

Role of Financial Institutions in Climate Financing for Sustainable Development: Leadership, Commitment and Challenges- with special reference to India

Sanchita Yadav
AJNIFM
sachitarao@gmail.com

ABSTRACT

Global warming and continuous climate change present serious risks for people, organization and economy. This review paper has focused on four aspects of climate finance: role of climate finance for creating low carbon economy, leadership and commitment of the financial institutions in creating low carbon economy, challenges faced by financial institution in developing low carbon economy and the flow of climate finance in India.

The current study revealed the fact that the efforts made by the financial institutions till now to control over climate change are not enough and the whole world has failed in creating low carbon economy. There is a need to develop and implement a new model to control over climate change. This model should focus on various aspects of climate change and about the strategies to control over the same.

Key words: Global Warming, Climate Change, Low Carbon Economy, Climate Finance.

JEL Classification: E00, F64

1. Introduction & Overview

Carbon dioxide is colorless. We produce it just by breathing. The United Nations Framework Convention on Climate Change (UNFCCC) defines it as a change of climate that is attributed directly or indirectly to human activity, altering the composition of the global atmosphere.¹

There are two ways of climate change, one is due to human, that is called Anthropogenic climate change, and the other one is due to the earth's natural processes. So, as per the environmental policy, the term climate change has become synonymous with anthropogenic global warming. Due to climate change, surges the chances of global warming and increase in the surface

temperature and greenhouse gas level affect.

Climate finance is critical to addressing climate change because large-scale investments are required to significantly reduce emissions, notably in sectors that emit large quantities of greenhouse gases. Climate finance is equally important for adaptation, for which significant financial resources will be required by countries to adapt the adverse effects and reduce the impacts of climate change.²

There is a survey by World Bank which says that the cost of mitigation in developing countries alone ranges from Us\$140 billion to Us\$175 billion annually until 2030.

In January 2009, a roundtable discussion for CEOs of financial institutions,

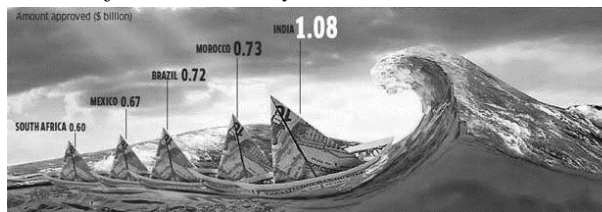
¹ <http://www.wired.co.uk/article/what-is-climate-change-definition-causes-effects>

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http://unfccc.int/focus/climate_finance/items/7001.php

convened by ‘The Climate Group’, concluded that there was an imminent need for engagement with the Indian Banks’ Association (IBA) and a larger cross section of banks to raise awareness on climate change. This report emerged from a meeting in late 2009, when ‘The Climate Group’ initiated dialogue with the banks operating in India to discuss the most effective ways to tackle climate change.

Figure 1: India gets more money dedicated climate funds than any other nation



Source: *Climate Funds Update*³

Figure 1 showed that India gets more money in comparison to other countries from dedicated climate funds. Now, there is a need of shift the investment form high-carbon to low-carbon activities to control the monster of climate change. There are many steps have been already taken by the several financial institutions in India like during the year 2017, SBI has launched solar rooftop projects worth Rs 400 crore, Yes Bank flung first Green Bond in the country and Green Buildings projects etc. Alzbeta Klein, Director and Global Head, Climate Business, IFC (jan. 2019), said that, *“Half of the urban centres in India are not built yet and will be built by 2030. If these were to be built, they better be green*

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<https://economictimes.indiatimes.com/news/politics-and-nation/india-among-the-largest-recipients-of-climate-change-grants-but-few-key-questions-remain-unanswered/articleshow/60343313.cms>

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<http://www.thehindubusinessline.com/>

*buildings, as of now, only 5 per cent of new buildings constructed in India are green”.*⁴

