INDIA'S RESPONSE TO INTERNATIONAL CLIMATE CHANGE NEGOTIATIONS: COPENHAGEN TO PARIS 2009 – 2015

Lily Pandeya

Roll No. 4527

(A dissertation submitted for the degree of Master of Philosophy in Social Sciences of the Panjab University, Chandigarh)

Under the guidance of

Prof. Vinod K. Sharma

45th Advanced Professional Programme in Public Administration

INDIAN INSTITUTE OF PUBLIC ADMINISTRATION, NEW DELHI

2019 – 20

CERTIFICATE

I have the pleasure to certify that Ms. Lily Pandeya has pursued her research work and prepared the present dissertation titled "***India's Response to International Climate Change Negotiations: Copenhagen to Paris 2009 - 2015"*** under my guidance and supervision. The dissertation is the result of her own research and to the best of my knowledge, no part of it has earlier comprised any other monograph, dissertation or book without proper citation. This is being submitted to the Panjab University, Chandigarh for the degree of **Master of Philosophy in Social Sciences** in partial fulfilment of the requirement for the Advanced Professional Programme in Public Administration (APPPA) of Indian Institute of Public Administration (IIPA), New Delhi.

I recommend that the dissertation of Ms. Lily Pandeya is worthy of consideration for the award of M. Phil degree by the Panjab University, Chandigarh.

Place: New Delhi
Date: March 2020

(Dr. V. K Sharma)
Supervisor & Faculty
Indian Institute of Public Administration
I.P Estate Ring Road,
New Delhi, 110002

DEDICATION

This work is dedicated to my husband, Manish Pandeya,

for his love and companionship.

ACKNOWLEDGEMENTS

I place on record my gratitude to the 45th APPPA course of Indian Institute of Public Administration for affording me the opportunity to pursue my interest in international climate change negotiations by way of this study.

I am sincerely grateful to my research supervisor, Prof. Vinod K. Sharma, for his constant encouragement and support throughout the writing of this dissertation. His invaluable observations and comments helped me develop my ideas and concepts. I cherish his guidance and friendship.

I am deeply indebted to Sri. R. R. Rashmi, former Special Secretary in the Ministry of Environment, Forest & Climate Change, Government of India, and currently, Distinguished Fellow and Programme Director, Earth Science and Climate Change in The Energy & Resources Institute, New Delhi, for his sharp insights that helped me acquire fresh perspective and cleared many of my doubts; Sri. R. S. Prasad, Additional Secretary, Ministry of Environment, Forest & Climate Change for his highly informative conversation on the contours of Indian participation in international negotiations 2013 onwards; Sri. Sanjay Vashisht, Director, Climate Action Network South Asia, for his priceless inputs and expert advice on the subject, and for graciously sharing his resources and permitting their use in this study; Ms. Urmi Goswami, senior journalist with Economic Times for her incisive account, especially on the role of India's principal negotiators during the Conference of Parties that she attended from 2009 to 2015; and, the researchers and library staff of Centre for Science and Environment and IIPA for helping me locate the right articles and material for this work.

I am beholden to Dr. Aditi Madan, Associate Fellow (Communications & Research), Institute for Human Development, for being a very precious support and a great sounding board. She helped me develop the structure and format of the study apart from creating the timeline and Conference of Parties highlights, which are appended to this work. Her knowledge, clarity and inputs have been extremely helpful.

I can never thank my family and friends enough for their unwavering support, care and understanding, and our beagle Bertie, for being such a delightful distraction.

ABSTRACT

Global climate change is an imminent and defining issue of our times. The last decade of the 20th century saw the emergence of a robust scientific opinion that anthropogenic greenhouse gas emissions augment the natural greenhouse effect, potentially altering the planetary life irreversibly. Its characteristic features – interplay of human and physical systems, inherent uncertainties, direct involvement of core socio-economic and political stakeholders, steep cost of mitigation, adaptation and associated trade-offs – make it one of the most complex issues ever faced by the world community. The UNFCCC 1992 established the process of dialogue among the governments as efforts coalesced to seek the most optimal policy prescriptions and action plans by way of the Kyoto Protocol 1997, and subsequently the Paris Agreement 2015.

