimulating the development of a high quality Indian LED lamp manufacturing industry. In 2014, the LEDs purchased were at Rs.310 per piece in 2014; as on date the price is Rs. 38.

The market transformation can be adjudged by the fact that India is the second largest LED market in the world, worth Rs. 21.4 billion in revenues per year, and is likely to continue to grow further. A Make in India case study come true!

Several important lessons derived from India's lighting BLY and UJALA initiatives, summarized in the acronym KISS, have been detailed in the following table:

Conclusion

Considering that climate change is occurring, mitigation actions now need to be scaled-up. Post Paris, NDCs present a vehicle to undertake such actions and move beyond specific, individual projects and comprise longer-term strategic and transformative policy interventions. The BLY and UJALA offer experiential learning in minimizing transaction costs of a programme through simplified data monitoring, reporting, and verification. The KISS-based framework applied in India takes care of ground realities ensuring availability, accessibility, and affordability of energy-efficient device. This experience suggests that concerted effort can redirect significant market investment towards low-carbon investment and can play a vital role in helping achieve the ambitious GHG objectives.

KISS	Learnings
K-Reduce transaction 'K'ost	<p>The principle of economy of scale is a universal rule.</p> <p>While in the case of BLY, the adoption of the PoA approach enabled an unlimited number of CDM programme activities to be replicated as long as they fulfilled the eligibility criteria. Over time, this saved cost as compared to a single project-based approach.</p> <p>Under UJALA, the aggregation of demand and transparent procurement over a period of time has ensured sustainability of supply, thereby reducing prices while enhancing market share of LEDs.</p>
I-Institution driven	<p>Just like a stable, strong eye is at the center of a storm, a strong institutional core provides the overall framework and independence required to anchor the implementation.</p> <p>In the case of BLY, the Bureau of Energy Efficiency acted as the institutional core while UJALA is led by Energy Efficiency Services Limited (EESL), a public ESCO. In both cases, this independence allowed scaling up and building a strong public-private partnership coalition.</p>
S-Simplify Monitoring, Reporting & Verification Requirements	<p>Methodologies often involve complex verification and monitoring, entailing effort and costs, and thus, are not amenable to scaling up.</p> <p>The BLY made use of a simple deemed savings-based methodology to monitor and verify CFL use. In this context, 'deemed' implies use of pre-estimated parameters and using data backed appropriate choice of discount factors. This enhanced the predictability of returns to a financier. The same methodology was also applied for UJALA.</p>
S-Consult Stakeholder	<p>Both BLY and UJALA consulted stakeholders from supply- and demand-side thus, yielding benefits, such as</p> <p>Early identification of barriers and enablers, Transparency in decision making, and Facilitate stakeholder buy-in and build consensus</p>

Aligning Poverty Reduction Programmes with SDGs and India's NDCs to Combat Climate Change

S Vijay Kumar, Distinguished Fellow, TERI

Manish Kumar Shrivastava, Fellow, TERI

E-mail: mshrivas@teri.res.in

Challenges before India

India houses 30% of global poor, 24% of the global population without access to electricity, and 30% of the global population relying on solid biomass for cooking. About 92 million people in India are without access to safe drinking water, around 363 million people live in poverty, and about 1.77 million people are homeless. The National Socio-Economic Census 2011 also indicates that economic and social deprivations are much higher in terms of availability of proper houses, access to education, lifeline availability of energy, and stable sources of income. With a human development index (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. The challenge before India is to address these developmental challenges while simultaneously aligning with the imperatives of climate change and sustainable development goals (SDGs) which essentially implies that economic growth and development have to be guided by the key concerns of sustainability and the threats posed to economic development by a deteriorating ecosystem. Additionally, since climate change will disproportionately impact vulnerable sections, including the poor, climate-related strategies need to ensure that the SDG-related strategies are not justified for rich sections.

India's Approach

India's approach towards this balance is well articulated in the National Action Plan of Climate Change (NAPCC) and its eight Missions. The State Action Plans on Climate Change (SAPCCs) in turn mainstream climate change concerns in the state-level planning processes. This approach is further refined in India's Nationally Determined Contributions (NDCs) which is predicated on a sustainable way of living, conservation and moderation, climate-friendly path to economic development, and investments in development programmes in sectors vulnerable to climate change.