The RBI (Reserve Bank of India) has followed the dual approach for financing to invest in priority sectors and also provides guidelines for the green finance. *Based on the Banking Regulations Act from 1949, the RBI's Priority Sector Lending Programme (PSL) concurs to the objective of allocating credit to some vulnerable sector like agriculture, infrastructure, education and micro, small and medium enterprises. By a range of measures such as guidelines and quotas, the RBI ensures that 40% of commercial bank lending goes to those sectors. In 2012 and 2015, the RBI included loans for renewable energy projects or social infrastructure into its priorities. Those loans can be used to finance projects for solar or biomass-based power generators, wind mills, micro-hydro plants, etc. Consequently, lending to renewable energy projects has grown at a higher rate than overall credit growth in the 2009-2014 period. However, the impact of the PSL has been mixed as many banks fail to achieve their annual PSL targets.*⁵

Capital markets could also play a significant role to protect the environment, to the extent that they can assess and price these exposures, can potentially help households and institutions hedge climate change risks. Climate science has generated increasingly precise, accessible, and long historical panel data sets on a range of climate variables that allow for

[economy/climate-finance-is-going-to-be-big-in-india/article9978261.ece](https://www.economy/climate-finance-is-going-to-be-big-in-india/article9978261.ece)

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http://www.qe4people.eu/7_central_banks_climate_change

measurement and assessment of these risks on capital markets over the past century. Capital markets research that integrates these new data can spur the development of new methodologies and findings to help us address these important issues that affect the welfare of current and future generations, particularly those living in less-developed or emerging markets. In this regard, both government and financial institution should work together. For low carbon economy there is a need of creating new investment opportunities and policies by the financial institutions which helps to control the climate change risks.

India is a growing economy in every perspective but there is a need to focus more on climate protection. Due to more privatization and mechanization continuously, there is an increase in global warming, that is not good at all for the planet and human beings.

In the current scenario to tackle the problem of climate change and global warming, there is a need to provide sustainable finance to the society. Sustainable finance is responsible for assisting in integrating the Environmental, Social and Governance (ESG) financial services to the customers and investors. A sustainable financial system provides an opportunity to the financial markets to contribute long lasting development of an economy, environment and society. For developing nations lots of improvements are required in terms of economic growth rate, infrastructure, transportation, manufacturing, urbanization and technology but it should not be on the cost of ecological system. There was a study conducted by Goldstein during the year

2001 on the role of financial institutions for the sustainable development from Costa Rica. But surprisingly it was found that due to lack of interest in funding to the green project as the rate of interest is very less neither financial institutions nor capital market is playing significant role for the sustainable finance. The researcher has suggested three specific policies to the financial institutions to achieve the environment goal i.e., "*Green Banking, Green Group Lending, a Green Bond Market, and a Conservation Lending Certification Body*"⁶. For sustainable development there is a need to protect and restore the environment, society and cultural assortment. There are various financial instruments like green investment, green bonds, microfinance, green projects, impact investing, active ownership etc. required, that help to convert the financial system into sustainable financial system.

There are numerous problems of low carbon economy such as unreasonable energy structure, irrational industrial structure, backward technology level, developed countries "lock-in effect" and imperfect carbon financial system. Yifan Yuan (2016), conducted research in China and focused on the importance, status, problems, challenges and opportunities of the carbon financial market. The author has suggested to encourage the development of carbon financial market to create a low-carbon economy and to eliminate the problems of high-carbon economy. Authors have suggested to cultivate low-carbon economy consciousness, optimizing energy structure and accelerate carbon finance derivative product innovation. McCann (2004), found the reasons for global

⁶ Goldstein, D. (2001). Financial sector reform and sustainable development: the case of Costa Rica.

