

## **India: Climate Change Adaptation Planning**

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### **1. Background**

Today, the climate change has become an intriguing concern and is haunting the global community and thwarting the developmental efforts all across; being a global issue, this needs concerted efforts at the global scale. Since the Kyoto Protocol in 1997, the global communities of the developed and developing countries are now responding to these climatic exigencies through regular review of scenario by engaging themselves in conventions and conferences to not only negotiate consensus on greenhouse gases (GHGs) emission cuts, reduction of fossil-fuel use, promotion of green energy technologies, but also work out modalities for technology transfer, capacity building, R&D support, fund provisioning, etc. for this global cause. The developing world which is struggling with poverty, poor infrastructure, unemployment and has yet to provision the basic needs for a vast majority of their population and attain a minimum optimal in Human Development Index is at crossroads and cannot afford to forgo the economic and other developmental aspirations of their people. Continuing with such development agenda, however, incurs costs in terms of enhanced CC impacts. An amicable internalization/globalization lies in following a balanced approach and ethical compromises to support the adaptation efforts of developing countries by means of global collaborations for technology transfer, capacity building, and provisioning of funds.

As a further step forward in this context in UNFCCC COP-19 in Warsaw in 2013, preparation of INDC (Intended Nationally Determined Contribution) by parties or countries, outlining their post-2020 intended actions to climate change and its timely submission for deliberations in COP-21 in Paris (France) for a more definitive action and agreement at the global scale, was desired. As a follow-up to these developments, recently on 2<sup>nd</sup> October 2015, India has submitted its INDC to UNFCCC; India's INDC, which is comprehensive, balanced, equitable, pragmatic and also inspired by Mahatma Gandhi's exhortation that - *"Earth has enough resources to meet people's needs, but will never have enough to satisfy people's greed"*. It includes all the basic developmental priorities of the government such as - electricity for all, housing for all, poverty

eradication, access to education and health for all, Make in India, infrastructure development, etc. and incorporates goals and strategies for the mitigation, adaptation, finance, technology transfer and capacity components. The high climatic vulnerability of the country, widespread poverty, and dependence of a large population on climate sensitive sectors stress on ‘CC Adaptation Planning’ a special focus in India’s INDC.

## 1. Climate change adaptation planning

Climate adaptation is to anticipate the adverse effects of climate change, take corrective actions and prevent or minimise the damage that such changes can cause.

On June 30, 2008, the Prime Minister of India unfolded country’s first National Action Plan on Climate Change (NAPCC). It outlined existing and future policies and programmes addressing climate mitigation and adaptation and identified eight core ‘national missions’ that are being implemented directly by different ministries. The aim is to better adapt to climate change by enhancing investments in development programmes

of key sectors vulnerable to climate change such as agriculture, water resources, biodiversity and Himalayan Ecosystem, coastal regions and islands, health and disaster management. The priority for the country is to maintain high economic growth rates and raise quality of life; at the same time it pledges that the per capita GHGs emission does not exceed than the desired rates while pursuing the developmental objectives.

### Box I: State Action Plan on Climate Change (SAPCC)

Under the common framework provided by the MoEF&CC, the SAPCC is developed to integrate adaptation and mitigation of climate change into political agenda, ongoing government schemes and practical actions with the technical assistance of key development agencies, such as GIZ, UNDP, DFID and the World Bank. The SAPCC identifies and prioritizes adaptation and mitigation options. Ideally, the plans are developed through a broad participatory planning process involving government departments, scientists, policy-makers, academics, non-governmental organizations, private sectors, civil societies and local communities.

## 2. National Missions

The United Nations Framework Convention on Climate Change (UNFCCC) initiated steps to bring strong recognition of adaptation to climate change in internationally ‘shared vision’ developed in 1992 and further fastened in the UNFCCC’s summits held in Bali (2007), Copenhagen (2009), and Cancun (2010). The Government of India released the NAPCC for the

country outlining existing and future policies and programmes to address climate change mitigation and adaptation. The NAPCC is being operationalised in all Indian states through State Action Plan on Climate Change (SAPCC), wherein adaptation to climate change is being integrated into government policies and climate proofing schemes being piloted at the state level (Box-I). The NAPCC outlines India’s plans to address national climate change concerns with the eight national missions addressing both climate change adaptation and mitigation concerns across different sectors (Table 1). Under the NAPCC, the present government efforts are directed mainly in the key development areas such as crop improvement, drought proofing, forestry, water, coastal regions, health, risk financing and disaster management.

