



# The coordination of climate finance in India

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## Key messages

- The climate finance landscape in India on a whole is highly fragmented with the central government, state governments, private sector and civil society actors all playing significant roles in low emission and climate resilient development.
- Well-defined policies in the solar energy and energy efficiency markets, triggered by national climate policy, have spurred climate related finance through a variety of domestic and international, both public and private, sources.
- The main institutional response of the Government of India on climate finance has been to establish a Climate Change Finance Unit within the Department of Economic Affairs in the Ministry of Finance.
- In accessing international climate funds in the past, the Ministry of Environment and Forests has led selection and oversight of projects, while the Ministry of Finance has been the nodal department for receiving financial assistance from multilateral and bilateral funds.
- There is no formal coordination mechanism around climate finance in India, but a wealth of stakeholders at the national and subnational level, in both the public and private sectors could be engaged to develop a clearer sense of opportunities and priorities using both domestic and international finance.
- There is a need for a coherent strategy on climate finance in India, which interfaces ongoing efforts on mitigation and adaptation with the emerging domestic and international financial arrangements.

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# Abbreviations

ADB	Asian Development Bank
AF	Adaptation Fund
AS	Additional Secretary, Ministry of Environment and Forests
BEE	Bureau of Energy Efficiency
BIRD-UK	Baif Institute of Rural Development – Uttarakhand
CCAP	Climate Change Action Programme
CCFU	Climate Change Finance Unit
CCM	Country Coordination Mechanism
CDM	Clean Development Mechanism
CER	Certified emission reduction
CFP	Country Focal Point
CIDA	Canadian International Development Agency
CIF	Clean Investment Fund
CO <sub>2</sub>	Carbon dioxide
CSO	Civil society organization
CSP	Concentrated Solar Power
CTF	Clean Technology Fund
DA	Designated Authority
DEA	Department of Economic Affairs
DEG	Deutsche Investitions-und Entwicklungsgesellschaft
DFI	Development finance institution
DFID	Department for International Development
DRCSC	Development Research Communication and Services Centre
DST	Department of Science and Technology
ECA	Energy Conservation Act
ECBC	Energy Conservation Building Code
EEFP	Energy Efficiency Financing Platform
ESCO	Energy Service Company
EXIM	Export-Import
FC	Finance Commission
FEEED	Framework for Energy Efficiency Economic Development
FMO	Netherlands Development Finance Company
FYP	Five Year Plan
GBI	Generation-based incentive
GCF	Green Climate Fund
GEF	Global Environment Facility
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GHG	Greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit

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Gol	Government of India
GW	Gigawatts
IBRD	International Bank for Reconstruction and Development or World Bank
IDRC	International Development Research Center
IFC	International Finance Corporation
IFMR	Institute for Financial Management and Research
IMFFS	Integrated Mangrove Fishery Farming Systems
INCCA	Indian Network for Climate Change Assessment
INR	Indian Rupee
IREDA	Indian Renewable Energy Development Agency Ltd.
JBIC	Japan Bank for International Cooperation
JNNSM	Jawaharlal Nehru National Solar Mission
JS-CC	Joint Secretary (Climate Change), Ministry of Environment and Forests
LUCF	Land Use Change and Forestry
MDB	Multilateral development bank
MEA	Ministry of External Affairs
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MNRE	Ministry of New and Renewable Energy
MoA	Ministry of Agriculture
MoEF	Ministry of Environment and Forests
MoEF&CC	Ministry of Environment, Forests and Climate Change
MoF	Ministry of Finance
MoP	Ministry of Power
MoUD	Ministry of Urban Development
MoWR	Ministry of Water Resources
MSSRF	M. S. Swaminathan Research Foundation
MtCO <sub>2</sub>	Million metric tons of carbon dioxide equivalent
MTEE	Market Transformation For Energy Efficiency
NABARD	National Bank for Agriculture and Rural Development
NAPCC	National Action Plan on Climate Change
NBC	National Building Code
NBFC	Non-Banking Finance Company
NCDMA	National Clean Development Mechanism Authority
NCEF	National Clean Energy Fund
NGO	Non-governmental organization
NIE	National Implementing Entity
NMEEE	National Mission on Enhanced Energy Efficiency
NMGI	National Mission for a “Green India”
NMSA	National Mission for Sustainable Agriculture
NMSH	National Mission on Sustainable Habitat
NMSHE	National Mission for Sustaining the Himalayan Ecosystem
NMSKCC	National Mission on Strategic Knowledge on Climate Change
NORAD	Norwegian Assistance Agency for Development Cooperation
NSM	National Solar Mission
NTPC	National Thermal Power Corporation

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NVVM	NTPC Vyapar Vidyut Nigam
NWM	National Water Mission
OFP	Operational Focal Point
OPIC	Overseas Private Investment Corporation
PACE-D	Partnership to Advance Clean Energy - Deployment
PAT	Perform, Achieve and Trade
PFC	Power Finance Corporation
PPF	Political Focal Point
PIB	Press Information Bureau
PMO	Prime Minister's Office
PRGF	Partial Risk Guarantee Fund
PRSP	Partial Risk Sharing Program
PTI	Press Trust of India
PwC	PricewaterhouseCoopers
RE	Renewable energy
REC	Renewable Energy Certificates
RPO	Renewable Purchase Obligations
SAPCC	State Action Plan on Climate Change
SBI	State Bank of India
SCCF	Special Climate Change Fund
SDC	Swiss Agency for Development and Cooperation
SIDA	Swedish International Development Agency
SIDBI	Small Industries Development Bank of India
TAAL	Towards Action and Learning
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
US-EXIM	Export-Import Bank of the United States
USD	United States dollar
VCFEE	Venture Capital Fund for Energy Efficiency
WB	World Bank
WRI	World Resources Institute

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# 1 Introduction

In India, institutional arrangements around climate finance have mostly followed national policy responses to climate change. This paper maps the emergence of climate change policy in India and subsequently traces the evolution of arrangements around climate finance. An early assessment of the climate finance landscape in India suggests that it is a highly complex and fragmented space with a multiplicity of institutions, actors, and channels of climate finance, both public and private, and domestic and international. This focus of this paper is to understand the processes of collaboration and coordination across the several actors that have a role to play in the national response to climate change policy and finance. In particular, the paper tries to determine the effectiveness of the domestic arrangements to access and manage climate finance, which are aimed at realizing national strategies that respond to climate change. In doing so, it takes lessons from India's past experiences with accessing multilateral climate funds. Finally, this paper aims to highlight opportunities to strengthen coordination between the different institutions and actors, such that they contribute positively to the development of climate change policy and finance landscape in India.

## 2 Mapping the climate institutions and policy

Climate change is an enormous challenge for a country like India, which is extremely vulnerable to climate impacts. While climate variability remains a steady feature in India, given its unique topography, the impacts of climate change are likely to worsen the existing pressures on various sectors. In the words of Jairam Ramesh, when he was the minister for Environment and Forests, “no country in the world is as vulnerable, on so many dimensions, to climate change as India. Whether it is our long coastline of 7000 kms, our Himalayas with their vast glaciers, our almost 70 million hectares of forests (which incidentally house almost all of our key mineral reserves) – we are exposed to climate change on multiple fronts. Rigorous science based assessments are therefore critical in designing our adaptation strategies” (INCCA 2010).

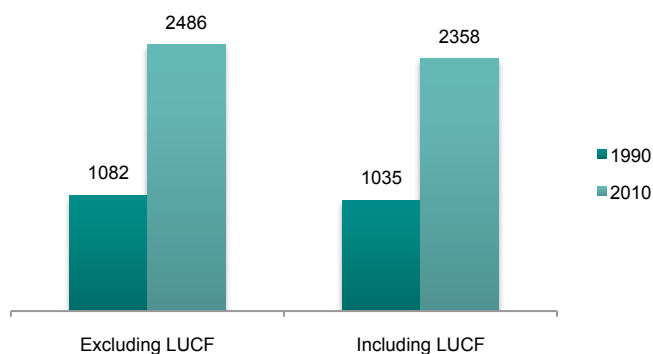
In November 2010, the Indian Network for Climate Change Assessment (INCCA) – a network-based programme that brings together over 120 institutions and over 220 scientists from across the country to undertake scientific assessments of



different aspects of climate change – prepared a report titled “Climate Change and India: A 4X4 Assessment A sectoral and regional analysis for 2030s” – the first comprehensive, long term climate change assessment based on rigorous scientific analysis undertaken in India. This report considers the impact of climate change by 2030 on four key sectors of the Indian economy: agriculture, water, natural ecosystems and biodiversity, and health. It further identified four climate sensitive regions in India, namely the Himalayan region, the Western Ghats, the Coastal Area and the North-East Region. The key results of the 4x4 assessment for the 2030s identified vulnerability on several dimensions: from all round increased temperatures to extreme variation in precipitation patterns; impacts on agriculture and livestock, as well as on ecosystems and biodiversity; vulnerability to sudden and/or extreme weather events such as cyclones, storm surges, droughts, floods etc.; severe stress on water resources; variable impacts on human health due to climate variability; and sea level rise along India’s coastline (INCCA 2010, pp.10-29).

In addition, India has a growing greenhouse gas (GHG) emissions profile and is currently the third largest emitter of GHGs globally, after China and the United States. However, India’s per capita GHG emissions remains extremely low at 1.7 metric tonnes of CO2 per capita, as compared to China’s at 6.2 and United States’ at 17.6 (World Bank 2014). Moreover, it has been estimated that even by 2031 India’s per capita GHG emissions (likely to remain within 4 metric tonnes of CO2 per capita) will continue to be lower than the global per capita GHG emissions in 2005 (4.22 metric tonnes of CO2 per capita) (PIB 2009b).

