



Outcomes of COP21

Feb 2016

NEW CLIMATE DEAL

The new climate agreement was reached in Paris as a multilateral treaty by an unprecedented 195 nations that will for the first time commit to lowering planet warming greenhouse gas emissions and avoid most dangerous effects of climate change.

The Paris Agreement is a landmark in international climate policy. The Paris Agreement will enter in to force once atleast 55 countries covering 55% of global emissions have acceded to it. It is a crucial agreement that will shape the climate action for decades in future.

The countries that met in Paris agreed to make efforts to limit temperature rise below 2° Celsius above pre industrial levels while also pursuing a long-term effort to stay below 1.5°C above pre industrial levels. To achieve this goal, we require cutting down global green house gas emissions (GHG's) and reducing dependence on the biggest contributor i.e. fossil fuels. In the second half of this century, emissions are expected to achieve "a balance between emissions by sources and removals by sinks of GHG" (IPCC). According to the IPCC AR5, least-cost emission pathways with a likely chance of keeping temperature rise below 2°C correspond to annual emissions of 44.3 (38.2–46.6) Gt CO₂ eq in 2025 and 42.7 (38.3–43.6) Gt CO₂ eq in 2030⁽¹⁾. Global GHG emissions would need to equal net zero at the latest by 2100. Temperatures have already increased by about 1°Celsius (1.8 degrees Fahrenheit) since pre-industrial times. To contain the temperature rise below 1.5°C, the countries have agreed to reach global peaking of greenhouse gas emissions as soon as possible.

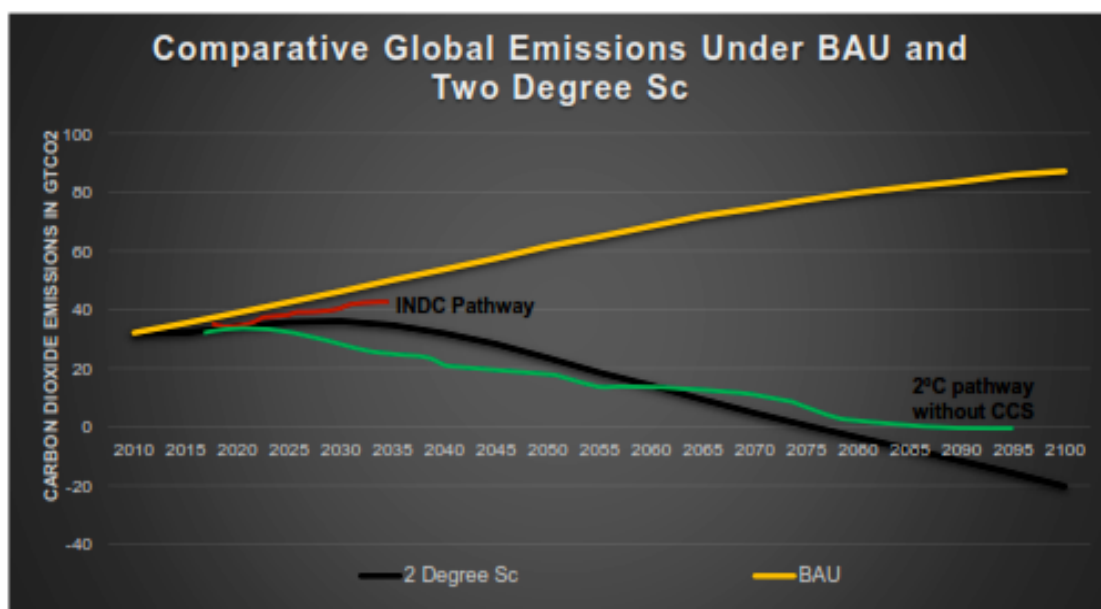
Approach Change: Nationally Determined Contributions (NDCs)

The Paris agreement rests on the presumption that international agreements drive domestic actions in countries, even against the run of domestic politics. The Paris Agreement is developed on a different logic: the motive power for change in energy systems will come from