Table 1. The eight core national missions of the Government of India under NAPCC are:

<b>Mission</b>	<b>Objective</b>
The National Solar Mission	To promotes the development and use of solar energy for power generation and other use with a target of 20,000 MW of solar power by 2020
The National Mission for Enhanced Energy Efficiency	To implement a host of programmes that will improve energy efficiency in the energy-consuming industries and sector
The National Mission on Sustainable Habitat	To promote energy efficiency as a core component of urban planning including the extension of the existing Energy Conservation Building Code as well as more efficient waste management.
The National Water Mission	To improve in water use efficiency by 20 % through regulatory mechanism, formulating basin level management strategies, and water conservation measures.
The National Mission for Sustaining the Himalayan Ecosystem	To conserve biodiversity, forest cover, and other ecological values in the Himalayan region.
The National Mission for a ‘Green India’	To achieve 6 million hectares of afforestation over degraded lands and the extension of forest cover from currently 23% to 33% of India’s territory by 2017
The National Mission for Sustainable Agriculture	Climate adaptation in agriculture through the development of climate-resilient crops, improving productivity of rainfed agriculture, expansion of weather insurance mechanisms and innovative agricultural practices.
The National Mission on Strategic Knowledge for Climate Change	To establish a better understanding of climate science, impacts and challenges through high quality and focused R&D.

### 3. Other National Initiatives

In addition to the NAPCC, the Government of India has also undertaken several new initiatives for adaptation and sustainable development to address the threat of climate change (Box-II). These initiatives operate at the national and sub-national levels and span domains that include climate change research, clean technology research and development, finance, energy efficiency, renewable energy policy and deployment. Furthermore, keeping the challenges of climate change in view, the Indian government is implementing several other policies/missions. Some of the key

policies and missions are: National Food Security Mission, Mission for Integrated Development of Horticulture, National Mission on Agricultural Extension & Technology, Neeranchal, National Mission for Clean Ganga, National River Conservation Directorate, Integrated Disease Surveillance Programme, Integrated Coastal Zone Management, Mangroves for the Future, Island Protection Zone, National Disaster Relief Fund, National Mission for Himalayan Studies, and Mahatma Gandhi National Rural Employment Guarantee Scheme in India.

#### Box II: Other National Initiatives

- National Adaptation Fund of INR 350 crore (USD 55.6 million)
- National Clean Energy Fund (NCEF)
- State Action Plan on Climate Change
- Accreditation to National Bank for Agriculture and Rural Development (NABARD) as a National Implementing Entity (NIE)
- Indian Network for Climate Change Assessment
- Expert Group on Low Carbon Strategies for Inclusive Growth
- Bilateral Cooperation on Environment and Clean Technology

### 4. Actions for Adaptation and Mitigation

The Government of India's expenditure on adaptation to climate change exceeds 2.6% of the GDP, with agriculture, water resources, health and sanitation, forests, coastal-zone infrastructure and extreme weather events, being specific areas of concern (NAPCC, 2010). Some of the existing adaptation-related programmes are:

- To increase power generation the government plans to retire inefficient coal-fired power plants and support the research and development of Integrated Gasification Combined Cycle (IGCC) and supercritical technologies. In Renewable Energy sector, it is mandatory to purchase grid-based power from renewable sources by the central and state electricity regulatory commissions. To increase energy efficiency, the large energy-consuming

industries are required to undertake energy audits and an energy labelling programme for appliances has been introduced.

- ii. Crop improvement to address measures such as development of arid-land crops and pest management, as well as capacity building of extension workers and NGOs to adopt the best practices for vulnerability reduction.
- iii. Drought Proofing to minimize the adverse effects of drought on production of crops and livestock, and on productivity of land, water and human resources, so as to ultimately lead to drought proofing of the affected areas.
- iv. Afforestation and sustainable forest management programmes are aimed at stopping the clearing and degradation of forest. This programme resulted in annual reforestation of 1.78 mha during 1985-1997 and is currently 1.1 mha annually, due to this; the carbon stocks in Indian forest have increased over the last 20 years to 9-10 giga tons of carbon (GtC) during 1986 to 2005.
- v. The National Water Policy (2002) stresses upon non-conventional methods for utilization of water, including inter-basin transfers, artificial recharge of ground water, and desalination of brackish or sea water, as well as traditional water conservation practices like rainwater harvesting, roof-top rainwater harvesting to increase the utilizable water resources.
- vi. In coastal regions, restrictions have been imposed in the area between 200m and 500m of the high tide line (HTL) while special restrictions have been imposed in the area up to 200m to protect the sensitive coastal ecosystems and prevent their exploitation.
- vii. The programme initiated under the health sector has key objectives of surveillance and control of vector-borne diseases and provides emergency medical relief in the case of natural calamities, and also trains and develops human resources for these tasks.
- viii. The risk-financing programmes have been initiated to support adaptation to climate impacts such as insurance of farmers against climate risks and the credit support mechanism for them.
- ix. The National Disaster Management Authority (NDMA) programmes provide grant-in-aid to victims of weather-related disaster, and manage disaster relief operations. It also support proactive disaster prevention programmes, including dissemination of information and training of disaster-management cells at the state and local levels.