Ecological Economics, 37, pp. 199-215

warming and explained that the main reason for the same is the emissions of greenhouse gases from human activities. The result has been accepted by most of the researchers. There are large numbers of CDM (Clean Development Mechanism) projects registered in India. A research has been conducted by Gudrun Benecke (2009) to check the efficiency and the impact of those projects on the sustainable development. The author revealed the fact that carbon governance in India is weak and very less involvement of civil society. Another research “The World Bank India (June 2008), Strategies for Low Carbon Growth, Scaling Up Carbon Finance in India”, analyzed the performance of India in the carbon market and suggested a string of measures should be taken by the Government and private sector together. The author depicted that India is behind China to supply of emission reductions in 2006. The research has recommended India to improve the performance in the carbon market. There is a need of commitment over Kyoto Protocol, development and implementation of national CDM strategies, carbon financing and price transparency.

There is a need to know about the environmental performance and value of the firm. Konar and Cohen (2001), investigated the value of the firm based on their environmental performance and reported that there is an inverse relationship between intangible asset value of the firm and bad environmental performance. A study has been conducted on Canadian pulp and paper industries during 1992 to find out the role of communities to create incentives for local industrial facilities to reduce pollution by Doonan, J., P. Lanoie and B. Laplante, (2005). The results of the study showed that Government policies are the

main blockade in the environment performance of a firm not the financial and consumer markets. Education level of employees is also influencing the environmental performance.

1.1 Research Objectives

The objective of this review paper is to find out the answers of very crucial questions related to climate change with the help of following mentioned objectives:

1.1.1 To review the role of climate finance for creating low carbon economy.

1.1.2 To review the leadership and commitment of the financial institutions in creating low carbon economy.

1.1.3 To review the challenges faced by financial institution in developing low carbon economy.

2. Role of Climate Finance for Creating Low Carbon Economy

Intergovernmental Panel on Climate Change (IPCC) report (2018), warned with the following facts about the worldwide climate change:

2.1 Human Activities are responsible for 1.0°C (with a likely range of 0.8°C to 1.2°C) of global warming above pre-industrial levels. Due to this Global warming is expected to touch 1.5°C amid 2030 and 2052 if it continues with the same rate.

2.2 Ocean sea surface temperature is continuously increasing due to global warming.

2.3 The ocean oxygen level is continuous decreasing due to global warming.

2.4 Sea Level Rise: Continuous rise in the sea level is also the cause of climate change and global warming. The below figure the IPCC projected that in future there will be high emissions (red, RCP8.5 scenario) and very low emissions (blue, RCP2.6 scenario) of the sea level and this is dangerous.

The above climate indicators are dangerous for

the planet and human beings and are going to create imbalance on the earth. The report has warned about the warmer earth and need immediate action against climate change. To control over the climate change and to create a low carbon economy there is an urgent need to take climate action worldwide. For this, both developed and developing countries have to work together. There is a need of carbon finance by the developing country and this should be supported by developed countries, it is mandatory as per the United Nations Framework Convention on Climate Change (UNFCCC) and its Paris Agreement. Worldwide action on climate change will be successful by providing adequate and timely finance to the developing nations.

Finance is the key component (Paris Agreement Work Programme (PAWP)) to implement the climate action speedily and efficiently. For this there is a need of transparent system from both ends with proper guidelines on the following terms:

- Requirement of Fund
- Announcement of Fund
- Disbursement of Fund
- Utilization of Fund
- Accountability of both contributing and recipient countries
- Role of Multilateral Development Banks (MDBs)

The OECD report 2018 showed that the climate finance has been increased by 20% during the year 2013 to 2017. The Multilateral Climate Finance has been

increased from USD 15.5 billion to USD 27.5 billion i.e., 77.42 % by the developed nations to the developing nations.

On the other side the report depicted that there was a stability of the mix of grants to loans over the five-year period (2013 to 2017).

This represents that almost all the areas have received climate finance in increasing percentage during the last five years (2013 to 2017).