CLIMATE ACTION FOR LEGISLATORS

- Mainstream climate in new policies
- Drive Policy Change
Formulate policies and guidelines at both centre and state level and aligning it with the objective of India's INDCs.
- Capitalize on opportunities
Synergizing and integrating different missions of different ministries for example, Smart Cities Mission with climate change vision
- Work with private sector
Facilitating exchange of ideas, which could inspire and promote enhanced action and learning
- Promote low carbon and inclusive growth
Promoting local low carbon projects in villages by encouraging funding from Saansad Adarsh Gram Yojana or MPLAD funds.
- Promote access to finance
Encourage participatory governance by engaging with citizens and making them a part of policymaking process

domestic politics in country after country, but the international process can amplify and provide leverage for domestic actors. The key components of the Paris Agreement are binding commitments on the national pledges, i.e. Nationally Determined Contributions (NDCs) made before Paris. The objective is that the Paris Agreement will set in place mandatory procedures, which then stimulate a process in country after country, ideally stimulating ever-greater shifts to low-carbon trajectories.



Source: Intended Nationally Determined Contributions and Global Carbon Space, CEEW

2. Insight into the Paris Agreement

Implications of the outcomes of COP 21 on World and India:

	World	India
1.) <u>The 2 degree and 1.5 degree goals</u>	<p>World needs to have zero emission economies by the end of century ¹</p> <p>1.5 degrees goal would push countries to decarbonize faster</p>	<p>The 2 degrees goal mean India has to significantly reduce its emission reductions and would require to manage its energy sector which holds a major share of its emissions.</p> <p>To achieve 1.5 degrees India will be expected to ratchet up its commitments significantly and shift to a non coal based energy supply</p>

<u>2.) Differentiation-Roles and Responsibilities</u>	<p>The agreement mentions responsibilities for every nation, with high burden on rich economies and low burden on developing economies.</p> <p>While developed countries should "continue taking the lead" by undertaking economy-wide absolute emission reduction targets, developing countries should continue enhancing their mitigation efforts.</p>	<p>The principle of Differentiated Responsibilities with Respective Capabilities (CBDR-RC) – strongly advocated by India- was incorporated in four important aspects—finance, technology transfer, capacity building and adaptation. However, not in all elements of the Paris agreement</p>
<u>3.) Climate Finance</u>	<p>Commitment to mobilize \$100 billion a year in climate finance by 2020 was extended to 2025. A new collective climate financial goal is likely to be set up in 2025. A ‘concrete Roadmap’ by all developed countries has been committed</p>	<p>India may not receive much as least developed and island nations are major benefactors. India shall need to look for options like raising funds from private sector capital. India may require funds for technology transfer and purchase of IPR. The Agreement also calls for developing nations to contribute to climate finance voluntarily.</p>
<u>4.) Emission Mitigation</u>	<p>Every country to revisit INDC once in five years and can enhance their commitments</p>	<p>India will have two options in 2020 — the first will be to review its INDCs or to re-submit its 2015 INDC and give an enhanced one.</p> <p>No forcible ratcheting up of emission targets periodically</p>
<u>5.) Transparency and Accountability</u>	<p>A uniform assessment and verification rule for all countries. Rich nations will assist least development nations to report to framework.</p> <p>This shows firm signal of political intent but requires further granularity in the coming years.</p>	<p>India wanted differentiation be set up more deeply and explicitly in how countries report and are reviewed for achieving commitments. However, as other developed countries called for equivalence in mechanism, India had to agree for uniform assessment and verification rules.</p> <p>India needs to develop its capacity to report</p>

3. India's Intended Nationally Determined Contributions (INDCs) – The agreement has established a global goal on adaptation to enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change in context of temperature goal. The agreement aims at achieving a balance between mitigation and adaptation. India's INDCs have a strong focus on adaptation.

India's Intended Nationally Determined Contributions

- a. Reducing carbon intensity of its GDP by 33 to 35 percent from 2005 levels by 2030
- b. Increasing the share of non fossil fuel based electricity to 40% by 2030
- c. Accelerating afforestation efforts to create additional carbon sinks of 2.5 to 3 billion tonnes of CO₂ equivalent
- d. Making concerted efforts toward adapting to climate change by enhancing investments in development programmes in various vulnerable sectors, including agriculture, water resources, forestry, health and disaster management
- e. Building capacities while adopting and deploying new energy efficient technology, and other technologies to reduce carbon emissions
- f. Mobilize resources to execute our plans for combating climate change across sectors
- g. Adopt and promote low carbon-intensive lifestyles on a mass scale through sustainable living based on traditions and values of conservation and moderation.