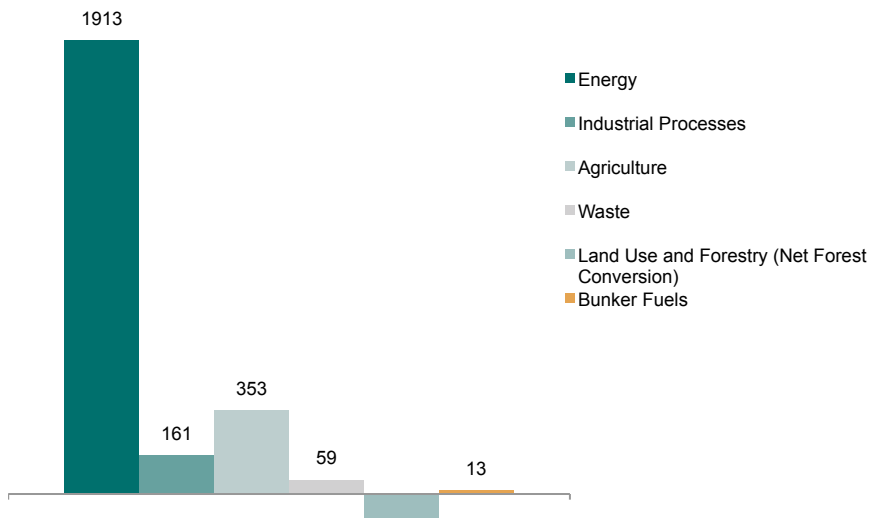
**Figure 1: India’s Total Greenhouse Gas Emissions (MtCO2e)**



Source: WRI 2014.

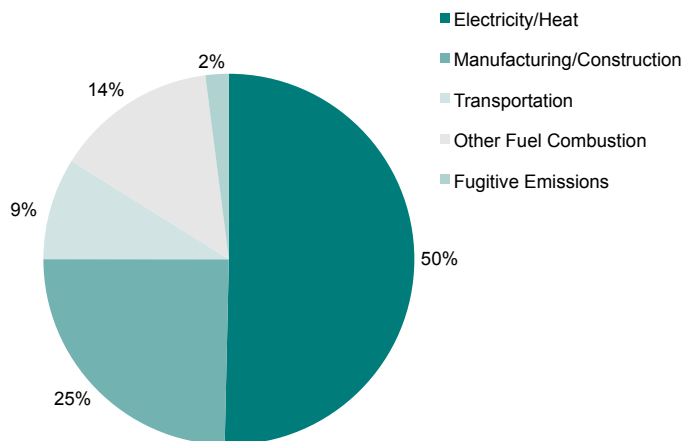
The energy sector in India is the biggest contributor to GHG emissions, responsible for approximately 75% of the total GHG emissions in the country (Figure 2), while the power sector (electricity + heat) remains responsible for about half the emissions within the energy sector (Figure 3).

**Figure 2: India's Total Emissions by Sector (MtCO<sub>2</sub>e)**



Source: WRI 2014.

**Figure 3: India's Total Emissions in the Energy Sub-Sector (MtCO<sub>2</sub>e)**



Source: WRI 2014

## Policies governing India's response to climate change

With a new government coming to power in May 2014, several institutional structures around climate change policy are presently in the process of being revised or renewed. For instance, the nodal environment ministry in the country, Ministry of Environment and Forests (MoEF), was renamed the Ministry of Environment, Forests and Climate Change (MoEF&CC) (ET Bureau 2014).<sup>1</sup> While there may be further announcements or developments in the domestic policy space,

<sup>1</sup> For the purposes of this paper, however, we will refer to the environment ministry as Ministry of Environment and Forests or MoEF, since several policy documents and research papers continue to employ the older nomenclature.

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an understanding of the initial drivers for national responses to climate change policy would be helpful to contextualize the emergence and role of climate finance in the country.

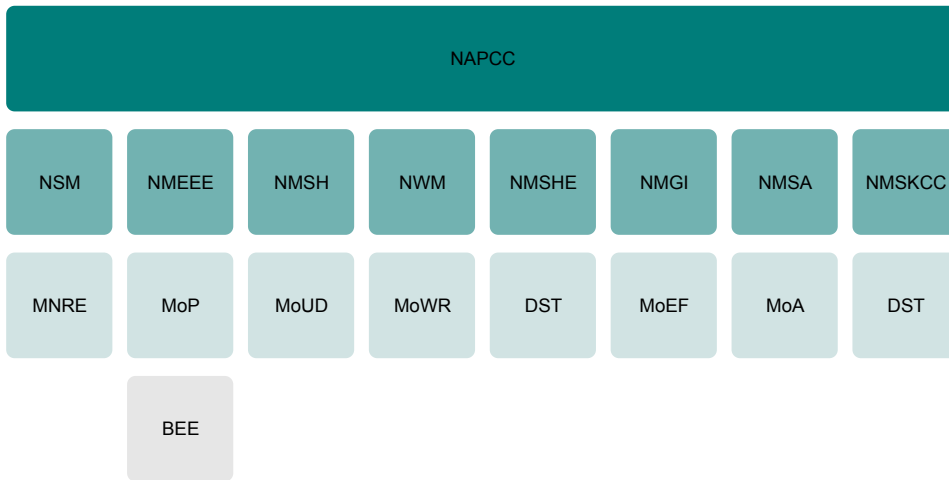
The national response around climate change emerged through the Prime Minister's Office (PMO) in 2007, with the creation of the Prime Minister's Council on Climate Change to coordinate national action for assessment, adaptation and mitigation of climate change. The PM's Council on Climate Change – a multi-stakeholder body comprising of 26 members, including the ministers from the MoEF, Ministry of External Affairs (MEA), Ministry of Finance (MoF), Ministry of Agriculture (MoA), Ministry of Water Resources (MoWR), Department of Science and Technology (DST) and Ministry of New and Renewable Energy (MNRE); Deputy Chairman, Planning Commission; National Security Advisor; Chairman, Economic Advisory Council; and other climate change experts from varied backgrounds such as industry, academia, and civil society organizations (CSO) – was required to evolve a coordinated response to issues relating to climate change at the national level; provide oversight for formulation of action plans in the area of assessment, adaptation and mitigation of climate change; and periodically monitor key policy decisions. The Council was serviced by the PMO, and could obtain assistance as required from any Ministry/Department/Agency of the government, especially the MoEF (PIB 2007).

Later, the PM appointed Ambassador Shyam Saran as the PM's Special Envoy on Climate Change, in support of the PM's Council on Climate Change and to elaborate a National Action Plan on Climate Change (NAPCC). The Special Envoy's role was to lead the multilateral negotiations in which India was involved and to coordinate the national climate plan to make sure that the different efforts under it were harmonized (Worldwatch Institute 2014). However, Ambassador Saran resigned from the position in February 2010, following which the position has remained unfilled (Deshpande and Sethi 2010, Vardarajan 2010).

Following these early initiatives, in June 2008 the PM released the NAPCC, which serves as the main policy document addressing climate change in India. The NAPCC comprises eight core "Missions" and outlines existing and future policies and programs addressing climate mitigation and adaptation, representing multi-pronged, long-term, and integrated strategies for achieving key goals in the context of climate change (MoEF 2008).

Operating on a strategic level are key line ministries that have been designated as the nodal ministry for the delivery of each of the eight "Missions" under the NAPCC (Figure 4). Under the direction provided by the NAPCC, each of the nodal ministries were required to submit comprehensive mission documents detailing objectives, implementation strategies, timelines, and monitoring and evaluation criteria, to the PM's Council on Climate Change by December 2008. The MoEF, in turn, acted as the main coordinating entity under the NAPCC, as the comprehensive mission documents required that the nodal ministry liaise and coordinate its activities with the MoEF. Following the approval of the comprehensive mission documents by the PM's Council on Climate Change, the "Missions" would await the final approval of the implementation framework by the Union Cabinet. It was only upon the final approval by the Union Cabinet that the required funding would be channelled into the "Mission" through the budgetary outlays presented by the nodal ministries. At the time of writing this paper, all eight "Missions" have received the approval of the PM's Council on Climate Change, however some still await the approval of the final implementation framework (Annex 1).

**Figure 4: The eight “Missions” under the NAPCC and its nodal ministries**



Although the PM’s Council on Climate Change was to provide overall guidance to climate change related actions taken by nodal ministries and other agencies, as well as review the progress and implementation of the each of the eight “Missions”; it appears to have met only to give the final approval to each of the “Missions” and has not convened a meeting in more than three years (Pai 2014). Therefore, in the last few years, its role as the main coordinating entity overseeing all climate policy in India remains unclear. In a significant move, however, the new government has reconstituted the PM’s Council on Climate Change in a bid to revive its coordinating role around issues of climate change (PIB 2014). Coupled with the new nomenclature of the environment ministry, climate change appears to be taking a central role, both in with the PMO as well as the MoEF.

In 2009, after the launch of the NAPCC, the PM urged state governments to create state-level action plans on climate change consistent with the strategies under the NAPCC (PIB 2009a). As a result, climate policy is developing is the sub-national level, with several states embarking on ambitious plan formulation processes for mitigation/adaptation strategies through State Action Plans on Climate Change (SAPCCs). The common themes within SAPCCs are the principles of territorial approach to climate change, sub-national planning, building capacities for vulnerability assessment, and identifying investment opportunities based on state priorities, while the major sectors for which adaptation strategies envisaged are agriculture, water, forests, coastal zone, and health (MoF 2013). Presently, 28 states and union territories have completed drafts of their plans, 19 have been ‘endorsed’ by the National Steering Committee and 3 have been ‘considered’ by the Expert Committee on Climate Change (MoEF 2014b). Most of these plans are being developed on the basis of guidelines provided by the MoEF, with support from international agencies such as the United Nations Development Programme (UNDP) and the German aid agency, GIZ (Dubash and Jogesh 2014).

In addition to the national and state climate plans, the 12<sup>th</sup> Five Year Plan (FYP) prepared by the Planning Commission of India is another policy document that outlines India’s efforts in addressing climate change. In the aftermath of the Copenhagen Accord, the Government of India (GoI) went on to formally pledge that it would reduce the emissions intensity of its gross domestic product by 20%–25% from 2005 levels by 2020. This domestic goal of reducing emissions intensity

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and the objectives of the NAPCC are to be achieved through a sustainable development strategy proposed under the 12<sup>th</sup> FYP. It was launched with the specific theme of ‘faster, more inclusive and sustainable growth’, and outlines low carbon growth strategies to add momentum to ongoing environment or climate change related policies and programmes of the government (MoF 2013, pp.254-255). The 12<sup>th</sup> FYP further goes on to identify several thrust areas for this purpose, including more specifically the Climate Change Action Programme (CCAP) – an umbrella scheme that aims at advancing scientific research, information and assessment of the phenomenon of climate change, building an institutional and analytical capacity for research and studies in the area of climate change, and supporting domestic actions to address climate change through specific programmes and actions at the national and state level (Planning Commission 2013).