The adverse impacts of climate change on the developmental prospects of the country are amplified enormously by the existence of widespread poverty and dependence of a large proportion of the population on climate-sensitive sectors for livelihood. Vulnerabilities in India differ among

states, regions, and different groups of people, within the same region, due to substantial variations in topography, climatic conditions, ecosystems as well as diversity in its social structures, economic conditions, and needs of different communities. Hence, programme-level strategies may have to be aligned and synchronized not only to enable the NAPCC and Mission strategies to be realized but also to provide flexibility where required, for implementation of the SAPCCs in their local context.

Lessons from MDGs

The experience with Millennium Development Goals (MDGs) can offer useful insights for achievement of Sustainable Development Goals (SDGs). For MDGs, India focussed on poverty alleviation programmes through providing safety nets, such as MGNREGA, rural development, creating livelihood opportunities, and increasing social expenditure to reduce inequality. While Although India achieved the MDG targets on poverty, hunger, forest cover, and access to clean drinking water, the country lagged behind on targets for empowering women through wage employment and political participation, and improving access to adequate sanitation to eliminate open defecation. Halving poverty from 1990 levels by mid-2000s was both a result of economic growth (including in agriculture) as well as increased social spending. However, divergent growth experiences and rising inequality have led to poverty becoming increasingly concentrated in poorer states. The incidence of poverty in rural India is twice that of urban areas and higher among excluded groups, such as Scheduled Tribes, Scheduled Castes, female-headed households, and minorities.

The experience of the MDGs has shown that fast progress towards development objectives really requires stimulating key underlying drivers. India's achievement of the SDGs will require a focus on the acceleration of inclusive economic growth; guaranteed access to comprehensive social services; vast investment in basic infrastructure and women's empowerment. While the way forward after adoption of the SDGs and NDCs is likely to be a continuation and accentuation in the same broad direction, clearly further optimization would be necessary.

Enhancing Synergies

For the purpose of illustration, Table 1 intuitively maps the potential synergies between the development policies of the Ministry of Rural Development, Government of India, SDGs, and the INDCs. There are significant opportunities for improving synergy and efficiency in goal conceptualization and programme delivery in relation to climate change action plans and the SDGs. Some suggestions are elaborated as follows:

- **Institutional Linkages:** Better institutional linkages at the national level between the Missions and the sectoral programme design process, thus ensuring that the programme design is not only aligned with SAPCCs and SDGs but is also complied with by the states.
- **Efficiency and Accountability:** Improving efficiency of implementation and accountability is well recognised within SDGs and the Paris Agreement. The Social Audit mechanism of MGNREGA has immense potential for improving targeting-efficiency in favour of the poorer and more vulnerable sections and the Ministry of Rural Development. This can be achieved by statutorily universalizing the mechanism for all social sector programmes that can leverage this potential. Capacity building of the stakeholders around the mechanism can truly make a “game changing” difference.
- **Leverage MGNREGA:** The work carried out under MGNREGA is capable of reducing desertification, reclaiming degraded lands, improving the rural asset base to provide supplemental opportunities for the rural poor, and improving their resilience to climate change, and helping in adaptation. It would be highly advantageous if MGNREGA works are informed by the State Climate Change Action plans.
- **Universalize PMGSY:** PMGSY, by creating and maintaining a road network of good quality, is generally recognized for its huge impact on poverty, both directly in terms of improved livelihood opportunities and indirectly by ensuring easier access of the poor to basic services, such as education, health, etc. Logically, every rural road should have the same impact. Universalizing PMGSY to the entire rural road network should therefore be promoted both as a poverty reducer and to provide greater resilience to adverse impacts of climate change.
- **Leverage Aajeevika:** The Livelihoods Mission “Aajeevika” creates capacity to access knowledge, skills, and resources through building institutions of the poor (IoPs), such as Self Help Groups (SHGs). With a pro-woman and pro-poor orientation IOPs have created sustainable livelihood opportunities and empowered the hitherto vulnerable and marginalized sections of society. The SHG movement has the potential to promote inclusiveness and improve the delivery and effectiveness of a range of basic services for its members and incubate important sections of the future leadership of the community. By providing recognition and special status to SHGs, the Ministry of Rural Development, Government of India, can emplace a mechanism of long-term significance to promote gender-equality, improve livelihoods, and increase resilience.
- **Watershed Development on Wastelands:** The Integrated Wasteland Development Programme (IWDP) focusses on common property resources or agricultural lands of the poorer sections and the general approach has been soil and moisture conservation and improvement of problem soils. Some estimates suggest that India could have 64 million ha of wastelands (though it could be three times as much). Since wastelands are often the only land resources available to the poor, there is a direct implication for poverty reduction in this process, as well as adaptation to climate change impacts.
- **SPM National Rurban Mission:** Many of the larger villages are acquiring non-agricultural characteristics and are actually classified by the Census Commission as “Census Towns”. Under the Rurban Mission, the State Governments are to identify such village clusters in accordance with the Framework for Implementation prepared by the Ministry of Rural Development, Government of India. Many of the normal rural development schemes (including MGNREGA and rural housing programmes) are difficult to apply here because of the non-rural nature of the settlement. Developing Census Towns as “Smart Villages” with a growth path to becoming “Smart Towns” will enable planned urbanization and facilitate sustained poverty reduction. A strong development focus on Census Towns will not only reduce unsustainable migration to district (and higher) level towns, etc., it will also promote inclusivity and make the delivery of basic services easier, more sustainable, cost-effective, and actually accelerate the process of poverty reduction. Needless to say, the planning for such settlements should include aspects relating to extreme events and adaptation to climate change impacts.