2.6 Report of Standing Committee on Finance 2018 Biennial Assessment on Climate Finance Flow

The Standing Committee on Finance⁷ has recommended the following points through the 2018 Biennial Assessment on climate finance flow:

Table 1: Climate finance flow

Year	Climate Finance (Type)	Amount (USD)
2014	High-bound climate finance	584 billion
2015	High-bound climate finance	680 billion
2016	High-bound climate Finance	681 billion
2015	MDBs Climate Finance	23.4 billion
2016	MDBs Climate Finance	25.5 billion
2017	MDBs Climate Finance	35.2 billion ⁸

⁷ <https://unfccc.int/sites/default/files/resource/51904%20-%20UNFCCC%20BA%202018%20-%20Summary%20Final.pdf>

⁸ <https://www.worldbank.org/en/news/press->

All the big organizations, developed nations and developing nations are working on climate finance to prevent the world from greenhouse gas emission and climate development. But, still the information towards disbursement, accounting and reporting of climate finance has not been taken systematically by the domestic climate-related finance, thereby preventive the important information.

3. Leadership and Commitment of the Financial Institutions in Creating Low Carbon Economy

Due to the present scenario of climate change, there is a need to do banking on the low carbon economy all over the globe. A low carbon economy helps to build the nation health, impel innovation, growth in productivity and in the overall growth of the economy.

Climate change is significantly affecting the health of the economy and the health of current and future generation. The policy maker and economist are focusing on this issue and alarming the need of climate control by developing a low carbon economy. To create a low carbon economy new funds and investments are required from the government and private sector as well. There is a need to give financing rewards and financial assistance to generate a low carbon economy.

In this response banks and the financial institutions should take the responsibility to innovate low carbon investment products and service. This will provide the

opportunity to the bankers, corporate and general public to contribute in the creation of a strong and successful low carbon economy.

Commitment and leadership of the banks will play vital role in creating a low carbon economy. Indian banks have already taken the initiative to form low carbon economy for the sustainable development.

The World Bank data represented that the developing countries needs US\$140 billion to US\$175 billion annually until 2030 to mitigate the climate change. The figures make it clear that hues amount of investment is needed to protect the climate. India is a strong and developing nation. The banking system of the nation is capable enough to take the challenge and provide support to control over the climate. Banks are now creating carbon portfolio and channelizing the investment in creating low carbon economy. The National Action Plan on climate change like National Solar Mission, National Mission for Enhanced Energy Efficiency, National Mission on Sustainable Habitat, and National Mission on Green India etc. provides an opportunity to the banks to formulate and develop new investment and funding instruments for low carbon economy.

3.1 Banks Commitments to Achieve a Low Carbon Economy

The Climate Group had convened a roundtable discussion in January 2009 for CEOs of financial institutions in India about the climate change and control. The discussion concluded that there was an

release/2018/06/13/mdb-climate-
finance-hit-record-high-of- us352-
billion-in-2017

imminent need for engagement with the Indian Banks' Association (IBA) and a larger cross section of banks to raise awareness on climate change⁹. The Climate Group has suggested the most effectual strategies to tackle the climate change.

Both IBA and Climate Group decided to work together in India and provided guidance and support to Indian financial system to generate low carbon economy. There are various initiatives have been taken by the Indian Banks like *Work on Climate Change with Commercial Advantage, Clean Development Mechanism (CDM), India's National Action Plan on Climate Change, Success Means Tackling Climate Change, Leadership Role and Financial Incentives* to spread the awareness and creating a low carbon economy.

A survey has been conducted by PricewaterhouseCoopers (PwC) to measure the performance of initiatives taken by the financial institutions in India for low carbon economy. The report concluded that more initiatives and involvement of banks are to control the climate change and clean future. Banks require mobilizing the financial resources in such a way that helps in to develop low carbon projects and infrastructures.

India is an active participant of two big climate change authorities i.e., UNFCCC and the Kyoto Protocol. The Clean Development Mechanism (CDM) has provided the following opportunities to Indian financial system:

- Reduce carbon emissions at a relatively low price through renewable energy projects and energy efficiency projects.