India has always been deeply vulnerable to climate impacts owing primarily to its rainfed agrarian economy, long coastline, and large swathes of impoverished population lacking in capacity to fend off or adapt. Therefore, the success or failure of international efforts to stem climate change is highly consequential to India. However, the phase from 1992 – 2007 was marked by remarkable consistency in its negotiating stance and strategy due primarily to the preponderance of its twin national objectives of poverty eradication and economic development through industrialization. Championing the cause of the developing nations, India emphatically advocated the principles of equity, climate justice, historical responsibility, CBDR & RC and polluter pays, and ensured their inclusion in UNFCCC and Kyoto Protocol.

Evidently, there were fundamental changes in Indian climate policy trends and discourses between Copenhagen Accord 2009 and Paris Agreement 2015, two major decision points in the climate treaty negotiations. Within a short span of time, India successfully navigated the distance between idealism and pragmatism, from being a 'naysayer' to being hailed as a 'part of the solution.' Shifts in India's approach to climate negotiations, saw the issue assume greater political salience and visibility. The national framing of the climate threat and the politics of policy formulation furnish an important opportunity to explore the clusters of images and venues associated with it. This study

attempts to map the factors that shook the equilibrium – first, by ascertaining the aspects of climate policy narratives that changed; and second, by identifying factors that enabled this change. Through the theoretical concepts of the Punctuated Equilibrium model, the narrative emphasizes the role of policy images and venues, and factors fostering the positive feedback mechanism that sustained the impulses of change. The role of the stakeholders such as the civil society advocacy groups, the industry and the media have been assessed to ascertain their influence in informing the shifts in India's climate strategy.

Policy punctuation occurred in the face of the changing underlying fundamentals. Domestically, India's development aspirations, critical need for energy access and security to sustain its economic growth, and formulation of comprehensive climate mitigation and adaptation strategies, formed the basis for its tilt towards the 'co-benefits' paradigm and concomitant flexibility in its negotiating stance. Internationally, with the new found status of an 'emerging' economy, India found itself aligning proactively with new coalitions and negotiating blocks to fulfil its desire to play a strategically important role in the new global order. However, it is increasingly clear, that with a greater level of conversation on climate change, India's climate policy equilibrium has been altered for all times to come.

TABLE OF CONTENTS

LIST OF FIGURES

ABBREVIATIONS

AF	Adaptation Fund
AGBM	Ad Hoc Group on Berlin Mandate
AOSIS	Alliance of Small Island States
APEC	Asia – Pacific Economic Cooperation Forum
AR 4, 5	Assessment Report 4, 5
BAP	Bali Action Plan
BASIC	Brazil South Africa India & China
CANSA	Climate Action Network South Asia
CBDR & RC	Common but Differentiated Responsibilities & Respective Capabilities
CDM	Clean Development Mechanism
CEEW	Council on Energy Environment and Water
CFC	Chlorofluorocarbons
CH4	Methane
CII	Confederation of Indian Industry
CJN!	Climate Justice Now
CMP	Conference of Parties to the Kyoto Protocol
CO2	Carbon Dioxide
COP	Conference of Parties
CS	Civil Society
CSE	Centre for Science & Environment
CSS	Centre for Study of Science
DoE, US	Department of Energy, United States
DP	Durban Platform
EC	European Economic Community
ECCC	Executive Committee on Climate Change
EDF	Environmental Defence Fund
ENGO	Environment Non-Governmental Organizations

ENSO	El-Nino Southern Oscillation
EPA, US	Environmental Protection Agency, United States
EU	European Union
FAR	First Assessment Report
FICCI	Federation of Indian Chambers of Commerce and Industry
G 7, 8, 20, 77	Group of 7, 8, 20, 77
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GHG	Greenhouse Gases
ICSU	International Council of Scientific Unions
IEA	International Energy Agency
INC	Intergovernmental Negotiating Committee
INDC	Intended Nationally Determined Commitments
IPCC	Intergovernmental Panel on Climate Change
IRAD	Integrated Research and Action for Development
IREDA	Indian Renewable Energy Development Authority
ISA	International Solar Alliance
JUSSCANNZ	Japan, US, Switzerland, Canada, Norway and New Zealand
KP	Kyoto Protocol
LCA	Long term Cooperative Action
LDC	Less Developed Countries
LMDCs	Like Minded Developing Countries
MEA	Ministry of External Affairs
MEF	Major Economies Forum
MOEF	Ministry of Environment and Forest
MOEFCC	Ministry of Environment, Forest & Climate Change
MRV	Measurement Reporting & Verification
N2O	Nitrous Oxide