3.2 The targets for Power Sector – its implications

India's target for the Power Sector is critical as electricity makes the highest contributions to the total Indian GHG emissions. Indian INDC proposes a target for non-fossil fuel capacity in the electricity mix (40% by 2030). At present non fossil fuel capacity is at 24%, so increasing this to 40% would imply a significant effort. If we take grid losses into account (15%) and total capacity factor(45%) we can estimate that total non-fossil fuel capacity would have reach about 290 GW in capacity by 2030 to be 40% of total installed capacity(Khosla R, 2015)

A more short term target set by Government of India domestically is the 175 GW by 2022. While this target is not part of the INDCs it will nevertheless be a critical stepping stone towards achieving the larger target of 40% power capacity from 2030.

However, there remains a lot of lack of clarity on the convergence of both the targets. To achieve 40% of generation from non fossil fuel sources in 2030, RE will account for 28-31% of the grid capacity and atleast 13-14% of the electricity generation (Khosla R, Dubash N, 2015). As per analysis of CPR, if India meets its domestic target of 175 GW by 2022, it is likely to over achieve its target of 2030 which means it requires a lot of capacity addition of renewables in the coming 7 years. On the other, if a more realistic development of the power is envisaged in the next 15 years, the total RE capacity required to meet the 40% non fossil fuel capacity will range 196 GW -276 GW. The

higher end of this estimation would essentially mean installing the current capacity of the entire power sector in the next 15 years.

In other terms, renewables would have to grow at an ambitious rate of 27% between 2015 and 2022(CPR, 2015).

This poses following challenges for India:

- 1.) Huge amount of RE expansion is a major challenge for India as cost of renewable energy implementation are relatively higher and conditions for RE absorption into the grid less conducive due to its variability.
- 2.) Renewable energy operates at lower Capacity utilization factor (CUF) than conventional power.

Nuclear targets in India's INDCs

India has nuclear estimates of 63 GW of nuclear energy from a current base of 6 GW. The nuclear growth rates over the last decade were low and fuel faces continued political and other obstacles to its expansion. The nuclear projects in INDCs are too high considering the high costs of fuel and associated risks involved. If we consider a low nuclear growth scenario in the coming years, India is likely to achieve 276 GW of non fossil fuel electricity in 2030.

3.4 Towards More robust energy policy

To pursue ambitious goals outlined in India's INDCs-

- 1.) We have to build a robust and ongoing national process to examine our energy and climate future and to fill in gaps in current energy planning and policy.
- 2.) This requires a more cogent system of energy information gathering and analysis. Moreover, we shall also need to anticipate the amount of additional coal energy and to what extent we urbanize while limiting the carbon lock in.

The Paris Agreement along with the RE targets will require some fundamental changes in the Indian Power sector. Some of these changes are:

- The need to recognize all commercialized technologies of Renewable Energy as the mainstream fuel resource of the power sector
- The grid and related power sector infrastructure as well as the power markets need to be designed and redesigned to allow large integration renewable energy
- Given huge demand on national and international resources, Government of India needs to formulate a cost effective strategy for achieving these targets timely
- Apart from power sector there is also a need to look at the other energy intensive areas through RE applications
- There is also a need to focus on "Generation" rather than "capacity" as it has been witnessed in the past that large capacities of Renewables have been left unutilized due to grid congestion or commercial consideration

- Given the concurrent nature of electricity, there is also an immediate need to bring States as active partners for the implementation such RE capacities and also devolve planning exercises to the extent possible. This allows States to implement targets as per ground conditions and plan capacity addition keeping affordability and supply security in mind.

3.5 Pursuing Vision through Climate Finance

Global finance goes green!

The Paris Agreement brings in a paradigm shift in the way the world is spending. The Agreement states that finance flows should be consistent with a pathway towards low emission and climate resilient development, in the context of sustainable development priorities and efforts to eradicate poverty.

