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Financing Mechanism on Climate Change Impact Mitigation

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Abstract

This paper deals with climate change financing mechanism. It outlines the origin of climate change finance system in India and innovative and new approaches in climate change financing. This paper makes a special note on climate change readiness performance and policy implications and required approaches of climate change financing in India. This paper concludes with some interesting findings.

Keyword**:** *climate change mitigation finance; climate change; panel ARDL; GHGs; South Asian countries*

Introduction

India has put a figure of USD 2.5 trillion at 2014-15 prices as its price for achieving its mitigation and adaptation targets by 2030. Not only is the amount huge, it also seems large for a USD 2 trillion economy which is also the world's third largest after United States and China, measured on the basis of Purchasing Power Parity (PPP). Consequently, India is home to a large number of people with huge developmental needs and who are extremely vulnerable to climate change impacts. India is a farming country with both its primary and secondary sector hugely dependent on climate-sensitive natural resources. Two out of three persons are dependent on agriculture and allied activities out of which 60% of its predominantly small and marginal farmers are dependent on the monsoons for irrigation. Even the irrigated cropland in the highly climate-sensitive Indo- Gangetic Plains depends on monsoons for replenishing surface water which contributes to 80% of the irrigation in the region. All of India's forests and livestock-related economic enterprises are sensitive to temperature and rainfall patterns. Agro-based exports and textiles comprise over a fifth of India's exports.

Climate-related poverty in India has another dimension. Over 2/3rd (68%) of the cultivable area is drought-prone, 12% is vulnerable to floods and river erosion and 3/4th of the 7500 km-long coastline is prone to cyclones, salinity ingress and sea-level rise. Climate change-induced disasters like cloud bursts, flash floods, glacier lake outburst floods and landslides in the Great Himalayan Mountains have already brought havoc to large urban and rural areas. The Himalayan glaciers, feeding nine of India's largest rivers, are rapidly melting and retreating, threatening food and water security of hundreds of millions of people in the downstream areas of India and its neighboring countries in South Asia. It also reduces power generation capacity from dams and micro-hydro projects. India is among the world's 10 most disaster-prone countries and climate change is projected to worsen the situation, requiring huge investments in not just disaster preparedness and restoration but also to address social and economic impacts of loss and damage.

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Origin of Climate Change Finance in India

India's blueprint on climate action, the National Action Plan on Climate Change is the umbrella policy initiative of India framed by the Prime Minister Council on Climate change in 2008. The National Action Plan on Climate Change encompasses twelve 'National Missions,' each focusing on key climate-sensitive sectors including creation of climate knowledge. The National Action Plan on Climate Change has adopted a mission mode over policy because missions come with operational guidelines and budgets and can be monitored whereas policies usually only reflect intent.

The Missions mainstream both mitigation and adaptation into India's development programmes, with the responsibility of each Mission entrusted to subject specific ministries and departments. Being a federal nation, the National Action Plan on Climate Change is accompanied by State-level Action Plans on Climate Change which have been formulated on the lines of the National Action Plan on Climate Change but with a higher focus on adaptation and forestation than on mitigation. Three National Action Plan on Climate Change Missions – on sustainable agriculture, water and the Himalayan ecosystem - are slated to help people adapt to climate uncertainties. The Mission on Strategic Knowledge emphasizes high quality research and technology, including joint research with other countries. Subsequently, four new Missions were added by the current government in 2014. These focus on wind energy, waste-to-energy, human health and coastal resources management. Missions on solar energy, energy efficiency and sustainable habitat will contribute to decelerate emissions with a strong focus on increasing the share of renewable including nuclear and biofuels. The mission on a forestation or the Green India mission will contribute to both mitigation and adaptation as about 350-400 million people depend on forests for their basic needs and their livelihoods. Finance will be raised through internal programmes, including the controversial Compensatory Afforestation Fund Management and Planning Authority which earns huge amounts from cutting trees for timber and infrastructure development and then uses these funds for compensatory a forestation that does not match the richness of the depleted forests.

Given India's susceptibility to climate-induced disasters, projected to worsen following rising climate uncertainties, India also has an institutional set-up on disaster management, backed by legislation and national, State and sub-State-level Disaster Management Authorities under the Ministry of Home. Drought lies with the Ministry of Agriculture and epidemics with the Ministry of Health. These institutions are also dealing with climate change impacts. Much of the finance available for disaster management is through relief funds at the national and State levels – mainly the Prime Minister's Relief Fund at the Centre and State level Chief Minister's Relief Funds. The National and State-level Calamity Funds were merged in 2010 with the newly constituted National and the State level Disaster Response Fund. Union Territories get their relief funds directly from the Home Ministry.