NAM	Non Aligned Movement
NAMAs	Nationally Appropriate Mitigation Actions
NAPCC	National Action Plan on Climate Change
NAPs	National Adaptation Plans
NASA, US	National Aeronautics & Space Agency, United States
NDC	Nationally Determined Commitments
NGO	Non-Governmental Organizations
NMEEE	National Mission on Enhanced Energy Efficiency
NRC, US	National Research Council, United States
NRDC	Natural Resources Defence Council
OECD	Organization for Economic Co-operation & Development
OPEC	Organization of the Petroleum Exporting Countries
PA	Paris Agreement
PE Model	Punctuated Equilibrium Model
PMCCC	Prime Minister's Council on Climate Change
QUELROs	Quantified Emissions Limitations and Reduction Objectives
REDD	Reducing Emissions from Deforestation & Forest Degradation in Developing Countries
RF	Radiative Forcing
SAR	Second Assessment Report
SBSTA	Subsidiary Body for Scientific and Technological Advice
SPM	Summary for Policymakers
SWCC	Second World Climate Conference
TAR	Third Assessment Report
TERI	The Energy & Resources Institute
TGSC	Tata Global Sustainability Council
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Program
UNEP	United Nations Environment Program

UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
WCP	World Climate Program
WGI, II, III	Working Group, I, II, III
WMO	World Meteorological Organization
WRI	World Resources Institute
WTO	World Trade Organisation

GLOSSARY

BASIC Ministerial Meetings

The BASIC countries are a bloc of four large newly industrialized countries namely, Brazil, South Africa, India and China formed by an agreement on November 28, 2009. The four countries committed to act jointly at the Copenhagen climate summit, including a possible united walk-out if their common minimum position was not met by the developed nations.

Petersberg Climate Dialogue

The Petersberg Climate Dialogue was launched in 2010 at the initiative of the German Chancellor Angela Merkel with the goal of creating a space for close and constructive exchanges among environment ministers of different nations. It has contributed to climate policy successes in recent years.

BRICS

BRICS is an association of five major emerging economies: Brazil, Russia, India, China and South Africa. It was originally grouped as BRIC before the induction of South Africa in 2010. The main objectives include cooperation between the member countries for development, providing financial assistance, supporting various projects, infrastructure etc.

Conference of Parties

Conferences of Parties (COP) are yearly formal meetings held in the framework of the UNFCCC to assess progress in dealing with climate change.

Copenhagen Accord

The Copenhagen Accord (COP 15) drafted by the United States and the BASIC countries is not legally binding and does not commit countries to agree to a binding successor to the Kyoto Protocol, whose round ended in 2012.

Intergovernmental Panel on Climate Change

Intergovernmental Panel on Climate Change (IPCC) is an intergovernmental body of the United Nations established in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP). It is dedicated to providing the world with objective, scientific information relevant to understanding the scientific basis of the risk of human-induced climate change and possible response options.

Kyoto Protocol

The Kyoto Protocol is an international treaty adopted in Kyoto, Japan, on 11 December 1997 committed to the objective of the UNFCCC to reduce the onset of global warming by reducing greenhouse gas concentrations in the atmosphere to "a level that would prevent dangerous anthropogenic interference with the climate system".

Least Developed Countries

The Least Developed Countries (LDCs) is a list of developing countries that exhibit the lowest indicators of socio-economic development, with the lowest Human Development Index ratings of all countries in the world according to the United Nations.

Like Minded-Group of Developing Countries

The Like Minded-Group of Developing Countries (LMDC) is a group of developing countries acting as a block negotiators in international organizations, representing more than 50% of the world's population.

Major Economies Forum

Major Economies Forum (MEF) on Energy and Climate aims at facilitating dialogue among major emitting countries, both developed and developing, to garner the political leadership needed to advance efforts against climate change. The 17 major economies include Australia, Brazil, Canada, China, the EU, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russian Federation, South Africa, the UK and the US.

Paris Agreement

The Paris Agreement is an agreement within the UNFCCC, dealing with greenhouse-gas-emissions mitigation, adaptation, and finance, signed in 2015. It's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise below 2°C above pre-industrial levels and to limit the temperature increase.

