



# THE EFFECT OF INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (NDCS) ON INDIAN ECONOMY AND SHAPING INDIAN ECONOMIC POLICIES FOR NET ZERO CARBON EMISSION

## 1. Introduction

Climate change is a major challenge for developing countries like Republic on India that face large scale climate variability and exposed to higher risks from climate change. Few countries in the world are vulnerable to the consequence of climate change as India is with its large population that is dependent on the growth of its agrarian economy by Larkin, A., Kuriakose, J., Sharmina, M., & Anderson, K. (2017). It also entails tradeoffs with economic growth and social development within the short run that needs to be factored in the policy matrix, where eradication of poverty is one of the foremost priorities.

A recent national socio-economic census indicates that economic and social deprivations are much higher in terms of availability of proper houses, access to education, lifeline availableness of energy, and stable sources of financial gain. This is higher in rural India where 48% of the households lacks fundamental socio-economic services and were categorized as disadvantaged sections. India also has the largest buffalo and cattle population in the world of approximately 300 million, which faces multiple challenges including Animal borne diseases, inadequate supply of fodder etc. as a result of changing climate.

India is having the challenge of sustainable rapid economic growth while fighting with the global threat of climate change. This threat emanates from accumulated green house gas (GHGs) Emissions in the atmosphere, anthropogenically generated through long term and intensive industrial growth and high consumption lifestyles in developed countries by Megan Mills-Nova. Diana M. Liverman. (2019). While engaged with the international community's to collectively and cooperatively deal with threats, india needs a national strategy to firstly, adapt to climate change and secondly, to further enhance the ecological sustainability of India's development path. Climate change may alter the distribution and quality of India's natural resources and adversely affects the livelihood of its people. With an economic closely tied to its natural resource base and climate-sensitive sectors such as agriculture, water and forestry, india may face a major threat because of the projected changes in climate.

## 2. Literature Review

Many Researchers were done Research on Importance of INDC Mercer, C. (2015), Pan, X., den Elzen, M., Höhne, N., Teng, F., & Wang, L. (2017), Mead, L. (2015), Which has give clear deep insights into the INDCs committed by various countries and its effect studied by Nielsen, T. D. (2014), Oxfam. (2015), Iyer, G. C., Edmonds, J. A., Fawcett, A. A., Rogelj, J., Reisinger, A., Mccollum, D. L., ... Chen, C. (2016). And financial gap is calculated by India's intended nationally determined contributions (UNFCCC2018), the paris agreement is vital for financial needs Morgan, J., & Northrop, E. (2017). So it's found that there is research gap influence between Indian economic growth and India's INDCs and how to shape Indian economic developmental policies for sustainable development.

## 3. Methodology

One of the best ways of understanding climate change mitigation actions is examining the official government reports published in Indian Government websites and which should be authenticated and trustworthy. The main study is to examine the climate adaptation efforts made by India. As per the methodologies suggested in UNEP Adaptation Gap Report 2017, these assessments can broadly be descriptive and evaluative in nature. The Descriptive assessment on the government reports to know their efforts to achieve the target committed to NDCs at UNFCCC and the evaluative Assessment on government fund spending on the climate change mitigation through economic policies and its sustainability part.

The data on climate mitigation strategies and its current development and fund resources allocated for such climate action collected from International organisation reports mentioned in Okereke, C., Bulkeley, H., & Schroeder, H. (2009). These data's where called as mitigation efforts. The mitigation strategies examined based on its aim and current development and the gap between final target and present achievement. This will bring true condition about bridging the gap. The funds allocated by various international organisations where collected and compared with amount sanctioned to know effective functioning fund resources redistribution. India's NDC's where observed from official Indian government statement reports and examine feasibility of such NDC's with stipulated time and available fund resources. The various achievement of India within 75 years of independence for enhancing climate mitigations observed thorough government reports and it's important to know how much it's contributed for a economic development through sustainable development policies. The ambitious targets by India through nationally determined contributions were observed to know how much it can add development value to the India@ 100.