The Bureau of Energy Efficiency (BEE), a statutory body established by the Energy Conservation Act (ECA) of 2001, has emerged as another key in climate change policy. With the national government realizing the importance of improving industrial energy efficiency for maintaining competitiveness, reducing aggregate energy demand and cutting GHG emissions, the BEE was entrusted with the task of preparing the implementation plan of the National Mission on Enhanced Energy Efficiency (NMEEE), one of the eight core “Missions” under the NAPCC. The NMEEE is expected to account for annual fuel savings in excess of 23 million tons by 2014, achieve a cumulative avoided electricity capacity addition of 19 GW and save 98 million tons CO<sub>2</sub> emissions per annum, as well as attract private sector investment in the energy efficiency market estimated at Rs.74,000 crores (PIB 2010b). Therefore, the BEE, under the aegis of the Ministry of Power (MoP), develops programs to increase energy conservation and efficient use of energy in India through various regulatory and promotional instruments.

## 3 Analysing institutional arrangements for climate finance at the country level

Climate finance entered the lexicon of the official establishment with the release of the Economic Survey 2011-12, which contained for the first time a chapter on ‘Sustainable Development and Climate Change’ and a dedicated section on ‘Climate Change Finance’ (PIB 2012, MoF 2012). The Economic Survey 2011-12 provided an overview of various domestic and international sources of finance, as well as private finance sources. The following year, the Economic Survey 2012-13

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estimated Rs. 230,000 crores (approximately USD 30 billion)<sup>2</sup> as the amount of finance needed to fulfill the mission objectives under the NAPCC (MoF 2013, p.264). This amount appears to align with the early estimated financial outlays of Rs. 253,508.35 crores (approximately USD 42.2 billion) provided by each of the nodal ministries in charge of the “Missions” under the NAPCC. According to the most recent Economic Survey 2013-14, the financial outlay allocated towards the “Missions” for the 12<sup>th</sup> FYP period i.e. 2012-2017 is Rs. 256, 836 crores (approximately USD 42.2 billion), of which nearly Rs. 26,730 crores (approximately USD 4.5 billion) has been approved for four “Missions”: NWM, NMSHE, NMGI and NMSA (Annex 1).

## Climate Change Finance Unit

The main institutional response of the Government of India aimed specifically at climate finance has been the setting up the Climate Change Finance Unit (CCFU) in September 2011 (The Hindu Business Line 2011). The CCFU was created within the Department of Economic Affairs (DEA) in the Ministry of Finance (MoF), to serve as the nodal point on all climate change financing matters in the Finance Ministry. The key functions of the CCFU were to represent the Finance Ministry in all climate change financing related issues in all international and domestic fora; to prepare briefs and position papers for Government of India's position on climate change financing; to provide guidance and inputs to MoEF to feed into climate change negotiations as well as to develop capacity to analyze emerging issues; to assess the submissions on climate change financing from various national governments who are Parties to the UNFCCC; to analyze the financial pledges of developed countries; and to provide inputs to the designing of Green Climate Fund (MoF 2014b).

The CCFU, presently, is a four-person team: an Economic Advisor, an Additional Economic Adviser, and two consultants. While the initial idea behind the creation of CCFU was to create strong analytical thinking on the subject of climate change finance, so far its role has largely focused on representing India during international negotiations around climate finance.<sup>3</sup> Another identifiable contribution of the CCFU has been its input on issues of climate finance in the previous three issues of the Economic Survey of India.

In spite of the creation of the CCFU there is no formal coordination mechanism around climate finance, as a result multiple processes for financing thrive within the country. Based on the strategies developed around climate policy, both at the national and sub-national level, multiple actors carry out the financial function for different policies. The climate finance architecture in India, so far, comprises of domestic and international, both public and private, resources and mechanisms for funding.

## Domestic Resources and Mechanisms for Climate Finance

Based on an extensive survey of the available literature in India, the domestic resources and mechanisms available for financing the NAPCC “Missions”, as well as other low carbon strategies and environmental policies of the government can be broadly divided into public climate finance and private climate finance (Figure 5).

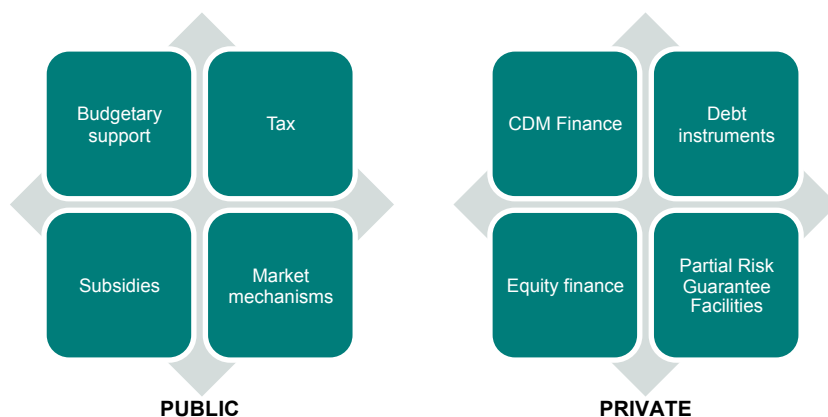
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<sup>2</sup> 1 USD = 60 INR

<sup>3</sup> The earlier Head of the Climate Change Finance Unit – Dr. Dipak Dasgupta (then Principal Economic Advisor) – is India's representative during the Green Climate Fund Board Meetings. Since April 2014, a new Principal Economic Advisor has been appointed however Dr. Dasgupta continues as an Alternate Board Member at the GCF.

Public climate finance comprises budgetary support, taxes, subsidies and other market mechanisms. While, private climate finance usually comprises clean development mechanism (CDM) finance, debt instruments, equity finance and partial risk guarantee facilities. Each of these resources and mechanisms will be discussed in detail below.

**Figure 5: Public Climate Finance and Private Climate Finance**



## Public Climate Finance

### Budgetary support

It is the main source of public climate finance in India, with most of the money coming as sectoral funding for ministries of water, agriculture, power, renewable energy etc., as resources for adaptation and mitigation are built into ongoing policies and programmes (Planning Commission 2013). It is, however, still uncommon to see a portion of the budget dedicated specifically to climate-related action. Additional budgetary allocations have been also made from the 13th Finance Commission (FC) for the period 2010-15. In view the urgent need for action for combating climate change, the 13<sup>th</sup> FC has recommended three types of grants to state governments of Rs.5000 crore each, viz. for forest cover, renewable and water sector (Finance Commission of India 2009).

Financing for SAPCCs was to be made available in the course of implementation of state plans in various sectors with the resources being mobilized through budgetary support (Planning Commission 2011). The MoEF had suggested that states come up with cost estimates for their proposed actions, following which several states came up with estimates that according to some did not appear robust or credible. It was said that there were marked inconsistencies in the estimates quoted by different states, as well as a lack of objective criteria in determining the prioritized list of actions (Mandal et al. 2013, p.16). Moreover, state climate plans were initially developed under the promise of substantial funds under the 12<sup>th</sup> FYP. But, in the course of the plan development the amount of funding available for states was very modest. This in turn has led to a greater emphasis on attracting donor funds to support the implementations of state climate plans (Dubash and Jogesh 2014, pp.19-20). Some states also sought additional funds from existing central schemes to implement climate related action at the state level, for instance, Sikkim deployed funds from the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) to implement actions in the water sector (Dubash and Jogesh 2014, pp.19-20).

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## **Tax**

The Finance Bill 2010-11 created a corpus called the National Clean Energy Fund (NCEF) out of a cess at the rate of Rs.50 per tonne of coal to invest in entrepreneurial ventures and research in the field of clean energy technologies (PIB 2010a, 2011). The clean energy cess was hiked to Rs.100 per tonne of coal during the Budget 2014-15 (PTI 2014). The main purpose of the NCEF is to fund research and innovative projects in clean energy technology. An Inter-Ministerial Group has been constituted to approve the projects/schemes eligible for financing under the Fund, which comprises of a Chairperson [the Finance Secretary] two Members [Secretary (Expenditure) and Secretary (Revenue)] and representatives from Ministries of Power, Coal, Chemicals & Fertilizers, Petroleum & Natural Gas, New & Renewable Energy and Environment & Forests (PIB 2011).

The NCEF may be an innovative attempt by the government to raise additional resources to support a low-carbon pathway, but there are several shortcomings with the fund as the money hardly goes into “new” or “innovative” projects relating to clean energy technologies and is mostly being used to overcome budgetary shortfalls in the MoEF or the Ministry of New and Renewable Energy (MNRE). Despite the NCEF having collected a substantial sum of money, the process of disbursing the funds continues to be mired in confusion (Panda and Jena 2012). In the 2013-14 interim budget speech by the then Finance Minister, P. Chidambaram (2014), the government decided to launch a five-year long scheme that would provide low interest bearing funds from the NCEF to the Indian Renewable Energy Development Agency (IREDA) to lend to viable renewable energy projects. This can be seen as one of the first steps towards operationalizing the NCEF specifically for climate-related projects.

## **Subsidies**

The government supports the renewable energy sector through generation-based incentives (GBIs), direct subsidies, tax exemptions, cheap credits or reduced import duties. Under the first phase of the National Solar Mission, the India unveiled a Rs.86,700 crores plan to produce 20 GW of solar power by 2020. The National Solar Mission employs different policies to support grid-connected solar power projects and to encourage the domestic manufacture of solar cells and modules, such as include feed-in tariffs, solar purchase obligations and power purchase agreements for grid-connected projects. Soft loans and capital subsidies are also provided for off-grid projects.

By the 2010-2011 budget, the government increased the funds available to the MNRE by 61% from Rs.620 crore to Rs.990 crore. The Government of India has also introduced Renewable Purchase Obligations (RPOs) with tradable Renewable Energy Certificates (RECs) that are helping drive the expansion of the solar and wind sectors. In 2013-14, the government has decided to reintroduce ‘generation-based incentive’ for wind energy projects and provide Rs.800 crores to the MNRE (Chidambaram 2014).

## **Market mechanisms**

The Bureau of Energy Efficiency (BEE) under the Ministry of Power is responsible for overseeing various cap and trade schemes and other market mechanisms for financing under the National Mission for Enhanced Energy Efficiency (NMEEE), namely Perform, Achieve and Trade (PAT), Energy Efficiency Financing Platform (EEFP), Market Transformation For Energy Efficiency (MTEE), Framework for Energy Efficiency Economic Development (FEEED).