United Nations Framework Convention on Climate Change

United Nations Framework Convention on Climate Change (UNFCCC) is an international environmental treaty adopted on May 9, 1992 and opened for signature at the Earth Summit in Rio de Janeiro from 3rd to 14th June 1992. It entered into force on March 21,1994 after a sufficient number of countries had ratified it. The UNFCCC objective is to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."

CHAPTER ONE

"It's the biggest, most complicated, and most interesting issue that we've ever faced, I think outside of blowing ourselves off of the face of the Earth. Climate change is the single most important issue economically, politically, socially, diplomatically – I mean it's got everything involved in it."

~ Timothy Wirth, Under Secretary of State for Global Affairs, US, 1993 – 97.

Background

Global climate change is an imminent and defining issue of our times. The last decade of the 20th century saw the emergence of a robust scientific opinion that the global climate is changing at an unprecedented rate. According to the global warming theory, anthropogenic greenhouse gas (GHG) emissions augment the natural greenhouse effect, warming the planet beyond acceptable levels. If unmitigated, this could irreversibly alter the planetary life. While there is a general consensus that greenhouse effect is a necessary and continuing factor in the global climate system, the extent of anthropogenic contribution to the phenomenon has been a matter of continuing scientific investigation. Most of the anthropogenic emissions accrue from agriculture and combustion of fossil fuels, processes that lie at the very heart of modern industrial development. Measures to stem emissions require an overhaul of the global systems of production, consumption, and energy use.

Climate change is the 'prototype of the global commons' since all the nations are affected by the global climate system. The potential socio – economic impacts of climate change and redistributive consequences of the mitigation criteria make it one of the most complex issues ever to face governments. International cooperation and concerted policy

action are imperative for any endeavour to tackle the problem making climate diplomacy a staple of international relations in recent times. Though several of its features militate against easy and coordinated policy action, there has been hardly any lag between the emergence of the issue on national and international policy agendas in 1992 and consolidation of the international resolve to address the issue in the form of United Nations Framework Convention on Climate Change (UNFCCC) and the several treaties fostering global climate governance regimes concluded within its Conference of Parties (COP) system, notably the Kyoto Protocol, 1997 and the Paris Agreement, 2015.

Climate Change – Scientific Basis

Climate change refers to change in global temperatures over a period of time due to natural variability or human activity. The climate system is a complex interactive system consisting of the atmosphere, land surface, snow and ice, oceans and other bodies of water, and living things. The term 'climate' usually refers to the atmospheric component of the climate system and is often defines as 'average weather'. It is described in terms of mean and variability of temperature, precipitation and wind over a period of time, ranging from months to several years, the 'classical period' being 30 years (Le Treut and Somerville, 2007.) Climate system evolves in time under the influence of its own internal dynamics and due to changes in external factors, or forcings, that affect climate. External forcings include natural phenomenon such as volcanic eruptions and solar variations as well as anthropogenic changes in the atmospheric composition.

Solar radiation powers the climate system. There are three ways of changing the radiation balance of the earth: by changing the incoming solar radiation, i.e. by changes in

the earth's orbit or the sun itself; by changing the solar radiation that is reflected or the 'albedo' by changes in the cloud cover, atmospheric particles or vegetation; and, by changing the longwave radiation from earth back towards space i.e. by altering the greenhouse gas concentrations. Nearly 30% of the solar insolation that reaches the top of the atmosphere is reflected back into space and roughly two thirds of this reflectivity is due to clouds and aerosols. Remaining one third is reflected by the light-colored areas of the Earth's surface – snow, ice and deserts. Aerosols typically influence the climate for a short duration of a week or two. However, aerosols projected high into the atmosphere due to volcanic activity have the potential to remain in it for a year or two before falling into the troposphere through precipitation. Major volcanic activities have thus been known to cause a drop in the global surface temperature by up to about half a Celsius.

The energy that is not reflected back into space is absorbed by the earth's surface and radiated by it to balance the incoming energy. Some of the gases in the atmosphere, significantly carbon dioxide (CO_2) and water vapor, are pervious to the electromagnetic short-wave solar insolation that is absorbed by the planet's surface. This energy is then released into the atmosphere in the form of long wave infrared radiations which are trapped by these gases and spread isotropically. Everything on earth emits longwave radiation continuously. This geophysical process is called the greenhouse effect, and the gases that reabsorb and emit the infra-red waves are known as the greenhouse gases. The greenhouse effect causes surface warming making the planet habitable. It has sustained water in liquid form on Earth's surface, thus providing an essential substrate for biological evolution of life.