- Make money through creating and trading carbon credits through regulated carbon emission trading schemes.
- To get cheapest finance from developed nations to invest in emission reductions. The PricewaterhouseCoopers report has focused on the following points to find out the banking response towards sustainable development with low carbon economy in India: Key points of the Survey:

Banks have been surveyed and found the following interesting points:

Indian banks are focusing on tackling the climate change issue and included it in the list of *Top Ten Priorities Critical to success*. Various commercial banks took initiatives to promote the low carbon financing among the business community. Private bank like ICICI realized that sustainable development of the society is possible with the care of the environment and trying to support in this regard through participation in the Carbon Disclosure Projects, Corporate Environmental Stewardship Initiatives, and ICICI's Clean Technology Initiatives etc., which facilitate a transition to a low carbon economy. First solar-powered automated teller machine (ATM) has been initiated by a new generation IndusInd Bank in Mumbai, India. The project campaign name is "Hum aur Hariyali" as part of its Green Office. A "Green Office Manual" has been to prepared as a guidance for the sustainable practices in association with the Centre for Environmental Research and Education (CARE).¹⁰ IndusInd Bank playing a vital role for the sustainable development and to reduce the carbon footprint through

⁹ <https://www.theclimategroup.org/news/climate-change-and-finance-india>

¹⁰ [https://www.business-](https://www.business-standard.com/article/finance/indusind-bank-launches-first-solar-powered-atm-109122200191_1.html)

[standard.com/article/finance/indusind-bank-launches-first-solar-powered-atm-109122200191_1.html](https://www.business-standard.com/article/finance/indusind-bank-launches-first-solar-powered-atm-109122200191_1.html)

launching solar powered ATMs, thin computing, e-archiving, e-learning, e-waste management, paperless fax, energy conservation, CNG cars and also contributing finance programs with incentives to go green.

State Bank of India is the largest and oldest commercial bank in India and providing mass and efficient banking services to the country. Under the Green Banking Policy of the Banks, SBI is playing tremendous role to strengthening the nation's economy and environment and initiated the following steps to reduce the carbon footprint:

SBI is the first bank who has installed windmills for captive power consumption in the Indian Banking Industry in India.

- To promote renewable energy projects SBI is giving concessional interest rates and also provides separate incremental exposure limit for the renewable energy sector.
- Agreements with Multilateral/Bilateral Agencies for lines of credit for launching Rooftop Solar and other projects in the renewable energy space.
- Allocated money for Green Bond Projects (Renewable Energy- to include Solar energy, Wind Energy, Hydropower, Geothermal), Low Carbon Buildings- New Residential, New Commercial, Retrofit, Industry and Energy-Intensive Commercial- Energy Efficiency Processes, Energy Efficiency Products, Energy Efficient Appliances and Data Centres, Waste & Pollution Control- Recycling facilities, Waste to Energy, Sustainable Transportation Projects- Projects aiming at low energy or low emission transportation systems and infrastructure, including electrical vehicles, electrified mass transit

projects.¹¹SBI has given commitment to Govt. of India to finance viable renewable energy projects worth Rs 81,600 crore over the five year period (2015-2020).

- SBI has also started Green Remit Card and Green Channel Counter to do the financial transactions without/less paper work.
- Union Bank of India has also initiated annual audit for Electrical Energy for the environmental and economic benefit. The bank has installed solar water heaters at various facilities maintained by them to promote carbon reduction.

Environmental banking in India is very significant and IDBI lead the other banks by taking initiatives for financial support all possible Clean Development Mechanism (CDM) projects based on clean technologies like renewable, solar cell/module projects, co-generation, energy efficiency equipment's projects, etc.

The bank employees are engaged for tackling the climate change and sustainable development. Few bankers are also entitling with the "Climate Champions" for enhancing the investment in low carbon projects.

The sustainable finance is the need of today era, in this regard HSBC Climate Research a Centre of Excellence has been set up in 2007. The main aim of this center is to analyze the economic and climate risk and develop new financial opportunities to build a low carbon economy. There are three areas i.e., financing a 2°C world, climate policy and climate impacts on which HSBC Climate Research have focused. There are various internal and external factors like economic and marketing benefits, profitability, board influence, environmental benefits and competitive

¹¹
<https://www.sbi.co.in/portal/documents/44589/101>

996501/Green+Bond+Framework/5bb248cb-13bb-459d-88d6-ef6abdabdb35

advantage/new business opportunities that motivate banks for the enhancement of climate change activities.