Table 1 Potential Synergies between MoRD Programmes, SDGs, and INDCs (illustration)

SDGs	Schemes and Focus					INDCs
	MGNREGA	PMGSY	Aajeevika	Watershed Development	SPM National Rurban Mission	
	Employment Generation, Asset Creation	All-weather Road Connectivity	Livelihood and Skills	Irrigation + NREGA	Infrastructure for Smart Villages	
1. No Poverty	x	x	x	x	x	x
2. Zero Hunger	x	x	x	x	x	
3. Health and Well being	x	x	x		x	
4. Quality Education		x	x		x	
5. Gender Equality	x	x	x	x		
6. Clean Water and Sanitation	x		x	x	x	
7. Affordable and Clean Energy	x		x	x	x	x
8. Decent Work and Growth	x	x	x	x		x
9. Industry, Innovation and Infrastructure		x	x	x	x	x
10. Reduced Inequalities	x	x	x	x	x	x
11. Sustainable Cities and Communities		x			x	x
12. Responsible Consumption and Production	x			x		x
13. Climate Action		x				x
14. Life Below Water						
15. Life on Land	x		x	x		
16. Peace, justice and strong institutions	x	x	x	x	x	x
17. Partnerships			x		x	x

The Paris Agreement sets an ambitious goal of keeping the increase in temperature rise well below 2°C. Almost all countries put forward their INDCs as a start towards meeting this goal, which will be further revised as NDCs. Further, countries also agreed to undertake regular stock-taking to assess whether they will be able to reach their commitment and to what extent their efforts are enabling them to keep the GHG emissions trajectory on track with the above-mentioned goal. The achievement of these goals will depend on: i) effective implementation and ii) enabling means of implementation or support. Continued analysis, deliberations, and knowledge sharing is imperative for countries to implement their 'nationally determined contributions' along with identifying specific international cooperation needs. This project aims to contribute to this effort. The focus of the project is on issues related to implementing NDCs in both the international and domestic context. The following activities will be undertaken under this project:

1. Tracking of Nationally Determined Contributions and domestic linkages with SDGs
2. Role of international cooperation and domestic innovation on climate finance
3. Technology cooperation needs for implementing and enhancing India's NDC
4. Understanding gender dimension in mitigation actions

This series of Mitigation Talks acts as a platform to initiate discussions on various issues under these four themes.

For more information, contact:

Neha Pahuja

Fellow, TERI

The Energy and Resources Institute (TERI)
Darbari Seth Block,
IHC Complex, Lodhi Road,
New Delhi 110 003

Tel: 24682100 or 41504900

Fax: 24682144 or 24682145

Web: www.teriin.org

E-mail: neha.pahuja@teri.res.in