The various target given to the state governments through state action plan on climate change to combat climate change where observed from official documents of the Indian government to know in how effectively co-operative federalism is working to attain sustainable development.

## 4. Data Study

### The study on India's INDCs

NDCs are the basis of India's climate actions post 2020. As regards the NDC, the public determination is inversely important as commitment part of NDC. India has honoured that its path of development must be one which places acceptable emphasis on all the three pillars of sustainable development, videlicet, profitable, social and environmental. Thus, as far as Indian NDC is concerned, it wasn't grounded on any temperature thing but was on a "best efforts base", keeping in mind the development imperatives of the country. India's NDC gives equal weightage to adaption and mitigation.

Keeping in view its development schedule, particularly the eradication of poverty conjoined with its commitment to following the low carbon way to progress and being sanguine about the uninfluenced availability of clean technologies and financing from around the world, India hereby declares its Intended Nationally Determined Contribution (INDCs) in response to COP decisions 1/CP.19 and 1/CP.20 for the period 2021 to 2030:

**Table No 1. Climate relevant finance availability assessment: Coverage**

Vision	Targets
Healthy And Sustainable Way Of Living	Traditions And Values Of Conservation And Moderation.
To Reduce The Emissions Intensity Of Its GDP	By 33% To 35% By 2030 From 2005 Level.
Non-Fossil Fuel Based clean Energy Resources By 2030	To Achieve 40% Cumulative Electric Power Installed Capacity across the nation.
Increasing Forest And Tree Cover By 2030.	To Create An Carbon capture mechanism Of 2.5 To 3 Billion Tonnes Of CO2 Equivalent
To Better Adapt To Climate Change By Enhancing Investments In Development Programmes	Water Resources, Himalayan Region, Coastal sustainability, Health and Disaster Management.

## Climate Finance

To effectively and efficiently achieve climate commitments, finance and technologies are the two significant enablers. Climate finance forms an essential part of any climate change deliberations. Various sources of financing have been an integral part of discussions to ensure an adequate availability of finance, particularly to the developing set of countries for effective management and implementation of climate action goals. In this regard, this study also undertook an availability assessment to understand the amount of climate relevant finance flows currently available in the country. This in turn would help to understand not just the currently available climate finance amount, but also assist to get an idea of the future provision of resources from these different sources.

**Table No. 2 Climate Fund Resources**  
**Climate finance availability**

International Resources	Domestic Resources
Multilateral Funds	Expenditure Budget Analysis
Multilateral Development bank MDBs	National Funds
Foreign Portfolio Investment (FPI)	Scheduled Commercial Banks
Foreign Direct Investment (FDI)	Venture Capital Funds
External Commercial Borrowings (ECBs)	Alternate Investment Funds
Rupee Denominated Bonds (RDBs)	Corporate Bonds and Green Bonds

As per the revised availability numbers at constant 2011-12 prices, the analysis shows the total finance availability is estimated to stand at ₹ 29.064 trillion (₹2,906,425 Crores), with the share of international and domestic finance at ₹ 9.026 trillion (₹902,652 Crores) and ₹ 20.037 trillion (₹2,003,773 Crores), respectively. As can be observed, the domestic spending on climate-oriented expenditure is much higher than the 'approved' finance coming in from most of the international

sources. It needs to be mentioned about this total estimate included the individual estimates of multilateral funds, MDB financing from the joint MDB reports, RDB, ECB , FPI, FDI, expenditure budget analysis, national funds, Scheduled Commercial Banks (SCBs), domestic private investments, and green bonds only.