In the segment of retail banking also banks have introduced climate and carbon business. 'Yes Bank' is to be considered as 'Yes Community' and the community has involved in clean and green drives, energy efficiency practices, workplace health and safety and the development of local disaster management plans.

4. Challenges Faced by Financial Institution in Developing Low Carbon Economy and Cash Flow of Carbon Finance

There is no doubt that the Indian banks have taken initiatives to create a low carbon economy. The Indian National Action Plan on Climate Change is dedicatedly working on the development of low carbon economy. For carbon emission Indian Government permitted a national trading scheme for carbon credits worth more than 750 billion rupees in 2015. The joint efforts of Indian National Action Plan on Climate Change and Indian Government facilitate a golden opportunity for the banking segment to proposed and make investment in low carbon and energy efficient projects.

Yet the progress achieved is quite unsatisfactory. Public sector banks are lacking behind in the process of creating low carbon economy in India. They are still restricted the investments in old era basis. Reserve Bank of India (RBI) has provided guidelines on Corporate Social Responsibility for banks and emphasized on the role of banks for climate finance. There is a need of much dedicated banking sector to make investment in the greening of five key sectors of the global economy: transport, energy, buildings, agriculture and

water for the sustainable economic recovery.

Both national and international banks have realized the urgency of the climate finance and they are trying to do the proliferation of policies and framework in this regard. India is a developing country with lots of unresolved issues related to population, pollution, poverty, politics, corruption, education, water, electricity, hunger etc., due to which the Government of India is not able to focus fully on the climate change.

To fight against climate change additional resources are required for the emission. Indian banks need to reframe the allocation of funds in the various projects with keep in mind the carbon financing. Carbon financing is not only the need of the country and it's a global requirement. Banks should give preference to the low carbon project after considering cost/benefit and generous effects. The participation of Indian Banks in the climate change mitigation and adaptation is the urgency; the negligence or delay in this will be tougher for the banks. There is a pressure on India for the emission as India is the world's fourth-largest economy in greenhouse gas emitter. In the path of low carbon economy Indian Banks have adopted wonderful policies but still lots of opportunities are available in this regard. There is a need to focus further to find the new low carbon opportunities.

In India the standard benchmarks and sufficient technical tools to assess the climate change risks are not available, that needs to be improved.

There is a need to do more focused Energy, Infrastructure and Transport emission. For those following points could be the part of emission:

- Maintain proper record of GHG inventory of operations.
- Formulate and implement policies for

procurement of energy from renewable sources.

- Reduce the transportation by creating policies like carpooling, video conferencing facilities to reduce inter-city commute, among others.
- To save energy by creating awareness such as switch off computers and other electric equipment's after use,
- Unsure that office spaces are having LEED certified buildings, that helps in saving the energy.
- The integration is required between climate issues and business activities. The business can participate in creating low carbon economy through innovate products with commercial, social and environmental benefit. R&D department could play a vital role in this regard and introduce new products that facilitate low carbon development and for these financial incentives could be the motivating factor.

Table 2: Flow of climate finance in India

Source: <https://climatefundsupdate.org/the-funds/>

Table 2 depicted that there are various Multilateral Funds have been pledged, approved, provided and collected under climate finance during the year 2015 to 2017. But, still there is a need of focused climate finance due to following reasons: 2018 Intergovernmental Panel on Climate Change (IPCC) has reported that the planet will be warmer in future due to current Global Warming of 1.5°C. There is an immediate need of climate investment in this regard to control over greenhouse effects. Climate investment helps to innovate and adaption of technologies and

protect the globe from dangerous conditions of climate change.

There is a requirement to save the earth and for this the whole world to have work together. This is the responsibility of the developed nation to support the developing nations in terms of finance and technology to protect the atmosphere from accumulated greenhouse gases over the last 150-200 years.