The Disaster Response Funds allow just 5% of the funds for preparation of disaster management plans 'based on hazards, risk and vulnerability analysis' obviously done with some other undefined funding; for capacity building of all stakeholders; and the amorphous 'strengthening' of these national- and State-level Disaster Response Funds. All financial requirements for community-based disaster preparedness, infrastructural preparedness, restoration, reconstruction and mitigation disaster risk reduction is to be built into the normal budgetary heads of the State-level plans. There is no discussion within programmes and institutions yet on loss and damage despite the looming threats for large vulnerable regions, especially along the coast and the Himalayan ecosystem.

Thus, the scale and scope of climate finance required in India is huge and the financing architecture is complicated. India's multi-pronged approach, explained below, to deal with this crowded institutional space for climate finance leverages private finance and uses fiscal instruments and market mechanisms

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to generate public finance. Thus, the National Action Plan on Climate Change and the State-level Action Plans on Climate Changes, are not backed by a coherent climate finance strategy. Initially planned to be funded by the 12th Five-year Plan, the large budgets proposed by State-level Action Plans on Climate Changes were then opened to donor funds. Engagement with the private sector, both as a recipient and provider of climate finance, has been growing but again largely in an ad hoc manner. India is, however, clear on its approach to international climate finance and has been quick to set up systems to access the Adaptation Fund and the global climate fund by appointing the National Bank for Agriculture and Rural Development as the National Implementing Entity (NIE) for the two global funds.

Innovative and New Approaches

India has created new institutions, funds and various innovative schemes, the latter especially to target and leverage private funds, in response to new sources of global climate finance. In 2011, Department of Economics in the Ministry of Finance set up a Climate Change Finance Unit to advise and guide the Ministry of Environment and Forests (MoEF) as well as to lead on global climate finance issues. The Climate Change Finance Unit has included climate finance in the Economic Surveys, released prior to the annual Union Budgets. It has contributed to the design of the Adaptation Fund and brought together different stakeholders, including civil society, on climate finance issues for contributions to the Green Climate Fund. The Climate Change Finance Unit, however, is not an apex institution on climate finance. In 2010-11, the National Clean Energy Fund was created to promote clean energy, funded through an initial carbon levy of Rs. 50 which has now quadrupled to Rs. 200 per ton of coal. This Fund is governed by an Inter-Ministrial Group with the Finance Secretary as the Chair. Its mandate is to fund research and development of innovative clean energy technology in the fossil and nonfossil fuel based sectors.

India has also set up two funds, one each for adaptation and energy efficiency. The Ministry of Environment, Forests and Climate Change, the India's nodal negotiating agency, operates a National Adaptation Fund established in 2014 with a corpus of Rs. 100 crore that ratcheted up to Rs. 350 crore in 2015. India's National Adaptation Fund was set up with the aim of bridging the gap between the need and the available funds. States have been asked to submit projects and the first set of these are in the process of being approved. It could be noted that introduction of Tax Free Infrastructure Bonds for funding of renewable energy projects. There are also plans to build a corpus of USD 25 billion by floating five green energy funds of USD 5 billion each with the help of public and private financial institutions. It may be added here that energy security, an electoral promise of the present ruling Party, is critical for India which imports 80% of its crude oil and 18% of its natural gas requirements, running up an energy import bill of about USD 150 billion, expected to double by 2030 under a business-as-usual scenario.

India has reiterated several times that 'private sector is the prime mover and prime agent' for scaling up climate finance and 'studies show that public funds for mitigation can leverage private investment by widely ranging factors from 1:2 to 1:10.' Other reports have said that bulk of India's climate finance is expected to come from private investments. Already, 80% of the renewable energy capacity installed is in the private sector. This is in line with the projections by the International Energy Agency that private businesses and private households will contribute 40% of global climate investments each and only 20% will come from government sources.

India follows a combination of carbon pricing instruments and regulatory policies to leverage private finance. Clean Development Mechanism has played a large role in private finance with India having been the second largest receiver of Clean Development Mechanism projects after China. Other

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instruments include equity finance, debt instruments and partial risk guarantee facilities. The National Mission for Enhanced Energy Efficiency has offered the Partial Risk Guarantee Fund wherein risk coverage of bank loans for energy efficiency is expected to leverage 30 times the Government's investment of USD 20 million as seed money.

The Venture Capital Fund for Energy Efficiency is equity finance for EE projects to leverage more private finance. Then there is the Renewable Energy Certificate scheme that mandates the government electricity regulators at national and state levels to buy at least 5 % of renewable-sourced power, thereby giving incentives to the private sector to scale-up investments in renewable energy. The Perform, Achieve and Trade scheme involves trading energy savings among identified high-energy consuming industries. Then there are voluntary market-driven standards like the National Building Code, Energy Conservation Building Codes and the energy efficiency rating programme for domestic and other appliances that encourage more investment in energy efficiency by the private sector.