PAT is a market-based mechanism that enhances the cost effectiveness of improvements in energy efficiency in energy intensive large industries and



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facilities, through certification on energy savings that could be traded. In the 12<sup>th</sup> Five Year Plan, the PAT scheme is likely to achieve about 15 million tonnes oil equivalent of annual savings in coal, oil, gas, and electricity (including 6.686 million ton of oil-equivalent energy savings of first phase). EEFP helps stimulate necessary funding for Energy Service Company (ESCO) based delivery mechanisms for energy efficiency. The costs are to be recovered from the energy savings, which also reduces the subsidy bill of the state government. MTEE aims to accelerate the shift to energy efficient appliances in designated sectors through innovative measures to make the products more affordable with focus on leveraging international financial instruments, including Clean Development Mechanism (CDM) to make energy efficient appliances affordable and increase their levels of penetration. Meanwhile, FEEED, has developed two innovative fiscal instruments to leverage private capital, namely the Partial Risk Guarantee Fund (PRGF) and Venture Capital Fund for Energy Efficiency (VCFEE). PRGF is a risk-sharing mechanism that provides commercial banks with partial coverage of risk exposure against loans made for energy efficiency projects, while the VCFEE, set up with initial seed capital from the government under the NMEEE, looks to secure venture capital investment as equity in energy efficiency projects (Mandal and Sivapradha 2012).

Finally, there are various standards like National Building Code (NBC), Energy Conservation Building Codes (ECBC) that has been recently made mandatory in eight Indian states, and BEE rating program for appliances. These market-driven voluntary programs also have significant potential to save energy and reduce emissions.

## Private Climate Finance

### CDM Finance

The CDM allows a country with an emission-reduction commitment under the Kyoto Protocol to implement emission-reduction projects in developing countries, where such projects earn saleable certified emission reduction (CER) credits that can be traded in carbon markets. India is the second largest recipient of CDM projects after China, with a total of 563 projects till date, representing almost 33% of CDM projects in Asia and 22% of CDM projects worldwide (MoF 2013). The Central Government constituted the National Clean Development Mechanism Authority (NCDMA) for the purpose of evaluating and approving CDM projects in the country. The NCDMA comprises of 10 persons: Secretary, MoEF; Secretary, MEA; Secretary, MoF; Secretary, Department of Industrial Policy and Promotion; Secretary, MNRE; Secretary, MoP; Secretary, Planning Commission; Secretary, DST; Joint Secretary (Climate Change), MoEF; and Director (Climate Change), MoEF.

The NCDMA can also recommend additional requirements to ensure that the project proposals meet the national sustainable development priorities and comply with the legal framework so as to ensure that the projects are compatible with the local priorities and stakeholders have been duly consulted. It ensures that in the event of project proposals competing for same source of investment, projects with higher sustainable development benefits and which are likely to succeed are accorded higher priority (MoEF 2014a).

### Debt instruments

The most common debt instruments are local currency loans, which generally are in the range of about 70 per cent of the total project costs through conventional term loans. Domestic banks (both public and private sector banks) and Non-Banking

Finance Companies are the major sources of debt in India (Figure 6) (USAID 2013, pp.25-42).

IREDA and Power Finance Corporation (PFC), two government-backed NBFCs, lead debt financing of RE projects in India. Interestingly, IREDA, a public limited government company established in 1987, is under the administrative control of the MNRE for providing term loans for renewable energy and energy efficiency projects. As of March, 2012, IREDA and PFC have financed over 4 GW, which represents roughly 15 percent of the total 29.8 GW RE capacity installed in the country (USAID 2013, p.26).

### Figure 6: Prominent Financial Institutions providing Rupee Term Loans to RE Projects

<b>Government Backed NBFCs</b>	Indian Renewable Energy Development Agency Power Finance Corporation Power Trading Corporation Rural Electrification Corporation Indian Infrastructure Finance Company Ltd.
<b>Private NBFCs</b>	L&T Infrastructure Finance Tata Capital
<b>Public Sector Banks</b>	State Bank of India Canara Bank Central Bank of India Punjab National Bank Andhra Bank
<b>Private Sector Banks</b>	ICICI Bank Axis Bank HDFC Bank IDFC Bank Standard Chartered Bank

Source: USAID 2013.

The other kind of debt instrument is a foreign currency loans, which is provided to RE project by development banks, export-import (EXIM) banks and international banks. These loans carry low interest rates ranging between three and six percent, with tenures between 10 and 18 years. Major players providing foreign currency loans to RE projects in India are development finance institutions, such as the International Finance Corporation (IFC), Deutsche Investitions-und Entwicklungsgesellschaft (DEG), Overseas Private Investment Corporation (OPIC) and Asian Development Bank (ADB); and EXIM Banks, such as the EXIM Bank of the U.S., and China, and the Japan Bank for International Cooperation (JBIC) (USAID 2013, pp.29-30).

#### Private equity

A number of private equity investors are also active in the Indian RE market, where equity usually comprises 30 to 40 percent of the total project cost, with the rest of the project financed through debt. For example, Green Infra Private Limited (99 percent owned by IDFC Private Equity), Renew Power Ventures Private Ltd. (99 percent owned by Goldman Sachs Private Equity), and Continuum Wind Energy (majority owned by Morgan Stanley Infrastructure Partners). One of the notable trends is that most equity investments in Indian RE companies have been made at the parent company level, and not at the project level. In addition, development finance institutions, such as IFC, have also recently started providing equity funds

to large and small-scale RE projects. For instance, IFC has also provided funds to private equity funds like Nereus Capital (a RE-focused private equity fund) and SBI Macquarie Infrastructure Trust (USAID 2013, pp.34-35).

### Partial risk guarantee facilities

Partial risk guarantee facilities assume the lenders’ default risk on a part amount of the debt provided to the project, thereby improving a project’s credit rating and reducing the perceived investment risk. The Indian RE, however, have seen a limited presence of partial risk guarantee facilities. One of the first partial risk guarantee facilities in India was ADB’s India Solar Generation Guarantee Facility. ADB has a 150 Million USD partial risk guarantee program for solar projects with government-backed power purchase agreements, and as of June 2012, two solar projects with capacities of 25 MW and 10 MW have been funded using ADB’s guarantee facility. The World Bank Group’s Partial Risk Sharing Program (PRSP) also provides partial risk and credit guarantee products to support projects taken up by governments and private investors in developing countries. The objective of these products is to promote capital inflow into infrastructure development. PRSP has also provided support internationally for clean energy projects through these guarantee instruments (USAID 2013, pp.37-40).

### International Funds and Donors

Apart from the different domestic resources and mechanisms of climate finance in India, several climate-related projects or activities in India receive money from international funds, or multilateral and bilateral agencies. Moreover, many of these multilateral and bilateral agencies extend from a financial role into key implementing or executing roles. International organizations such as the World Bank (WB), UNDP or ADB, as well as bilateral aid agencies like GIZ from Germany or Department for International Development (DFID) from the United Kingdom to name a few, operate concurrently alongside central ministries, state governments, non-governmental organizations (NGOs) and civil society organizations (CSOs) to implement climate related projects and programmes in the country.

India has had a varied experience accessing international climate funds, with different institutional arrangements established to access each fund and different amounts of funding obtained through each of them. In particular, we look at the ways in which India has engaged with the Global Environment Facility (GEF), Special Climate Change Fund (SCCF), Adaptation Fund (AF) and the Clean Technology Fund (CTF).

**Table 1: A snapshot of India’s experience accessing international funds**

International Fund	Accessed (Yes / No: If yes, how much money)	What systems / processes does the fund use to engage with national government?	Country lead	Mechanisms for including other stakeholders (if any)	Key Findings
Global Environment Facility	Yes <i>GEF-4 (2006-2012)</i>	Focal Points	MoF (Political Focal Point) MoEF (Coordinating)	DEA, MoF (Trustee) WB, UNDP, etc.	Difficult to change the historical split

	2010) Approved: USD 113.67 million Disbursed: USD 113.67 million		(Operational Focal Point)	WB, UNDP and UNIDO (Implementing Agencies)	between MoF and MoEF
	GEF-5 (2010- 2014) Approved: USD 75.41 million USD Disbursed: USD 4.37 million			GEF Empowered Committee	
Special Climate Change Fund	Yes.  Approved: USD 9.82 million	Builds on the experience of the GEF Implementing Agencies.	WB and ADB (Implementing Agencies)	Unclear how implementing agencies engage multiple stakeholders during the project proposal and implementing stages	Both grants are for adaptation- related projects
Adaptation Fund	Yes.  5 proposals submitted to the AF Board	NABARD (NIE)	MoEF (Designated Authority and country lead)	NABARD engages in stakeholder consultation with CSOs, private sector or local authorities.	NABARD ownership over priority area setting, project proposals and funding structures.
Clean Technology Fund	Yes  India Investment Plan: USD 775 million First tranche approved: USD 263 million	MoF and implementing channels of the MDBs i.e. WB and ADB	DEA, MoF: Drafted India Investment Plan MoEF: Government Focal Point	The Investment Plan drawn up by DEA after consultations with a wide range of stakeholders, supported by the WB and ADB.	Heavy presence of WB and ADB in the drafting process, and in the final projects selected under the India Investment Plan
The GAVI Alliance	Yes  Approved: USD 262.7 million Commitments: USD 301.4 million Disbursed: USD 131.5 million	Co-financing	Ministry of Health and Family Welfare	International donors. Bill and Melinda Gates Foundation.	India has contributed USD 4 million to the GAVI Alliance reinforcing its commitments towards immunization.
GFATM	Yes  Disbursed: USD 1.3 billion	Country Coordination Mechanism (CCM)	CCM India	CCM India is a national multi- stakeholder public private partnership.	DEA, MoF has a direct link with the Global Fund as the main seat of multilateral funding in India.