The UNFCCC scaled-up, new and additional, predictable and adequate funding are still inadequate and unfocused.¹² The data of Oxfam's Climate Finance Shadow Report 2018¹³ represented that during the year 2015-2016 the flow of public climate finance around \$48 billion has been disgustingly inflated. The actual disbursements of climate finance to the developing countries on a concessional basis through UNFCCC. The fresh and extra flows amounted to only \$2.2 billion in 2014, and not \$62 billion as claimed in an OECD Report, which is inaccurate and deficient. Article 6.4 of the Paris Agreement¹⁴, emphasized on the new sustainable development. This article represented that there should be standardized measures are used in the design and implementation of emission reduction activities. The achieved results should be verified and compared with the standards. In this regard private sectors should contribute major source of climate finance. But private sectors are more interested in the areas from where they can earn high return. Private sectors are less focused on investing climate finance as the risk is high and return will be less. Due to this the flow is limited by the

¹² <http://ies.gov.in/pdfs/climate-finance-myths.pdf>

¹³ https://d1tn3vj7xz9fdh.cloudfront.net/s3fs-public/file_attachments/bp-climate-finance-shadow-report-030518-en.pdf

¹⁴ <https://www.carbon-mechanisms.de/en/introduction/the-paris-agreement-and-article-6/>

private sector in this regard. The flow is inadequate from the developed nations and the developing nations are not having sufficient climate funds to take climate action. Even the big developing nations like India are having scarce climate funds. India's GDP in 2017 was Rs. \$2,602.31 billion¹⁵ at current prices and *as per the country's Nationally Determined Contribution (NDC) submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2015, at least \$2.5 trillion (at 2014 -15 prices) will be required to meet its 2030 targets*, Minister of State for Environment Mahesh Sharma said in a written reply.¹⁶ Now, there is a big question, *who will provide the required fund for taking climate action?* The finance flow should be unswerving with a pathway towards low greenhouse gas emissions and climate-resilient development. Both developed countries and developing countries are blaming each other on the ground that the other one is not taking their responsibilities properly. So, there is a need of measurement tool to measure the roles and responsibility of each and other party in regards to climate finance.

Trillions of Dollars are required to meet the climate finance requirements. Developed nations have committed for the improvement and sustainable climate finance. But the reality is different from the commitment in terms of scale and speed. No, the global warming is going beyond the control and it's a alarming time for the developed nations to open the eyes and arms to look and support the developing nations

to control over climate change.

4.1 Action Plan of India Against Climate Change

India best to their own capability is fighting against the climate change and has taken many actions in this regard. Prime Minister's Council in Climate Change, India, has given eight national action plans to promote understanding of climate change, adaption and mitigation of climate finance, energy efficiency and natural resource conservation.

4.1.1 National Solar Mission

There is a need of using non-fossil and renewable energy to control over climate change. India is significantly doing work on the enhancement of the solar energy, nuclear energy, wind energy and biomass. This will help in empowering the developing nations by providing cheaper source of energy. But India needs to do R&D in this regard and also required International Corporation for the sustainable growth of Solar Mission.

4.1.2 National Mission for Enhanced Energy Efficiency

The enhanced energy efficiency will help in saving the energy and reduce the cost of production. The saved energy could be uses in future.

¹⁵ IMF's World Economic Outlook Database, 2018

¹⁶ <https://www.indiatimes.com/news/india/india-needs-rs-16-27-12-50-00-00-00-000-to-meet-its->

2030- climate-change-targets-its-not-a-typo-341742.html

4.1.3 National Mission on Sustainable Habitat

This mission focuses on three main areas i.e., improvements in energy efficiency in buildings, management of solid waste and modal shift to public transport for the sustainable habitat. Due to high rate of urbanization in India there is a need to promote energy efficiency through urban planning and urban renewal through the above-mentioned components. The concept of solar buildings and energy conservation buildings are in progress in India. The more commercial buildings adopt this concept we will be able to save more energy for future. Another concept for the sustainable economic development is to protect the environment from urban waste with the recycling process or by generating power from the waste. The third component of the sustainable habitat is to save the consumption of energy by providing safe, clean, quick and convenient public transport facility to the mass. For this India need the support of developed nations in terms of technology and finance both.