Due to earth's shape as a sphere and its rotation, energy is transported from the equatorial areas to the higher latitudes via atmospheric and oceanic circulation, including storm systems and migrating low- and high-pressure weather systems and their associated cold and warm fronts. Changes in the various aspects of the climate system, such as the size of the ice sheets, the type and distribution of vegetation or the temperature of the atmosphere or ocean will influence the large-scale circulation features of the atmosphere and the oceans. There are several feedback mechanisms in the climate system that either amplify or diminish the effects of change in climate forcing, called the positive and negative feedback processes respectively. For instance, the 'ice-albedo' feedback loop – rising concentration of GHG gases cause the melting of snow and ice sheets revealing darker land and water surfaces which in turn absorb more solar heat leading to more melting – leads to amplification of the initial warming.

For thousands of years the concentrations of the GHG like CO_2, nitrous oxide (N2O), and methane (CH4) in the atmosphere, and hence the planet's radiation balance, have remained fairly constant. However, in the past two centuries, by-products of human activities including industrialization and agricultural expansion have enhanced the concentration of atmospheric greenhouse compounds. It is estimated that the CO_2 in the atmosphere has increased by about 35% in the industrial era primarily due to combustion of fossil fuels and removal of forests. The anthropogenic emissions amplify the natural greenhouse effect, leading to a rise in average surface temperatures and resultant shifts in the weather related phenomenon. The prospect of these abrupt changes have captured public attention and reshaped global environmental politics and diplomacy.

In the context of climate negotiations, climate change refers to a change in climate "attributed directly or indirectly to human activity that alters the composition of the atmosphere and which is in addition to the natural variability observed over comparable time periods" (UNFCCC, 1992, art. 1).

One of the characteristic features of climate science is the inability of the scientists to perform controlled experiments on the planet as a whole and observe results. However, over time there has been increasing advancement of research and refinement of scientific methodology and tools in the field.

It is stated in 'Historical Overview of the Climate Change Science', IPCC 4th Assessment Report (AR4) that between 1965 and 1995, the number of articles published per year in atmospheric science journals tripled (Greets, 1995); climate science literature grew exponentially between 1951 and 1997 (Stanhill, 2001); and, the level of sophistication of climate models incorporating numerous aspects of climate system, from deep oceanic circulation to stratospheric chemistry among others, grew manifold with each successive Intergovernmental Panel on Climate Change (IPCC) report. Climate science today is an interdisciplinary synthesis of tested and proven physical processes and principles painstakingly compiled and verified over several centuries of detailed laboratory measurements, observational experiments and theoretical analysis.

The first high accuracy measurement of atmospheric concentration of CO_2, constituting the master time series documenting the changing composition of the atmosphere, was carried out by Charles David Keeling in 1958 at the Mauna Loa observatory in Hawaii, US. The significance of Keeling's work lies in the fact that apart

from providing a true measure of global carbon cycle, it also provides an effective continuous record of combustion of fossil fuel. The data maintains the accuracy and precision to allow for separation of carbon abundance due fossil fuel emissions from those due to natural annual cycle of atmosphere, biosphere and ocean. Such data in conjunction with the analysis of the composition of air enclosed in bubbles in ice cores from Greenland and Antarctica demonstrate that "From 10 kyr before present up to the year 1750, CO_2 abundances stayed within the range 280 ± 20 ppm (Indermühle et al., 1999.) During the industrial era, CO_2 abundance rose roughly exponentially to 367 ppm in 1999 (Neftel et al., 1985; Etheridge et al., 1996; IPCC, 2001a) and to 379 ppm in 2005 (Section 2.3.1; also Section 6.4)." There has also been an increase in the atmospheric abundances of two other major GHGs, CH4 and N2O. It is stated that the peak abundance is much higher than seen over the last half-million years of glacial-interglacial cycles, and "the increase can be readily explained by anthropogenic emissions." Several synthetic halocarbons (chlorofluorocarbons (CFCs), hydrofluorocarbons, perfluorocarbons, halons and sulphur hexafluoride) are greenhouse gases with large global warming potentials. These have been produced and leaked into the atmosphere by the chemical industry since the 1930s. The ice core research has shown that these compounds did not exist in ancient air (Langenfelds et al., 1996) and thus confirms their industrial human origin.