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### **Global Environment Facility**

The GEF experience in India is based on the concept of focal points. An officer in the MoF serves as the Political Focal Point (PFP), while another officer in the MoEF serves as the Operational Focal Point (OFP) for the GEF (GEF 2014). There is also a GEF Empowered Committee, chaired by the Secretary, MoEF, which functions as an empowered body to determine national priorities, streamline eligibility checks, approvals and endorsements of GEF proposals, monitor project implementation, and formulate India's position for the meetings of GEF Assembly and Council. The members of the GEF Empowered Committee comprise representatives from the various thematic divisions with the MoEF, DEA, MEA, Planning Commission and individual experts. It could also specially invite concerned officials from the central/state government, GEF Agencies, or project proponents on a need basis. In addition, there is a GEF Cell that assists the Operational Focal Point in coordinating GEF activities in India (Singh 2010). The GEF Empowered Committee identifies needs and national priorities for funding and conducts the national consultation process for the approval of GEF projects, wherein the MoEF is responsible for the identification of the GEF Agencies and the institutions tasked with leading the project are responsible for project design.

The process of seeking funds from the GEF usually begins at the level of the implementing agency, which sends the request for funding a project either to the state government or the MoEF. The request is then review by the OFP, who forwards it to the PFP with its endorsement. In turn, the funds from the GEF flow to the DEA within the MoF, which acts as the trustee of the money. The DEA then releases the money to the state government or MoEF, which ultimately disburses it to the implementing agency (Ricardo-AEA 2014). Currently, the main implementing agencies for projects under the GEF are the WB, UNDP and United Nations Industrial Development Organization (UNIDO) (Annex 2).

There appears to be have been little or no formal external stakeholder engagement by the MoEF in evaluating and approving project proposals. Most proposals are received by the MoEF from the concerned implementing agency, vetted by the GEF Empowered Committee after seeking comments from concerned line ministries or state governments, and forwarded to the MoF after endorsement. However, for the GEF-6 cycle efforts are being made by the MoEF to create an arrangement within the Empowered Committee to consider external viewpoints before forwarding the project proposals to the MoF.

One of the main observations from the GEF experience is that it would be difficult to change the historical split between the MoF (which is the seat for all international and/or multilateral funding) and the MoEF (which is in charge of strategizing and implementing environment and/or climate related projects). The existence of two focal points in two separate ministries i.e. MoF (political) and MoEF (operational) necessitates better coordination between the two ministries in securing international funds. Especially since an official from the MoF attends the GEF Council meetings where the amount of money being channeled into India gets decided, and the environment ministry that requires the funding has no formal presence at these meetings.

### **Special Climate Change Fund**

The SCCF builds on the experience of the GEF implementing agencies, and doesn't have a dedicated mechanism to engage with national governments. So far, a total USD 9.82 million has been approved for two adaptation related projects being

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managed by the WB and the ADB (Annex 2). While, the money has been approved, there is no indication about the date of disbursement of funds. It is also unclear whether and how the implementing agencies engage multiple stakeholders during project proposal building or implementation.

### **Adaptation Fund**

The AF experience in India is an interesting one since it was the first country in Asia to successfully designate a National Implementing Entity (NIE) accredited by the AF Board. An official in the MoEF is the Designated Authority (DA) (AF 2014b), who also serves as the country lead, while the National Bank for Agriculture and Rural Development (NABARD) is the NIE (AF 2014a). NABARD's accreditation as an NIE came on the back of its long-standing reputation as a leading development finance institution, extensive organizational presence across the country with more than 400 district level offices, and growing experience in the natural resource management sector. NABARD has successfully consolidated its exiting work in the natural resource management sector, as well as the requisite financial structure to manage and channel the money into adaptation specific activities, in order to meet the fiduciary and organizational requirements to be accredited as an NIE.

As of March 2014, the DA has endorsed five project proposals from NABARD to the AF Board. While two proposals are for small-sized projects and require funding in the range of USD 500,000-600,000, three are still in the concept paper stage with proposed funding requirements to the tune of USD 1-2 million. An early review of the project proposals and interviews with key NABARD officials, suggests that NABARD is the entity that liaises with CSOs, NGOs, international development partners etc. in order to decide which projects will be chosen for forwarding to the DA who then endorses them to the AF Board. While, it remains to be seen which projects get the final nod from the AF Board, a notable finding from the funding proposals is that 4 out of 5 proposals have come through pilot projects carried out with the financial and technical support of a bilateral donor i.e. GIZ (Annex 3). A clear implication would be that mere accreditation as NIE does not necessarily equip a national institution with the capacity and capability to develop proposals around climate finance indigenously. It could, then, call into question the peculiar nature of national "ownership", wherein the projects although routed through a national DFI are developed primarily with the aid of international expertise of multilateral or bilateral agencies.

### **Clean Technology Fund**

The CTF aims to provide middle-income countries with highly concessional resources to explore options to scale up the demonstration, deployment, and transfer of low carbon technologies in renewable energy, energy efficiency, and sustainable transport. With the Indian leadership already committed to sustainably addressing the country's energy challenges and reducing 2020 GHG emissions by 20–25% compared to 2005 levels, the Government of India (GoI) drafted the India Investment Plan to tap USD 775 million from the CTF for transformative investments to improve and expand India's hydropower operations, develop untapped solar resources, and improve energy efficiency (CIF 2011). Currently, about USD 288 million of India's total resource envelope is available. Given the fact that CTF financing is expected to leverage nearly USD 30 billion in additional financing, the India Investment Plan is a good example of how the government is trying to promote existing domestic efforts by securing an additional line of multilateral funding (CIF 2014).

The CTF works through the implementing channels of the multilateral development banks (MDBs), with ministries of finance as the starting point in most countries. In

India, the DEA, MoF was the main entity responsible for drafting the Investment Plan, while the Country Focal Point (CFP) was the MoEF. The Plan was drafted in coordination with the WB, ADB and key Indian stakeholders. It is also interesting to note that all four projects under the India Investment Plan are programmed and managed by either the WB or ADB, thus suggesting the significant influence of MDBs during the drafting process and in getting their projects selected as part of the final plan submitted to the CTF.

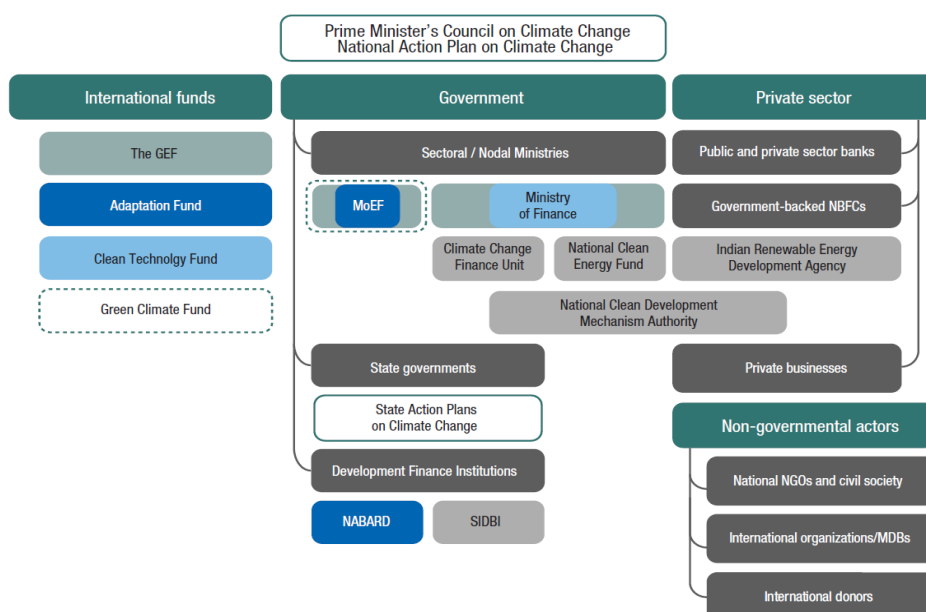
### Other multilateral funds

Two health-related multilateral funds accessed by India provide additional insights into country coordination: the GAVI Alliance and the Global Fund on AIDS, Tuberculosis and Malaria (GFATM).

The GAVI Alliance works on a co-financing policy that requires recipient countries to contribute towards the cost of the vaccines. Thus, any indication from a country of a specific contribution reinforces its commitments towards immunization. The country lead for all GAVI Alliance related activities is the Ministry of Health and Family Welfare. So far, India has received commitments to the tune of approximately USD 300 million, and disbursements of approximately USD 130 million. India has very recently committed a sum of USD 4 million to support the GAVI Alliance in its mission of immunizing children against life-threatening diseases (GAVI Alliance 2014).

The GFATM operates through a clearly specified Country Coordination Mechanism (CCM), and consequently the India-CCM is a national multi-stakeholder public private partnership. The India-CCM comprises of a focal point i.e. Ministry of Health and Family Welfare, and several members from the central government, state governments, CSOs, academia, private sector, and international agencies (GFATM 2014a). The unique public-private partnership at the national level is responsible for coordinating submission of fresh proposals, processing requests for continued funding, selecting Principal Recipients as well as oversight on all GFATM grants. Currently, there are 10 organizations/institutions that operate as Principal Recipients for funding (GFATM 2014c); while PricewaterhouseCoopers (PWC) India is the Local Fund Agent (GFATM 2014b).

**Figure 7: Climate Finance Landscape in India**



The climate finance landscape in India as a whole is highly fragmented, with no main coordinating entity and various roles for stakeholders at different levels of engagement (Figure 7). There are several parallel processes directing finance into climate related activities in India. The major domestic resources and mechanisms on climate change finance comprise budgetary outlays, taxes, subsidies, market mechanisms and private finance. Commercial financing instruments for renewable energy, both public and private and domestic and international, are increasingly becoming an important aspect of climate finance in India. Furthermore, India engages with different international funds in order to channel finance into climate-related activities domestically. As a result, there are multiple feedback loops between key actors that are relevant, few of these are expressly framed around climate change or associated finance as a policy issue per se (Table 2).