National Water Mission

India's *National Water Mission* is made ensure to provide drinkable and useable water to each and every citizen of the country. Steps have already taken to in this regard by conserving the water, by minimizing the water wastage and recycling of the water. To control over the climate-change the rework is required in the strategies of storage of water, rainwater harvesting, saving river water, efficient irrigation (sprinkler irrigation, drip irrigation, water-neutral or water-positive technologies, ridge and furrow irrigation).

4.1.4 National mission for Sustaining the Himalayan Ecosystem

There is a need to sustain the peaks of

Himalayan. Under the National mission for Sustaining the Himalayan Ecosystem various steps have been taken by India like to maintain two third area of the mountain should be under the forest. This will protect the eco-system of Himalayan and we will be able to get fresh water. This will also help to protect the globe from global warming.

4.1.5 National Mission for Green India

National mission for green India is going to focus on the preservation of ecological balance and maintenance of bio-diversity by protecting the forests, this will also help in the carbon sinks. The Green India campaign target is to cover 33% of land area under the forest which is currently 23%. This mission is also going to makeover the degraded forest land with the joint action of Forest management Committees and Departments of Forest in state governments.

4.1.6 National Mission on Sustainable Agriculture

Indian agriculture is totally dependent on the climate. There is a need to make the Indian agriculture independent and tough to the climate change. This is possible if we are able to predict and evaluate the climate in advance and do the changes in agricultural practice accordingly. There is a need of collaborative efforts of experienced agriculturist, technologist, geo-specialist and financial institutions to improve the agriculture productivity.

4.1.7 National Mission on Strategic Knowledge for Climate Change

This mission asked to the global research community to do more focused research on climate change, impact of climate change on the agriculture, on the health, on the economy, on the water, on the global

warming, on the economy, on the forest, on the demography, on the people and animals etc. More research funds like Climate Science Research Fund should be provided to the researchers for quality research on climate change. This will help to spread the awareness and knowledge about the climate change and every one will try to protect the earth with in his/her on limits.

5. Conclusion

Carbon financing helps in the sustainable development of the society. The mounting truth of climate change enforces every economy to start creating low-carbon economy to save the future generation. To carry out this, a huge and momentous financial investment will be required. Indian financial sector has already taken the initiative like National Solar Mission, National Mission for Enhanced Energy Efficiency, National Mission on Sustainable Habitat, National Mission for Green India etc., but there is a need to accelerate the same. There are innumerable obstructions in this way like lack of finance, lack of support from developed nations, technical problems, clarity on climate and carbon policy, lack of knowledgeable support ecosystem, lack of effective and consistent financial regulation, lack of effective climate-related financial disclosures etc.

The current research work has focused on three aspects of climate finance: role of climate finance for creating low carbon economy, leadership and commitment of the financial institutions in creating low carbon economy, challenges faced by financial institution in developing low carbon economy and the flow of climate finance in India. It has been revealed that the efforts made till now to control over climate change are not sufficient and the

whole world has failed in creating low carbon economy. To overcome from all the mentioned obstacles in the way of creating low carbon economy, there is a need to develop a new model to control over climate change. This model should focus on various aspects of climate change and about the strategies to control over the same. This should be applicable to both developed and developing nations. Both policy makers and financial regulators collaboration is required for the creation and implementation of comprehensive low carbon policies. There is a need to assess the carbon risk related to a project in advance so that controlling measures can be taken at earlier stage. The financial system should focus on the progress of green projects.

For the carbon free sustainable development across collaboration is required between the nations, financial regulators, financial markets, policy makers and research communities, only then we are able to create low carbon economy with sustainable development.

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