Developments of International Climate Finance at Paris

As highlighted earlier, developed countries continued on their commitment to mobilize \$100 billion by 2020. The target would be revised upward after 2025. The agreement saw some progress on the reaching this target. There were also serious objections raised by some developing nations, including India, when developed nations brought development assistance and other means of funding under the category of Climate Finance. The key change that Paris Agreement brought was the inclusion of the need for reporting, transparency and predictability in the climate finance committed by developed countries. The Agreement also encourages developing countries to report on finance received, as well as their needs. This can help improve tracking of funding commitments and set the level of ambition for future climate finance goals.

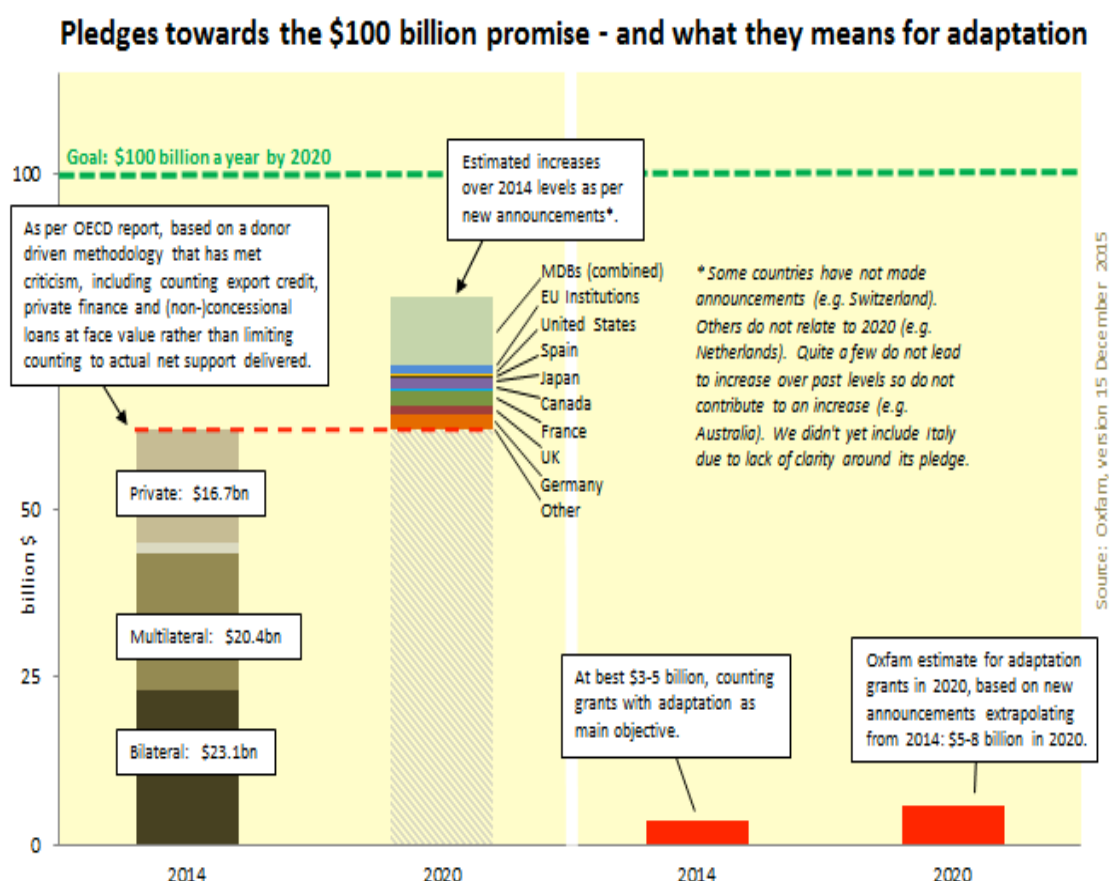
One of the major criticism for Climate Finance in the Paris Agreement is its lack of focus on adaptation. Another major criticism that is emerging is that most of the critical factors of Climate Finance, like the amount, how and what has been moved to “decision” document of the Agreement instead of the main agreement. Thus, they will be undergoing further negotiations.

India and Climate Finance

While India is articulating its development vision in it's INDC's, it will require significant amount of climate finance to pursue the goal. According to Indian Government, the total investments required for it to implement its INDC successful is \$2.5 trillion. It has clearly stated that it intends to cover this investment need through both domestic and international funds.