**Table 2: Actors involved in climate change finance in India**

Actors	Key institutions, or agencies	Role in climate finance	Coordination with other actors
Ministries/Departments within the government	PM Council on Climate Change Planning Commission NAPCC <i>Nodal Ministries:</i> MoEF, MNRE, MoP: BEE, MoWR, MoA, DST MoF: CCFU, NCEF	MoF, Finance Commission responsible for budgetary support BEE manages market mechanisms NCDMA under MoEF approves CDM projects	Inter-ministry Multilateral/bilateral agencies DFIs Private CDM actors
Local and sub-national entities	State Governments SAPCC	Operate on the basis of allocations from the central and state budgets Project-based international funding	MoEF MoF Multilateral/bilateral agencies Stakeholder consultation with civil society, local communities
Development Finance Institutions (DFI)	NABARD, SIDBI	NABARD is the NIE for the Adaptation Fund	MoEF NGOs, civil society
Public Sector Banks	SBI, Canara Bank, Central Bank of India, PNB, Andhra Bank <i>Government backed</i> <i>NBFCs:</i> IREDA, Power Finance Corp., Power Trading Corp., etc.	Financing renewables, energy efficiency Soft loans, co-financing.	With private players/project developers (mostly) IREDA operates under the administrative control of MNRE
Private Sector Banks	ICICI, Axis Bank, HDFC, IDFC, Standard Chartered <i>NBFCs:</i> L&T Infrastructure Finance, Tata Capital	Loans, co-financing, infrastructure financing, project finance for low-carbon investment	With private players/project developers (mostly)
Civil society/NGOs	TERI, CSE (major players), several other small, grassroot level NGOs	Consultations Capacity building No role in direct financing	Central and state governments Multilateral/bilateral agencies DFIs



Private actors	<i>Industry conglomerate:</i> CII, FICCI <i>Business groups:</i> Godrej, ITC, Tata Group etc	Investment signals for industry “Green” capability of companies, market leaders	Inter-industry or intra-industry
International climate funds	GEF, CTF, SCCF, AF	Grants, concessional loans, public-private partnerships.	Project-to-project, focal points in ministries (if any), stakeholder participation
Bilateral agencies	GIZ, DFID, USAID, CIDA, IDRC, SDC, SIDA, NORAD etc.	Grants, concessional loans, public-private partnerships	Central and state governments NGOs, civil society
Multilateral agencies	WB, UNDP, IFC, ABD, UNIDO	Grants, concessional loans, public-private partnerships	Central and state governments NGOs, civil society

## 4 Ways forward: implications of the institutional arrangements

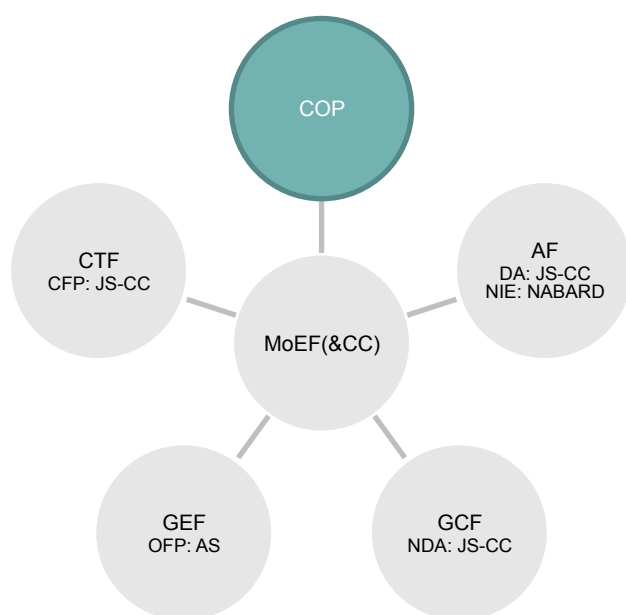
In India, the initial climate policy thrust by the government has proved to be one of the main driving forces behind climate finance as well. An early understanding of climate finance, which emerged through the Economic Surveys of India, hinges on it being a means of financing the various “Missions” under the NAPCC. The main focus is around estimating the required financial outlays to meet the total costs of action under each “Mission”. The relevant actors, then, are the nodal ministry that applies for budgetary allocation of funds for a particular “Mission”, the MoF that disburses central funds, and the MoEF that acts as the coordinating link between the nodal ministry and the MoF.

However, apart from merely financing climate action under the “Missions” of the NAPCC, there are multiple channels and actors that finance climate mitigation or adaptation related activities. This has led to the emergence of a highly decentralized climate finance landscape in India and has several implications for how climate finance is programmed and channelled in the country, with two very distinct and separate storylines – one, mobilizing funding labelled climate finance, and two, mainstreaming development finance that has climate benefits.

## Accessing and mobilizing international ‘climate finance’

The main finding from India’s past experiences with accessing international climate funds is that it is usually the MoEF that serves as a nodal point for coordinating the Fund’s activities within the country (Figure 8). In keeping with that line of thinking the MoEF, unsurprisingly, was nominated as the National Designated Authority (NDA) for the GCF as well (GCF 2014).

**Figure 8: MoEF vis-à-vis multilateral climate funds and international negotiations**



Another key observation emerging from India’s prior engagement with multilateral and bilateral funds is that funding comes on a project-to-project basis, to the implementing agencies, in the form of either grants or concessional loans (Annex 2). It is crucial to note that when the funding is in the form of a grant, the financial flows are relatively small and on a piecemeal basis. Moreover, it is the multilateral and bilateral agencies, such as the WB, ADB, UNDP, GIZ etc, which have a key implementation role as they operate concurrently alongside central ministries and state governments to develop, execute and manage climate related projects and programmes in the country. A majority of these financial flows are also focused on mitigation, financing activities such as energy efficiency and low carbon transport.

Although the MoEF has been designated as NDA for the GCF, there is little clarity on how it plans to coordinate the multiple actors and channels of climate finance, in order to align national priorities with the GCF’s broad mandate and secure a significant amount of funding. In fact, the appetite of the official establishment to engage with the GCF remains low, as there is much apprehension over whether the GCF will be able to reach its target of mobilizing USD 100 billion and little expectation of being able to secure a significant from that fund. Given that the amount of money flowing through international climate funds remains miniscule in comparison to estimated and allocated domestic budget outlays, one is unlikely to see a significant shift in the capacity of the existing arrangements to respond to the GCF, unless the scope and scale of finance improves dramatically.

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The one instance of a significantly large funding envelope was in the case of accessing the CTF, which had the MoF in charge of drafting the investment plan. This can, in large part, be attributed to the historical engagement of the MDBs with the MoF and the fact that the WB and ADB were brokering the investment plan in an attempt to support their existing efforts and maximize the financial gains from accessing the CTF. A clear message from this is that while the MoEF is the obvious choice for making decisions on climate-related activities requiring funding, the MoF is better suited at negotiating large sums of international funding. In the context of the GCF, it is imperative that the two ministries work closely, if finance accessed through the GCF is to make its way into domestic efforts on climate in a meaningful way.

It is here, perhaps, that there is an opportunity to re-imagine the role of CCFU in the domestic climate finance landscape. Quite significantly, the DEA is the seat for international funding coming into India and it houses the only dedicated entity within the government in charge of all matters relating to climate change financing i.e. CCFU. Thus, the specific role of the CCFU in accessing, managing and disbursing climate-related international funding might benefit from clarification. Especially on whether it could foster greater interaction and coordination between the diverse institutional arrangements and streamline the different channels of international and domestic climate finance, in turn allowing the NDA to maintain a steady roster of projects or programmes that would require new or supplemental GCF funding.

## **Increasing role of ‘climate’ in mainstream policy and investment decisions**

In addition to the institutional arrangements in place for accessing international climate finance, there is a significant, although heavily fragmented, domestic climate finance landscape in India. Most notably, the emergence of a role for major public and private sector banks and DFIs in supporting climate mitigation or adaptation related efforts. This lends itself to a ‘mainstreaming’ model wherein mainstream financial actors are engaging on climate-specific activities, as a result of strong policy signals or economic opportunities in the sector. This is especially true for renewable energy, more specifically the solar energy sector.

The NSM, one of the eight core “Missions” under the NAPCC, has triggered a reinforcement of more favourable policy conditions for the diffusion of solar energy across the country as quickly as possible. As a result, finance is flowing through a variety of sources, such as state-sponsored subsidies, private debt instruments, equity finance, and foreign lending (Box 1).

### **Box 1: Influence of climate policy on investment in the solar sector**

The example of the Rajasthan Sun Technique Concentrated Solar Power (CSP) Plant, the largest CSP project worldwide using the promising Linear Fresnel technology and one of the most advanced and cost-effective plants under India’s ambitious Jawahar Lal Nehru National Solar Mission (JNNSM), shows the involvement of a series of public and private stakeholders in financing the CSP plant.

#### **Public Sector stakeholders**

##### ***National and local government***

The Ministry of New and Renewable Energy (MNRE) and the NTPC Vyapar Vidyut Nigam (NVVM), are key stakeholders responsible for policies and power purchase. The implementation of this phase is in hands of NVVN, a subsidiary of the National Thermal Power Corporation (NTPC), the largest power producer in India. The NVVN also laid out guidelines for selection of developers for commissioning grid connected solar power projects in India.

##### ***Foreign public lenders***

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Development Finance Institutions and export credit agencies such as FMO (Dutch Development Bank), Asian Development Bank (ADB) and Export-Import Bank of the United States (US EXIM) provide long-dated debt to the project, extending available maturities from 10 to 18 years

**Private Sector stakeholders**

**Project Developer: Reliance Power Limited**

Reliance ADA, a large Indian conglomerate, developed the project through its subsidiary Reliance Power, holds the full equity in the Special Purpose Vehicle and is responsible for engineering, procurement and construction through Reliance Infrastructure, another Reliance ADA subsidiary.

**Technology Supplier: Areva Solar**

A US-based subsidiary of a large French energy company (Areva) provides the Linear Fresnel technology and ensures operation and maintenance through an India subsidiary.

**Private Lender: Axis Bank**

Axis Bank provided a small tranche of the debt facility but, interestingly, at 18 years maturity, indeed much longer than the one prevalent in the Indian banking market. This was likely due to the small size of the debt relative to the value of the project, and their existing business relationships with the project developer.

*Source: Stadelmann et al.2014.*

In addition, there are clear gains in the scale of finances raised through an international fund when a sector has clear policy signals. The use of CTF money to support the NSM and NMEEE, for instance, provides one example of how a country can tailor international funding to be integrated into national development objectives and to serve as a programmatic organizing framework for the activities of actors across institutions, stakeholder groups, and sectors. One of the key lessons from the solar energy and energy efficiency markets in India, therefore, is that when a country is able to demonstrate ownership of the agenda through well-defined policy, finance follows in the sector through a variety of public and private sources.