Role of Carbon Tax in Climate Change Mitigation in Energy Sector

State experience has also shown that fiscal instruments alone may not yield desired energy efficiency or demand-side management goals even if it fills the coffers with climate finance. Maharashtra, for instance, endeavored to build in energy efficiency into its power utilities by imposing a load management charge to incentivize residential and industrial units whose consumption was above or below a certain limit. The scheme generated a fund of Rs 700 million in just a couple of months but was withdrawn because it was not changing consumption patterns - consumers were not aware of the need for energy efficiency or ways to achieve it. The fund has subsequently been used to generate awareness and provide alternatives like compact fluorescent lamps at reduced rates to increase energy efficiency.

States have also pioneered fiscal instruments to address environment and climate change. The Sikkim government, known for its commitment to environmental conservation, imposed a cess as early as 2005 on the price of non-biodegradable materials entering the State to promote use of less-polluting materials and reduce post facto compliance costs of managing the effluents. The cess is deposited in the Sikkim Ecological Fund, backed by the Environment Cess Act. The Sikkim Ecological Fund has been used for building awareness, garbage management and for rejuvenating soil, water and forests, thus, contributing strongly to climate change adaptation and mitigation.

Several states such as Karnataka, Tamil Nadu, Maharashtra and Andhra Pradesh have imposed Green Tax on motor vehicles - mostly on those older than 15 years for personal vehicles and 7-8 years for those plying commercially – since 2002 onwards. There are also some more specialized taxes like the Air Ambience Fund by the New Delhi government which levies Rs 0.25 on selling of every liter of diesel to support clean air policies. Interestingly, the Himachal Pradesh government has introduced a voluntary Green Tax that any duty conscious citizen can donate towards a fund which will be used to make Himachal a carbon-neutral State.

India's Climate Finance Readiness Performance

Over the past decade, India has successfully accessed climate finance from a number of sources – most notably the Clean Technology Fund, the Global Environmental Facility, bilateral donors like Germany and Japan, and private sector finance channeled through the Clean Development Mechanism. Yet, as the global climate fund prepares to open its doors for funding proposals and as the private sector becomes increasingly engaged in investing in climate-related activities, how ready is India to access and deliver these funds?

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Policy Implications

India does not have a coherent national climate finance strategy or a central institution with a mandate to coordinate the access and delivery of climate finance in the country. India should designate or create an independent coordinating agency with the mandate to strategically plan, access, mobilize, disburse and track climate finance at the national level. Explore options to create an independent climate finance agency for example, through an act of Parliament, executive order on the recommendation of the Prime Minister's Council on Climate Change or under the Environmental Protection Act of 1986. Ensure agency is empowered with executive, advisory, and governance and secretariat functions to strategically align climate finance actions with development plans and priority policy actions. Incorporate key design features such as guiding principles and mandates; the coordination of climate finance access including leveraging capital from the private sector; a streamlined delivery structure. Provide appropriate technical, administrative, and financial training and capacity building to various executing agencies, particularly development finance institutions.

The Ministry of Environment, Forests and Climate Change has been nominated as the national designated agency for the global climate fund. However, it does not fulfil the above design features and functions of an independent climate finance agency. Therefore, India should explore the option of delegating Ministry of Environment, Forests and Climate Change role to the independent coordinating agency once it has been established.

India can learn from the experiences in Indonesia, where legal mandates to implement national climate change plans have led to greater accountability in planning, financing, and coordination and implementation structures. Indonesia's National Council on Climate Change (NCCC) is legally mandated to formulate strategies, programmes and activities on climate change. In parallel with the Indonesia's National Council on Climate Change, the Indonesian Climate Change Trust Fund aligns international financial resources and domestic budgets with Indonesia's climate change and development priorities.

There have been limited efforts to assess the impact of climate change on the national economy, and to prioritise climate-related investment within national and sectoral budgets, based on a detailed needs assessment. India should undertake detailed quantitative needs assessment and cost benefit studies to prioritise mitigation and adaptation actions, and provide detailed cost estimates for their implementation.

The Ministry of Environment, Forests and Climate Change, PMO, Ministry of Finance (MOF) and National Action plan on climate change missions should undertake needs assessment and cost-benefit analysis to develop a detailed list of priority climate-related interventions. Undertake Climate Public Expenditure and Institutional Review analysis to estimate national financing of climate related activities. Develop sectoral roadmaps for low carbon development and climate resilience.

The private sector has had limited engagement with the Government of India in climate change decision-making and coordinating a national financing strategy that encourages private sector investment in India should step up private sector engagement in national climate change policies, strategies, coordinating committees and national financing bodies for example, Partial Risk Guarantee Fund, Venture Capital Fund and National Clean Energy Fund.