Over the past decade, India has utilized climate finance from a number of sources including private sector, bilateral donors and international sources streamlined through Clean Development Mechanism (CDM). At the domestic level, India has opted for market mechanisms together with regulatory interventions to mobilize climate finance. The two dedicated funds set up by Government of India at the national level- National Clean Energy Fund (NCEF) and National Adaptation Fund (NAF). NCEF financed by a carbon tax equivalent cess of INR 200(USD 3.2) on each tonne of coal. National Adaptation Fund (NAF) funded on climate change.

The NCEF is expected to result in more than Rs. 13000 Crore annually. The objective of NCEF was to fund research and innovative projects which was diluted and the utilization of fund is non transparent. Most of the NCEF fund till date is utilized for the budget deficit fulfillment of MNRE. India needs to restore its objective of NCEF and to provide impetus to new technologies and research and development. National Adaptation Fund is being used to address adaptation needs in sectors like agriculture, water, forestry etc., with an initial allocation of INR 3,500 million (USD 55.6 million). Project worth Rs. 100 Crore has already been approved under this Fund.



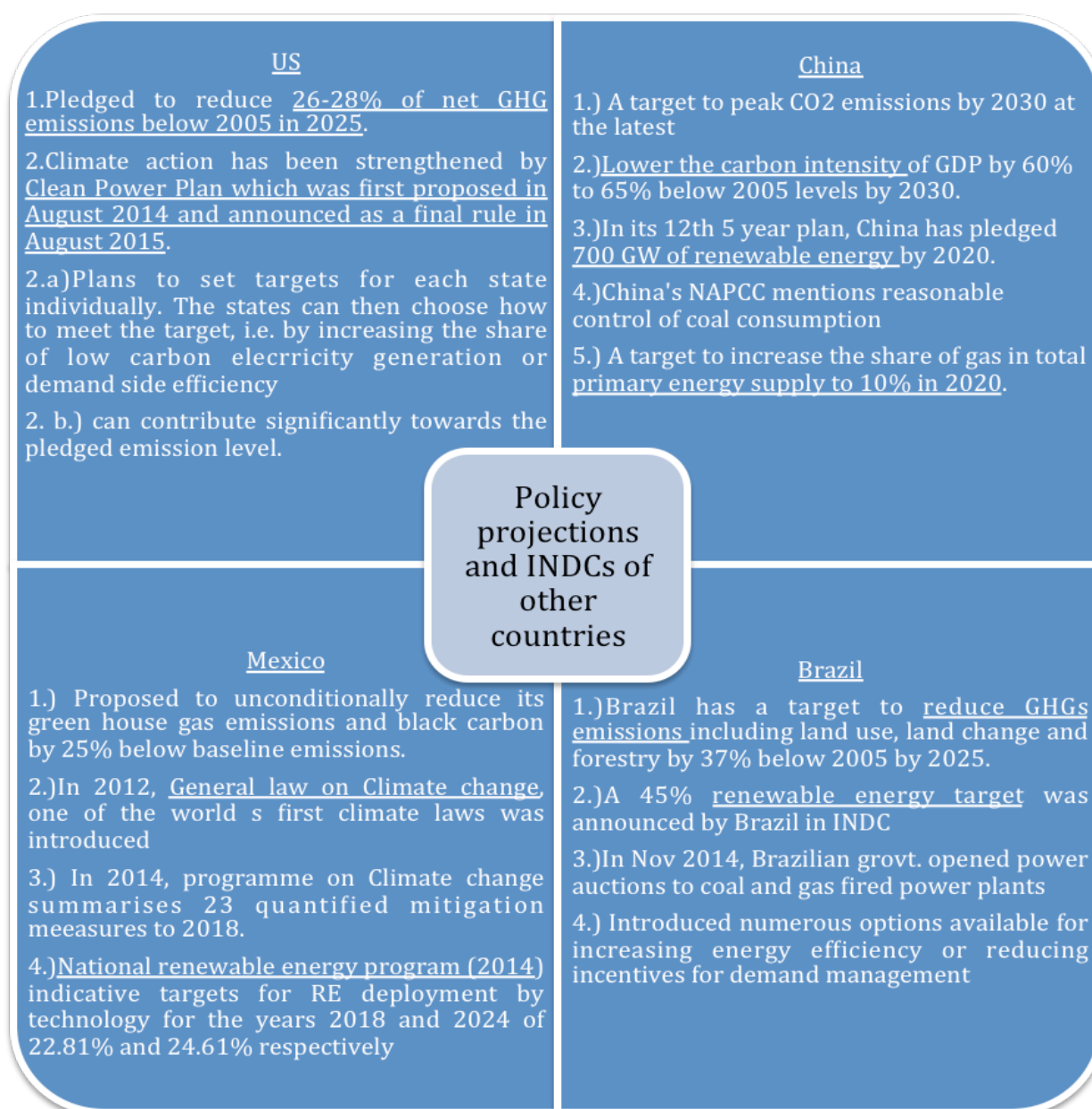
(Source: <http://www.germanclimatefinance.de/>. Graph on the left most side are based on the figures of a heavily contested report.)