Beyond the CTF example, which was carried through by the MDBs brokering the final investment plan, there appears to be a lack of strategic thinking at the highest levels of government around how international climate finance could effectively be linked to domestic efforts. There is also a need to engage the diverse sub-national and domestic financial actors who often remain outside the realm of national agenda setting around accessing international funds. A start seems to have been made with the accreditation of NABARD as the NIE of the AF, which was a result of the recognition of NABARD's long standing experience in development financing and its extensive investments in the natural resource management sector. Enabling a national DFI to develop and submit proposals for funding to an international fund, in line with its existing line of work and experience, indicates some recognition of the potential of domestic financial actors in driving climate action at the national level. But given the scale of finance available through the AF and the role of bilateral donors in developing individual proposals presented by NABARD, these arrangements appear likely to remain in the project-to-project mode of financing and fall short of a large-scale programmatic approach to funding spearheaded by the NIE.

## National Climate Fund?

The Economic Survey 2012-13 raised, for the first time, an argument for the creation of a National Green Fund to finance public and private sector projects/activities aimed at protecting the environment in accordance with the 12<sup>th</sup> FYP's objectives. It was suggested that such a Fund could be a vehicle for receiving international funding through bilateral and multilateral sources and could be used to finance actions not only at national level but also at state level for agreed

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priorities and thrust areas (MoF 2013, pp.264-265). However, the creation of a new domestic fund to serve as a docking platform for international finance will not in and of itself solve issues around the need for better coordination. The DEA is already the main recipient of all international finance, including climate-specific finance from both multilateral and bilateral funds, and its position is unlikely to change given the importance and authority of the MoF in overseeing foreign financial flows into the country. Thus, a National Green Fund or a National Climate Fund is not a panacea for the issues of coordination around accessing and managing climate finance in an already fragmented domestic landscape.

Moreover, the experience from earlier efforts to establish climate-specific funds such as the NCEF does not encourage confidence that new funds can always resolve these challenges. Despite its attempt at raising additional resources to support low-carbon activities and instituting an inter-ministerial body to approve financing for new projects, the NCEF has not been able to disburse money effectively and has fallen short of achieving its main objective of financing new research and innovative projects in clean energy technology. In terms of policy options, therefore, the creation of a new fund would be less important than strengthening the emerging institutional architecture around climate finance.

The central objective of any national coordination mechanisms around climate finance should be to encourage the incubation of fundable ideas from relevant actors, particularly beyond the core governmental set up, about how to take meaningful domestic actions on climate change. There is immense and diverse capacity across India that could be more effectively harnessed to this end. A concerted strategy needs to emerge around how India could effectively link existing channels of national and international climate finance to realise ongoing and under-financed efforts, such as the SAPCCs, and to find new and creative solutions. Additional international funding could then be used to unlock the full potential of these national efforts.

## Ways forward

For India, there are lessons on how it needs engage with the international climate finance architecture, and the emerging GCF in particular, to realise the potential for greater and more effective action on climate change given the diverse public and private actors engaged in climate finance at national level. There is an opportunity to develop a long-term, coherent strategy around climate finance, by interfacing ongoing efforts on mitigation and adaptation with the emerging financial arrangements. It would also be worthwhile to think of ways in which India could develop new, transformative ideas with a high mitigation or adaptation potential, and use GCF financing to unlock a range of domestic financing and implementation capacity around such efforts.

To realise this potential, national deliberations on “readiness” for climate finance need to consider more than just which national institutions might be accredited to access the GCF, or how to create of national climate funds to receive GCF funding. There are already institutional arrangements in place to receive international funding, as well as a bevy of national financial institutions that could potentially be accredited by the GCF on the basis of their fiduciary standing. There is, however, an absence of a cohesive domestic strategy around climate finance. In pursuing such efforts, a crucial issue will be to empower the NDA with the capacity and mandate to coordinate the existing arrangements in order to effectively identify and link existing pipelines of projects to the financial channels that have emerged both domestically and through international flows; and to create a new pipeline of

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domestically owned projects that could seek international finance for their “transformative” potential. To achieve this, the MoEF and MoF will need to work closely together not just on climate policy issues, but also on operational questions around how to prioritise action. This in turn will require active engagement of the diverse public and private sector actors at national and sub-national level who are now investing in mitigation and resilience enhancing efforts.

### **Policy recommendations for engaging with the Green Climate Fund**

- Engagement with the GCF presents an opportunity for India to take much needed steps to better integrate international funding with emerging national development objectives in the context of a climate response. Such engagement could facilitate a platform for developing a programmatic organizing framework for the climate-specific activities of domestic actors across institutions, stakeholder groups, and sectors, and identifying priorities for action on climate change.
- The opportunity for the NDA to develop country work programs that set priorities for national engagement with the GCF is one concrete process that might allow such progress to be made.
- The MoEF as the NDA needs to play a more central role in identifying priority areas for climate finance based on national circumstances and needs. It must actively engage relevant stakeholders both within and outside the government, as well as national financial institutions during this process.
- Need for strategic thinking at the level of the MoEF on how international climate finance could effectively be linked to domestic efforts, in turn providing clear policy signals to national financial institutions for unlocking investment in the identified sector.
- The CCFU and MoEF should foster greater interaction to identify and streamline diverse channels of international and domestic climate finance, thus enabling the NDA to maintain a steady roster of projects or programmes that would require new or supplemental GCF funding.

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Mr. Alok Srivastava. Joint Secretary, MNRE, GoI (Personal Communication, 16<sup>th</sup> April 2014).

Mr. Dipak Dasgupta. Alternate Member, Green Climate Fund Board (Personal Communication, 20<sup>th</sup> March 2014).

Mr. Sanjay Kumar Dora. Deputy General Manager, NABARD and Programme Contact Person (Personal Communication, 2<sup>nd</sup> April 2014).

Mr. Shashi Shekhar. Additional Secretary, MoEF, GoI (Personal Communication, 12<sup>th</sup> December 2013).

Ms. Rajasree Ray. Additional Economic Adviser, Climate Change Finance Unit, MoF, GoI (Personal Communication, 22<sup>nd</sup> May 2014).

## Annex 1: The core “Missions” under the NAPCC and their financial outlays

Mission	Nodal Ministry	Salient Features	Approval by PM’s Council on Climate Change	Approval by Union Cabinet	Estimated financial outlays*	Financial outlay allocated for 12 <sup>th</sup> Plan period**
National Solar Mission (NSM)	Ministry of New and Renewable Energy (MNRE)	NSM aims at increasing the share of solar energy in the total energy mix through development of new solar technologies.	✓	✓	Rs.4337 crores	Rs.8795 crores
National Mission for Enhanced Energy Efficiency (NMEEE)	Ministry of Power (MoP), Bureau of Energy Efficiency (BEE)	NMEEE seeks to upscale efforts to create a market for energy efficiency by creating a regulatory and policy regime that fosters innovative and sustainable business models to unlock this market.	✓	✓	Rs 425.35 crores	Rs.190 crores
National Mission on Sustainable Habitat (NMSD)	Ministry of Urban Development (MoUD)	NMSD attempts to promote energy efficiency in buildings, management of solid waste and modal shift to public transport including transport options based on biodiesel and hydrogen.	✓		Rs.1000 crores	Rs.950 crores
National Water Mission (NWM)	Ministry of Water Resources (MoWR)	NWM aims at to the conservation of water, minimizing wastage and ensuring more equitable distribution both across and within states.	✓	✓	Rs.89,101 crores	Rs.89,101 crores (Rs.196 crores approved)
National Mission for Sustaining the Himalayan Ecosystem (NMSHE)	Department of Science and Technology, Climate Change Programme Division (DST)	NMSHE aims at evolving management measures for sustaining and safeguarding the Himalayan glacier and mountain eco-system.	✓	✓	Rs. 1695 crores	Rs. 1500 crores (Rs.500 crores approved)
National Mission for a “Green India” (NMGI)	Ministry of Environment and Forests (MoEF)	NMGI focuses on enhancing eco-system services and carbon sinks through afforestation on degraded forest land in line with the national policy of expanding the forest and tree cover to 33% of the total land area of the country.	✓	✓	Rs 46,000 crores	Rs.45,800 crores (Rs.13,000 approved)

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National Mission for Sustainable Agriculture (NMSA)	Ministry of Agriculture (MoA)	NMSA would develop strategies to make Indian agriculture more resilient to climate change new varieties of thermal resistant crops, new credit and insurance mechanisms and improving productivity of rain-fed agriculture.	✓	Rs 1,08,000 crores	Rs.1,08,000 crores (Rs.13,034 crores approved)
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National Mission on Strategic Knowledge for Climate Change (NMSKCC)	Department of Science and Technology (DST).	NMSKCC is intended to identify the challenges of, and the responses to, climate change through research and technology development and ensure funding of high quality and focused research into various aspects of climate change.	✓	Rs. 2650 crores	Rs.2500 crores
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Sources:

\* Planning Commission 2011.

\*\* Ministry of Finance 2014a.

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## Annex 2: Financial flows into India from multilateral and bilateral climate funds

Parent Fund	Project	Focus	Financial Instrument	Approved year	Implementer	Approved	Disbursed
Clean Technology Fund	Development Policy Loan (DPL) to Promote Inclusive Green Growth and Sustainable Development in Himachal Pradesh (HP) - 117	Mitigation - general	Concessional Loan	2013	ADB	100	0
	Rajasthan Renewable Energy Transmission Investment Program - Concessional Loan - 124	Mitigation - general	Concessional Loan	2013	ADB	198	0
	Rajasthan Renewable Energy Transmission Investment Program - Grant - 120	Mitigation - general	Grant	2013	ADB	1.91	0
	Super Energy-Efficient Equipment Program (SEEP) - Concessional Loan - 123	Mitigation - general	Concessional Loan	2013	IBRD	50	0
GEF-4	Achieving Reduction in GHG Emissions through Advanced Energy Efficiency Technology in Electric Motors - 1618	Mitigation - general	Grant	2010	UNDP	0.25	0.25
	Chiller Energy Efficiency Project - under the Programmatic Framework for Energy Efficiency - 1619	Mitigation - general	Grant	2010	IBRD	6.3	6.3
	Coal Fired Generation Rehabilitation Project - 1620	Mitigation - general	Grant	2010	IBRD	45.4	45.4
	Enabling activities for Preparing India's Second National Communication to UNFCCC - 1621	Multiple foci	Grant	2010	UNDP	3.5	3.5
	Energy Conservation in Small Sector Tea Processing Units in South India. - 1622	Mitigation - general	Grant	2010	UNDP	0.95	0.95
	Energy Efficiency Improvements in the Indian Brick Industry - 1623	Mitigation - general	Grant	2010	UNDP	0.7	0.7
	Financing Energy Efficiency at Micro, Small and Medium Enterprises (MSMEs) - 1624	Mitigation - general	Grant	2010	IBRD	11.3	11.3
	IND Energy Efficiency Improvements in Commercial Buildings - under the Programmatic Framework for Energy Efficiency - 1625	Mitigation - general	Grant	2010	UNDP	5.2	5.2