Promote greater public-private dialogue on climate finance through regular forums and institutions such as sectoral associations, investor platforms and public consultations. Involve the private sector in the design and implementation of schemes such as PAT and PRGF. Develop public-private financing structures and launch pilot projects to showcase viable business models and attract further climate

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investment. India can learn from China, where experience shows that actively engaging the private sector has boosted investment in climate-related activities. China's clean development mechanism fund – the main climate finance coordinating body provides advisory and financial services for the private sector, which has successfully attracted private sector investment into low carbon initiatives such as feed-in tariffs and emission trading scheme pilots. While India has attempted to implement similar initiatives, it has suffered from weak uptake and lower compliance – mainly due to a lower level of engagement with the private sector when designing these schemes than in China.

Direct financial institutions in India have limited capacity to implement climate related projects beyond a narrow range of themes, sectors and geographies. Therefore, India faces challenges in developing a pipeline of bankable projects, which could help remove barriers for project financers and increase climate-related investment in the country. India should strengthen the capacity of direct financial institutions to design, select, coordinate and fund national and state-level climate change projects and programmes to increase the coverage of climate-related activities and develop bankable projects to attract further investment.

Provide direct financial institutions with formal mandates to allocate funds for climate-related activities under the National Action Plan on Climate Change and state action plan on climate change. Create new direct financial institutions to promote low carbon development actions in carbon-intensive sectors, such as transport, energy intensive industries, forestry, waste and water management. Create a climate finance group within each direct financial institution with a clear mandate to develop investment criteria to deploy climate finance. Promote greater collaboration between direct financial institutions, research institutions and the private sector to develop bankable projects. Explore how other financial institutions, such as the State Bank of India (SBI), Infrastructure Development Finance Company (IDFC), Infrastructure Leasing & Financial Services Limited (IL&FS), can also allocate climate finance. Design capacity building programmes at the sub-national level to assist direct financial institutions, national banks, project developers, local government and so on to develop bankable projects. Apply for GCF Readiness support for direct financial institutions to improve climate finance access and delivery.

Experience from China shows that focusing on capacity building at sub-national levels can help improve project development, design and implementation that are the necessary first steps to developing a pipeline of bankable projects. The Chinese clean development mechanism Fund provides capacity building and training for the private sector, which has helped to remove market and technical barriers for project developers to design good quality projects.

Climate finance delivery institutions (e.g. DFIs) have limited ability to match finance needs with a blend of climate finance sources and instruments. Direct financial institutions should develop the capacity to blend different sources and instruments grant, loan, equity and debt of finance when allocating funds to implementing entities. This should include the use of public funds to leverage private finance for climate related activities.

Undertake research on new financing instruments in an effort to increase project implementation capacity across a wider range of themes, sectors and geographies. Pilot new approaches based on innovative financing models to develop capacity in direct financial institutions. Improve existing procedural requirements in direct financial institutions, such as financial procedures and risk mitigation strategies to safeguard investments, project investment criteria and standard M&E indicators. Create sector specific focal points in direct financial institutions to provide support for project developers working with different types of private investors and different instruments.

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Indian direct financial institutions have capacity constraints in meeting international fiduciary standards (sound financial management, transparency, independence and professional standards), and social and environmental safeguards. Indian direct financial institutions should develop minimum accreditation standards for accessing and delivering climate finance from international funding streams.

Apply for global clean fund readiness funding to support direct financial institutions to meet global clean fund accreditation standards. Build project management capacity in direct financial institutions that will play a major role in climate finance delivery. Improve credit ratings in direct financial institutions by improving governance, and operational and risk control systems.

International experience shows that an important first step is for NIEs such as, direct financial institutions or National Climate Funds to build fiduciary standards to meet international requirements. For example, the Brazilian Development Bank (BNDES) has been instrumental in managing the Amazon Fund, providing financial management with strong fiduciary standards, low administration fees and a transparent management process for the dispersal of funds to the project level.

India has limited experience in measuring, reporting and verifying domestic, private and international climate finance. Systems for tracking volumes of climate finance have not been systematically applied and estimates on the impact of climate finance spend are even more limited.

India should set up a central system for monitoring all climate flows – coordinated by the main climate finance agency/ institution outlined in Recommendation. This system can be used to determine the total volume of climate finance in India and, more importantly, the effectiveness of that finance in supporting the goals of India's National Action Plan on Climate Change and state-level climate change projects

Conclusion

It could be seen clearly from the above discussion that climate change mitigation financing is very essential to overcome the negative impact of climate change on Indian society. The government of India has initiated a lot of funding mechanism in ministry of finance, minister of environment, forests and climate change, ministry of rural development and special funding in terms of national clean energy funds, the free infrastructure bonds, clean development mechanism fund, venture capital fund for energy efficiency and so on. The utility of such funding opportunities depends on political will coupled with the decisions of planners and policy makers.

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