However, due to the sheer quantum of climate finance required, these domestic initiatives fade in comparison. It will necessarily need international climate finance support as well. After the Paris Agreement, this has become a real possibility. However, there is tough competition amongst developing nations to channelize these funds. To attract climate finance, India needs to develop its readiness to grab the opportunities to access climate finances in order to accomplish its ambitious RE target and vision outlined in INDCs. India will need to take the following steps to improve its readiness:

- Identify the areas needing critical financial support but have the maximum impact and develop a plan for utilization
- Develop a national as well as state level institutional framework along with capacity building for the utilization of this framework
- Bring in internationally recognized modes of transparency, monitoring and verification processes
- Identify avenues to multiply the limited international climate finance available through leveraging plans and strategies and attracting private investments.

Policy cooperation in the future could focus on this domestic and international investment challenge. Additionally, India needs to prepare itself for proper and streamlined utilization of climate finance from various sources.

3.6 Policy Projections of other countries



4. What does Paris Deal Mean for India

The major argument for India's approach in ensuring our secure energy future is the principle of "common but differentiated responsibility and respective capabilities". Without this safeguard; all countries would have been placed on the same footing. India has contributed little to the problem of climate change and also has a limited capacity to address it. Developed countries have long argued for dilution of this principle along with principle of Polluter pays principle-, and have frequently pointed to the increasing economic might and GHG emissions of the BRICS. The differentiation aspect was contained by Paris agreement was a positive for India.

However, to deal with climate change impacts and achieve its ambitious targets outlined in Intended Nationally Determined Contributions (INDCs), India would need to fulfill following requirements:

- A paradigm shift in energy planning and framework in India- As India is committed in its INDCs, 40% of non fossil fuel electricity by 2030; it requires robust measures in energy planning at every step. Aiming at a huge and ambitious target of 175 GW of renewables by 2022, India is likely to face challenges relating to land, evacuation, grid balancing and infrastructure requirements to accommodate renewables. Additionally, it also need the policy support for example, RE Act (Draft) will provide a clear framework to address these challenges.
- Transparent and accountable mechanisms to be established for the implementation of INDCs -
- The Expert Group on Low Carbon strategies for Inclusive Growth in their final report in 2014 estimated the cumulative costs of low carbon strategies to be around 834 billion USD at 2011 prices over the two decades between 2011 and 2030. This huge amount shall be come from different sources for example budgetary sources, private sector and international sources. In order to streamline the funds for low carbon strategies, we need to clearly establish transparent and accountable financial mechanism for climate action.
- Policy Challenge- A comprehensive and long-term policy framework for climate change mitigation and adaptation should be implemented. This should also include updating and revising the existing policies and addressing the gaps in the present laws and policies. For example, the amendments in Electricity Act are crucial for bringing ambitious renewable energy target on ground. All policy that address climate change and renewable energy must define quantifiable targets, where all states would be equally responsible for meeting national uniform targets. Division of roles of centre and state would further aid in bringing the vision into action. All these policies should clearly state source, level and mechanism for disbursement of financial support.

An integrated approach to policy planning and deployment of resources is crucial for India.