	IND Improving Energy Efficiency in the Indian Railway System - under the Programmatic Framework for Energy Efficiency - 1626	Mitigation - general	Grant	2010	UNDP	5.2	5.2
	IND Programmatic Framework Project for Energy Efficiency in India (PROGRAM) - 1764	Mitigation - general	Grant	2010	IBRD	0	0
	Low Carbon Campaign for Commonwealth Games 2010 Delhi - 1627	Mitigation - general	Grant	2010	UNDP	0.8	0.8
	Market Development and Promotion of Solar Concentrators based Process Heat Applications in India - 1765	Mitigation - general	Grant	2010	UNDP	4.4	4.4
	Promoting Energy Efficiency and Renewable Energy in Selected Micro SME Clusters in India - under the Programmatic Framework for Energy Efficiency - 1628	Mitigation - general	Grant	2010	UNIDO	7.17	7.17
	Sustainable Urban Transport Project - 1629	Mitigation - general	Grant	2010	IBRD	22.5	22.5
GEF-5	Cleantech Programme for SMEs in India - 1146	Mitigation - general	Grant	2013	UNIDO	1	1
	Efficient and Sustainable City Bus Services - 1157	Mitigation - general	Grant	2012	IBRD	9.2	0
	Facility for Low Carbon Technology Deployment - 1165	Mitigation - general	Grant	2012	IBRD	9	0
	Improving Rural Energy Access in Deficit States - 1187	Mitigation - general	Grant	2013	IBRD	12.84	0
	Organic Waste Streams for Industrial Renewable Energy Applications in India - 1210	Mitigation - general	Grant	2013	UNIDO	3.33	0
	Partial Risk Sharing Facility for Energy Efficiency - 1211	Mitigation - general	Grant	2012	IBRD	18	0
	Preparation of Third National Communication (3NC) to the UNFCCC and Strengthening Institutional and Analytical Capacities on Climate Change - 1218	Multiple foci	Grant	2012	UNDP	9.01	9.01
	Promoting Business Models for Increasing Penetration and Scaling up of Solar Energy - 1221	Mitigation - general	Grant	2012	UNIDO	4.37	4.37
	Promoting Industrial Energy Efficiency through Energy	Mitigation - general	Grant	2012	UNIDO	4.47	4.47

	Management Standard, System Optimizaton and Technology Incubation - 1225							
	Scale Up of Access to Clean Energy for Rural Productive and Domestic Uses - 1249	Mitigation - general	Grant	2013	UNDP	4.01	0	
Special Climate Change Fund	Climate Resilient Coastal Protection and Management - 1321	Adaptation	Grant	2011	ADB	1.82	0	
	India: Sustainable Livelihoods and Adaptation to Climate Change (SLACC) - 1324	Adaptation	Grant	2012	IBRD	8	0	
UK's International Climate Fund	ADB Solar Loan Guarantee Facility (India) - 644	Mitigation - general	Unknown	2011		3.21	0	
	India: Solar Capital Market Climate Initiative (CMCI) - 732	Mitigation - general	Unknown	2011		0.1	0	
	India: Solar Capital Market Climate Initiative (CMCI) - 733	Mitigation - general	Unknown	2012		0.32	0	
Germany's International Climate Initiative	Climate Protection and Distributed Energy Supply - Indo-German Energy Forum - 871	Mitigation - general	Grant	2008	Potsdam Institute for Climate Impact Research (PIK), Potsdam	1.85	0	
	Climate-Neutral Energy Supply for Rural Areas - 879	Mitigation - general	Grant	2008	GIZ	6.81	0	
	Converting a Production Facility to the Manufacture of Climate-Friendly Air-Conditioning Equipment - 890	Mitigation - general	Grant	2008	GIZ	3.03	0	
	Eco-Industrial Parks in Andra Pradesh - 909	Mitigation - general	Grant	2008	GIZ	1.06	0	
	Energy Campaign for the Hotel and Restaurant Industry - 917	Mitigation - general	Grant	2008	Adelphi Consult GmbH, Berlin	0.21	0	
	Excellence Enhancement Centre - 927	Mitigation - general	Grant	2009	GIZ	2.41	0	
	Increasing resilience to climate impacts of vulnerable communities and critical ecosystems in the Eastern Himalayas of India - 959	Adaptation	Grant	2008	Diakonie Germany	0.2	0	
	Increasing resilience to climate impacts of vulnerable communities and critical ecosystems in the Eastern Himalayas of India - 960	Adaptation	Grant	2009	KfW Development Bank, Frankfurt WWF Germany, Frankfurt	0.28	0	
	Indo-German Trigen Project - 962	Mitigation - general	Grant	2008	GIZ, United Nations	1.52	0	
	Liaison Office - Indo-German Energy Forum (Second Phase: Climate Protection and Decentralised Energy Supply) - 984	Mitigation - general	Grant	2012	GIZ, United Nations	4.13	0	
Marketing solar energy in urban regions and industrial zones in India (ComSolar) - 995	Mitigation - general	Grant	2009	GIZ	6.84	0		



	Producing energy from waste and sewage - 1027	Mitigation – general	Grant	2009	GIZ	2.84	0
	Promoting Low Carbon Transport in India - 1032	Mitigation - general	Grant	2010	UNEP Division of Technology, Industry and Economics (DTIE), France	2.59	0
	Solar Mapping and Monitoring (SolMap) - 1065	Mitigation - general	Grant	2010	GIZ	2.12	0
	Support of NAMA and MRV development as part of Indian climate policy - 1084	Mitigation - general	Grant	2013	GIZ	3.95	0
	Sustainable Management of Coastal and Marine Protected Areas - 1101	Multiple foci	Grant	2012	GIZ	12.34	0
Japan's Fast Start Finance	Andhra Pradesh Rural High Voltage Distribution System Project - 395	Mitigation - general	Loan	2011		161.65	0
	Bangalore Metro Rail Project (II) - 396	Mitigation - general	Loan	2011		172.45	0
	Chennai Metro Project (II) - 403	Mitigation - general	Loan	2010		520.44	0
	Delhi Mass Rapid Transport System Project Phase 2 - 413	Mitigation - general	Loan	2010		292.52	0
	Kolkata East-West Metro Project (II) - 462	Mitigation - general	Loan	2010		203.5	0
	Loan Agreement with ICICI Bank under GREEN Operations - 467	Mitigation - general	Loan	2012	ICICI Bank	300	0
	Madhya Pradesh Transmission System Modernisation Project - 470	Mitigation - general	Loan	2011		160.65	0
	Micro, Small and Medium Enterprises Energy Saving Project (Phase 2) - 472	Mitigation - general	Loan	2011		260.87	0
	New and Renewable Energy Development Project - 474	Mitigation - general	Loan	2011		260.87	0
	Rajasthan Forestry and Biodiversity Project (Phase 2) - 562	Multiple foci	Loan	2011		136.95	0
	Renewable/Energy Efficiency Projects in India - 565	Mitigation - general	Loan	2011	ICICI	200	0
	Sikkim State Biodiversity Conservation and Forestry Management Project – 571	Multiple foci	Loan	2010		46.82	0
	Tamil Nadu Biodiversity Conservation and Greening Project - 582	Multiple foci	Loan	2011		76.77	0
	The project survey for solar heat power plant - 592	Mitigation - general	Grant	2010		0.45	0
Yamuna Action Plan Project (III) - 639	Mitigation - general	Loan	2011		283.23	0	

Source: [www.climatefundsupdate.org](http://www.climatefundsupdate.org)

## Annex 3: India's proposals for funding submitted to the Adaptation Fund Board

Project/ Programme Category	Title of Project	NIE	Executing Entities	Amount (US\$)	Consultations	GIZ Support
Small-sized project	Climate Smart Actions and Strategies on North Western Himalayan Region for Sustainable Livelihoods of Agriculture Dependent Hill Communities	NABARD	Baif Institute of Rural Development – Uttarakhand (BIRD – UK)	620,487	Village level District level involving district officials Scientists Professionals from development agencies	
Small-sized project	Conservation and Management of Coastal Resources as a Potential Adaptation Strategy for Sea Level Rise	NABARD	M. S. Swaminathan Research Foundation (MSSRF)	590,602	Local community Panchayati Raj institutions (local government) CSOs NGOs Government agencies such as Forest, Revenue, Fisheries and Agriculture Departments	Financial and technical.  Proposal based on pilot scale programme implemented in Pichavaram mangrove area in Tamil Nadu with the support of GiZ.
Regular (Concept Paper)	Enhancing Adaptive Capacity and Increasing Resilience of Small and Marginal Farmers in Purulia and Bankura Districts of West Bengal	NABARD	Development Research Communication and Services Centre (DRCS)	2,533,533	Village level Government departments Climate experts	Financial and technical.  Proposal based on GIZ funded project in the riverbank erosion and waterlogged areas of Malda and Murshidabad districts, which was implemented by DRCS
Regular (Concept Paper)	Building Adaptive Capacities of Small Inland Fishermen Community for Climate Resilience and Livelihood Security, Madhya Pradesh, India	NABARD	Towards Action and Learning (TAAL)	1,737,864	Local community, especially fish farmers Government agencies Members of the local Panchayati Raj institutions CSOs NGOs Independent development professionals	Financial and technical.  Proposal based on pilot project on climate proofing of fish farming under implemented TAAL with the support of GIZ.
Regular (Concept Paper)	Concept Note on Climate Proofing of Watershed Development Projects in the States of Tamil Nadu and Rajasthan	NABARD	Select NGOs as project executing entities	1,227,000	Farmers and landless persons to understand the problems of degradation of natural resources, low productivity of crops, issues connected with livelihood and to arrive at appropriate treatment measures.	Financial and technical.  Proposal based on the learnings from the climate proofing of rainfed areas on watershed basis implemented in collaboration with GIZ by NABARD in Tamil Nadu and Rajasthan.



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