The following projected important macro indicators are a reflection of India's future energy needs as the economy grows in the coming Decade:

**Table No. 3 Macro Indicators**

Indicator	India in 2014	India in 2030
Population (billion) a	1.2	1.5
Urban population (million)b	377 (2011)	609
GDP at 2011-12 prices (in trillion)c	INR 106.44 (USD 1.69)	INR 397.35 (USD 6.31)
Per capita GDP in US Dollar (nominal) c	1408	4205
Electricity demand (TWh)c	776(2012)	2499

Table No. 3 Source: a: Population Foundation of India; b: UN World Urbanization Prospects, 2014; c: Government of India

The total availability numbers were further utilized to make an attempt to forecast the future availability of climate finance. As the availability assessment numbers were spread across years, the total numbers were averaged down to obtain an annual estimate for 2011-12. The year 2011-12 was chosen as base year of calculations. This average estimate stands at ₹ 8711.47 billion. This in turn makes a 6.6 per cent share of 2017-18 GDP at current market prices. The GDP estimate used here was also deflated to the 2011-12 base as the average estimate has been obtained using numbers at 2011-12 constant prices.

### Gap Assessment

The allocation of public finances has been observed to follow an increasing rate over the years and with climate change gaining larger traction, future allocations and priorities could translate to a higher available amount. This could translate to higher pressure on the banking sector to increase their sustainable lending. Given the majority of current availability of climate finance stems from domestic sources, the available share in the future can be expected to grow from the public sector side. An increase in public financing, in turn, serves as a catalyst for private investors to diversify risks and enter the climate change arena. Further with an increasing stress on sustainable responsibilities and priorities in the corporate sector, the role of private sector can be expected to go up. International flows from MDBs, FDI, FPI etc. Are known to be greatly influenced by GDP growth rates and general macroeconomic environment in the country and thus can be expected to direct greater finance flows in the future.

## 5. Discussions

**The UNFCCC held in Glasgow India announced Panamrit Strategy which is India's INDCs, to deal with climate change:**

- India will reach its non-fossil installed electricity capacity to 500 GW by 2030.
- India will meet 50 percent of its electricity requirements from renewable energy by 2030.
- India will reduce the total projected carbon emissions by one billion tonnes from now onwards till 2030.
- By 2030, India will reduce the carbon intensity of its economy by less than 45 percent.

- e. By the year 2070, India will achieve the target of Net-zero.
- f. These panchamrits will be an unprecedented contribution of India to climate action.

The possibilities of achieving such INDCs were subjected to availabilities of fund to get it achieved within stipulated time. So there should be well build strategy to fill the gap by deficit funding by developed countries.

### **Possible options for gap coverage: exploring financial instruments**

The analysis in the above sections points out that availability of finance is the key pillar in enabling climate actions. This brings to the forefront the understanding of 3 essential “S” s of climate finance- Scope, Scale and Speed for global cooperative action on climate change. The gap estimates highlight the huge amount of finance that needs to be mobilized from both domestic and international sources. For a developing country like India, the amount of developmental expenditure will have an increase in the share of total domestic expenditure thereby increasing torsion on the available domestic sources of finance. The Paris Agreement will have to be implemented by the international community reflecting equity and the principle of Common but Differentiated Responsibilities. Global action on climate change can only be ensured through a timely and adequate amount of international public climate finance availability, sourced from efficient and innovative instruments by developed countries, and urgently address the gross finance gap which exists for successful implementation of NDCs.

### **Carbon Pricing Instrument**

Carbon pricing is essentially an instrument that ties the external costs of greenhouse gas (GHG) emissions, i.e. the cost of emissions that the public pays for, such as damage to crops, health care costs etc., to their sources through a pricing mechanism, usually in the form of a price on the carbon dioxide (CO<sub>2</sub>) emitted. It has gained worldwide popularity as a method to implement the ‘polluters pay principle’. There are two main types of prevalent carbon pricing mechanisms:

#### **a) Emission Trading Systems (ETS) –This is two types:**

- Cap-and-trade system that caps the total level of GHG emissions and allows those industries with low emissions to sell their extra allowances to larger emitters. Such a supply and demand system for emission allowances establishes a market price for GHG emissions.
- Baseline-and-credit systems where baseline emissions levels are defined for individual regulated entities and credits are issued to entities that have reduced their emissions below this level. These credits can be sold to other entities exceeding their baseline emission levels.