4.1 Post Paris Developments in India

- **International Solar Alliance** - The foundation-laying ceremony of the Interim Secretariat of ISA was done by both on January 25, 2016 at the National Institute of Solar Energy in Gurgaon. **This is part of the Rs 400-crore pledge that India has made for the ISA. French President has committed an amount of 300 million euros for the initial projects of International Solar Alliance**
- **A Science Express Climate Action Special train has been flagged off which will travel across the country for seven months** to increase the awareness on measures that can be taken on local and national level.
- **Solar power prices hit a new low the lowest tariff bid thus far was INR 4.63 (USD 0.07) per kilowatt hour in an e-reverse auction in November 2015, which is a milestone for the energy sector.**
- The MoEF&CC notified **revised emission standards for coal-based thermal power** plants in December 2015
- **The Ministry of Railways has signed Memorandums of Understanding (MoU's)** with the Ministry of Power and Ministry of New & Renewable Energy to focus on electricity transmission, energy efficiency and promotion of renewable energy in the Indian Railways.
- **India and Australia agreed to strengthen energy ties** by enhancing co-operation in clean coal technology, renewable power and LNG in a bid to meet the burgeoning demand for cheap and environment-friendly energy in one of the fastest emerging economies.
- **Tata Power Delhi Distribution launched a Smart Grid Lab** which will focus on demonstration of new technologies, products and operations of different organizations and institutions including utilities.
- **New Policy/legislative provisions introduced to meet the ambitious Renewable Energy target committed in INDCs by India:**
 - **Electricity Amendments Act** with significant changes in the Renewable Energy Sector will be placed in the parliament during the Budget Session. The Act lacks on a same number of fronts in strengthening the RE sector
 - **Renewable Energy Act** is being envisaged by the MNRE. The draft Bill is being prepared
 - **UDAY Scheme** aims at reviving ailing state electricity boards and power distribution companies. 15 states have come on board to join UDAY Scheme.
 - **Draft Procedure for Scheduling, Forecasting and Imbalance handling** through renewable energy generation from wind and solar is developed by Central Electricity Regulatory Commission (CERC)
 - **Ministry of Power has come up with Amendments of National Tariff Policy** The objective of the amendments is to ensure the 4 E's - Electricity for all, Efficiency to ensure affordable tariffs, Environment for a sustainable future, Ease of doing business to attract investments and ensure financial viability.

5.) Conclusion- The barriers and opportunities for going further

The Paris Outcome is a turning point for action to limit climate change below dangerous levels. It points end of business as usual scenario for energy intensive industries. It has placed measures such as adaptation, resilience that will be helpful to millions of people living in most vulnerable countries to deal with impacts of climate change. Implementation of INDCs will mean that renewables will make up 78% of new power generation investment to 2030 in major economies drive down the cost of renewable energy (E3G).

India already has some ambitious aspirations for the shift to a low-carbon economy, notably its renewables plans in the electricity sector. At the same time, with so much growth and infrastructure investment yet to occur India's choices today will be crucial for its long-term emissions trajectory and that of the world. INDC's of India sets out a broad vision for treading on the low carbon pathway. India has a vision and if it is supported with domestic policies, institutional capacity and appropriate finance, it is likely set an example for low carbon economic growth.

However, the draft Paris agreement has a few downsides, as it does not include any meaningful targets for developed countries to reduce their emissions. Also, it does not operationalize equity and does not include any mention of carbon budget.

The Paris Agreement shows it is possible to agree international regimes to manage critical global problems. This will set a positive example for other issues. All eyes turn into implementation and stakeholders must do their bit to push the countries in delivering their pledges.

Snippets

- 20 countries, including both the US and Saudi Arabia, launched Mission Innovation to support clean energy innovation and double investment in energy research and development from current levels of about \$10 billion
- The programme's implementation will also be supported by partners in a Breakthrough Energy Coalition backed by high-profile philanthropists such as Bill Gates (who has committed \$2 billion), Mark Zuckerberg, Richard Branson, and India's industrialist Mukesh Ambani.
- China has already pledged \$3.1 billion to be delivered through South-South financing.
- Germany broke the silence in May (putting other countries under pressure) and announced a doubling of its financial support from the federal budget to roughly € 4 billion a year by 2020, followed by France (increase by € 2 billion a year by 2020) and UK (reaching € 1,76 billion a year by 2020)

(Source: <http://www.germanclimatefinance.de/2015/12/21/climate-finance-paris-agreement/>)

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