## 5. Implementation

A planned approach to development has been the central theme of the Indian government, as reflected in the national five-year plans, departmental annual plans, and perspective plans of various ministries of the central and state governments. The planning process in India aims to increase wealth and human welfare, while simultaneously conserving the environment. The key focus areas on India's development programmes are: (i) Poverty alleviation, (ii) Skill development, (iii) Employment generation programmes, (iv) Social safety initiatives, (v) Rural Employment Guarantee Scheme, (vi) Rural infrastructure development, (vii) Environmental governance. Indian government has set up a National Adaptation Fund of worth 350 crores INR (US\$ 55.6 million). Expenditure on human capabilities and livelihoods viz., poverty alleviation, health improvement and disease control and risk management, constitutes more than 80% of the total expenditure on adaptation in India. Different Ministries are given the lead responsibility for each of the missions, who have developed specific objectives, implementation strategies, timelines, and monitoring and evaluation criteria. The progress is continuously being monitored by Prime Minister's Council on Climate Change on regular time interval. To be able to quantify progress, appropriate indicators and methodologies are being developed to assess both avoided emissions and adaptation benefits and substantial budget is allocated (Table 2) for implementation of various missions.

Table 2. Budgetary requirements, allocations and implementation status of eight 'core missions'

Mission	Budgetary Requirements and Allocations for the 12 <sup>th</sup> five year plan (2012-2017)	Implementation Status
National Solar Mission	INR 8,795 crore (approx. USD 1.4 billion).	<ul style="list-style-type: none"> <li>• 2,970 MW of grid-connected solar generation capacity installed</li> <li>• 364 MW of off-grid solar generation capacity installed</li> <li>• 8.42 million sq. meters of solar thermal collectors installed</li> </ul>
National Mission for Enhanced Energy Efficiency	INR 190 crore (approx. USD 31 million).	<ul style="list-style-type: none"> <li>• Perform Achieve and Trade (PAT) cycle-1 launched which covers 478 plants in 8 energy intensive industrial sectors that account for one third of total energy consumption</li> <li>• 2.58 million LED bulbs distributed; cost of an LED bulb reduced from INR 500 to INR 204 (approx. USD</li> </ul>

		8 to USD 3)
National Mission on Sustainable Habitat	INR 950 crore (approx. USD 153 million).	<ul style="list-style-type: none"> <li>• Energy Conservation Building Code 2007 made mandatory for new as well as old buildings</li> <li>• More than 50 capacity building programmes are being implemented</li> <li>• Long term transport plan for cities prepared</li> <li>• 760 water supply projects sanctioned at an estimated cost of INR 35,650 crore (approx. USD 5.75 billion)</li> </ul>
National Water Mission	INR 89,101 crore (approx. USD 14.4 billion) during the 11 <sup>th</sup> (2007-2012) and 12 <sup>th</sup> (2012-2017) five year plan periods	<ul style="list-style-type: none"> <li>• Revised National Water Policy (2012) adopted by National Water Resources Council</li> <li>• 1,082 new Ground Water Monitoring Wells created</li> <li>• Several capacity building and training programmes are underway</li> </ul>
National Mission for Sustainable Agriculture	INR 1,08,000 crore (approx. USD 17.4 billion) up to the end of 12 <sup>th</sup> five year plan period	<ul style="list-style-type: none"> <li>• 11,000 hectares of degraded land developed</li> <li>• 1 million hectares brought under micro-irrigation to promote water efficiency</li> <li>• 5.4 million metric tone agricultural storage capacity created</li> </ul>
National Mission for Sustaining the Himalayan Ecosystem	INR 1,695 crore (approx. USD 273 million)	<ul style="list-style-type: none"> <li>• 6 new centres relevant to climate change established in existing institutions in Himalayan states</li> <li>• Observational network to monitor the health of the Himalayan ecosystem created</li> <li>• Several capacity building and training programmes underway</li> </ul>
National Mission for a Green India	The total mission cost is estimated to be INR 46,000 crore (approx. USD 7.4 billion)	<ul style="list-style-type: none"> <li>• Preparatory activities underway in 27 Indian states</li> <li>• Perspective plans for 11 Indian states that cover 33 landscapes and working area of 85,000 hectares</li> <li>• Implementation guidelines finalized</li> </ul>
National Mission on Strategic Knowledge for Climate Change	INR 2,500 crore (approx. USD 403 million).	<ul style="list-style-type: none"> <li>• 12 thematic knowledge networks have been established</li> <li>• Developed 3 regional climate models</li> <li>• Trained 75 high quality climate change professionals</li> </ul>

*Source: MoEF&CC, 2014*

Apart from the high priority on reducing GHGs emission through mitigation, the importance of dealing with inevitable impacts of climate variability and change through adaptation has gained high recognition in recent years. Efforts are being made at national and local levels to integrate adaptation to climate change into ongoing policy, planning and decision-making processes. Recognizing the important role that non-state actors must also play in shaping India's response to climate change, the Government of India is taking steps to make this an inclusive and

consultative process and invites the participation of all communities, non-governmental organizations and industries.

**Note:**

This article is based on the 'India's Intended Nationally Determined Contributions: Working towards the climate justice', prepared by the Ministry of Environment, Forest and Climate Change (MoEF&CC), Govt. of India for the twenty-first session of the Conference of the Parties (COP) scheduled for 30 November to 11 December 2015 in Paris, France. The material is generated to create awareness on the subject. For further information, please visit MoEF&CC website (<http://www.moef.gov>)

**Reference:**

India's Progress in Combating Climate Change-Briefing Paper for UNFCCC COP 20 Lima, PERU December, 2014, Ministry of Environment, Forests and Climate Change, Government of India.