**b) Carbon tax** – A carbon tax, on the other hand, directly sets a price on carbon by defining a tax rate on the carbon content of fossil fuels i.e. a price per ton of carbon dioxide equivalent (tCO<sub>2</sub>e). It is different from an ETS as the emission reduction outcome of a carbon tax is not pre-defined, but the carbon price is.

Other mechanisms include

- a) Offset mechanism,
- b) Result Based Climate Finance (RBCF),
- c) Internal Carbon Pricing.

India does not have unique carbon tax. This fundamentally means that there is no formal policy on taxing carbon emissions, but there are taxes and duties that effectively related to a carbon tax, namely the Clean Environment Cess and the Excise duty on Petrol and Diesel. An initiation of a Voluntary Carbon Trading Platform can perhaps help to raise further financing through willing industries and international partners.

Theoretically, carbon pricing offers various benefits to different stakeholders in the economy. For governments, it serves as an instrument of climate policy as well as a source of revenue, reducing budgetary constraints. For businesses, internal carbon pricing helps to evaluate the impact of mandatory carbon prices on their operations and to identify potential climate risks and revenue opportunities. Finally, for long-term investors carbon pricing facilitates the analysis of potential impact of climate change policies on their investment portfolios, allowing them to reassess investment strategies and reallocate capital toward low-carbon or climate-resilient activities. These benefits also highlight the vital hold carbon rates have on the economic growth of a country. They have the capability to influence growth rates and may prove detrimental if not planned properly taking into account the national circumstances, resource endowments and rate of growth and stage of development of the economy.

Its important to know sustainable development goals as they are tools for making the world better place to live adopted by United nations to build sustainable livelihood by 2030. The NDCs and SDGs are totally interconnected and its linkages with basic needs of the society must be understood.

**Table No 4. Linkages between the NDC commitments, SDGs and Basic Needs**

NDC sectors	Climate impacts	SDGs	Basic needs
Water resources	Water scarcity	SDG 6 (Water availability to all)	Potable water
Agriculture	Food systems	SDG 2 (End hunger, food security)	Food and nutrition
Health	Health Impacts	SDG 3 (ensure healthy lives)	Health services
Himalayan region	Water scarcity, impact on liveability and quality of life	SDG 11 (cities and human settlements safe and resultant)	Housing
Coastal regions		SDG 6 (water availability to all)	Water supply and sanitation
Disaster management	Disasters	Part of SDG1 (No poverty)	Safety from disasters, relief in case of disasters
Overarching variables	Education	SDG 4 (Quality education) — affects overall adaptation capability	Education
	Income/poverty	SDG 1 (No Poverty) — affects overall adaptation capability)	Poverty alleviation

## 6. Conclusion

Given the gap between finance availability and finance requirements, implementation of wide-ranging NDC goals presents a major challenge for the developing countries as the finance is the critical enabler in ramping up these actions. India will endeavour to do its best for its climate actions. The current circumstances demand that the primary priority for India is adaption, being a country highly vulnerable to extreme weather events. Climate change impacts are expected to worsen with the due course of time because of the momentum due to present carbon stock continuing to increase the temperature. Hence, India's adaptation needs will have to be intensified and so the adaptation costs will increase. In short, Diversifying of climate actions in the Indian context means more adaption actions which would further require high resources to enable these actions. India is doing adaptation in mission mode. Hence it is very much essential that the resource distribution should also follow the prudent path based on the circumstances and priorities. India's adaptation actions warrant for intensive

domestic resources, while the mitigation actions would be a better playing field for the international finance flows. India should integrate the INDCs with Economic policies and Inclusive Developmental Framework to achieve its INDCs and bring Sustainable Environment when India @100. India can be a Global Leader to drive other nations with young talent usage towards environment sustainability.

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