The realization that the Earth's climate might be sensitive to the atmospheric concentration of GHGs has evolved over a period of the past century. Svante Arrhenius in 1895 predicted that a 40% increase or decrease in the atmospheric abundance of the trace gas CO_2 might trigger the glacial advances and retreats. In 1938, G. S. Callendar solving a

set of equations linking greenhouse gases and climate change found that doubling of atmospheric CO_2 concentration resulted in an increase in the mean global temperature of 2°C, with considerably more warming at the poles, and linked increasing fossil fuel combustion with a rise in CO_2 and its greenhouse effects. Similar observations were made by other scientists including Ahlman in 1947 and Plass in 1956. While studying the carbon cycle science, Revelle and Seuss in 1957 explained that part of the emitted CO_2 would accumulate in the atmosphere rather than being completely absorbed by the oceans. This postulation was corroborated by IPCC's Third Assessment Report (TAR, Sections 7.1, 7.3 and 10.4) which stated that interaction of climate change with the oceanic circulation and biogeochemistry was projected to reduce the fraction of anthropogenic CO_2 emissions taken up by the oceans in the future, leaving a greater fraction in the atmosphere. It was in the 1970s that other GHGs like CH4, N2O and CFCs were identified as anthropogenic GHGs. Around this time, the role of atmospheric aerosols as climate-forcing constituents was also established. Charlson et al. in the 1990s linked the increases in the sulphate aerosols with anthropogenic burning of fossil fuels and emission of CO_2. Thus the current knowledge of the atmospheric constituents driving climate change contains a diverse mix of greenhouse agents.

Earth's climate is characterized by several modes of variability involving atmosphere, biosphere, cryosphere, and oceans. Understanding the physical processes is crucial to improving science's ability to accurately predict climate change allowing for the separation of natural and anthropogenic variability. Therefore a central quest of the climate scientists has also been to determine how human activities have influenced the dynamic

nature of Earth's climate and to identify what would have happened without any human interference.

Throughout the 19th and the 20th centuries, several geomorphological and palaeontological studies provided new insights into earth's past climates. Milankovitch's (1941) astronomical theory of climate change stressed on modifications in the geographical and temporal patterns of solar energy reaching the Earth's surface due to changes in the Earth's orbital parameters. Paleoclimatic research of deep-sea cores suggested that the ocean temperatures may have been different during glacial times. The study of deep ice cores from Vostok in Antarctica provided key information about past climates, including surface temperatures and atmospheric chemical composition. This discovery drove research to understand the causal links between greenhouse gases and climate change. Episodes of abrupt climate changes, or regional events of large magnitude, necessitated the study of other sources of climate variability. The emerging picture of an unstable ocean atmosphere system even opened the debate of whether human interference through greenhouse gases and aerosols could trigger such events (Broecker, 1997 p. 107.)

The study of solar variability and total solar irradiance inferred that the variation in solar emission of light and heat due to changing patterns of sun spots and faculae could affect the earth's climate. However, IPCC's TAR stated that more research to investigate the effects of solar behaviour on climate would be needed to state the magnitude of solar effects on climate with certainty. The Working Group I (WGI) of First Assessment Report (FAR) codified the key physical and biogeochemical processes in the Earth system that relate a changing climate to atmospheric composition, chemistry, the carbon cycle and

natural ecosystems making a clear case for anthropogenic interference with the climate system.

Research on aerosols as climate forcing agents having indirect effects on cloud properties and hence radiative forcing (RF), extended beyond sulphates to include nitrates, organics, soot, mineral dust and sea salt in the 1990s. Quantitative estimates of sulphate aerosols and carbonaceous aerosols from biomass burning were recognised. Studies of cryosphere i. e. ice sheets of Greenland and Antarctica, tropical glaciers, snow, sea ice, river and lake ice, permafrost and seasonally frozen ground and cryospheric albedo in effecting climatic changes have a long history. The potential cryospheric impact on ocean circulation and sea level and of permafrost-climate feedbacks are of particular importance. Permafrost thaw due to warmer climates leads to release of the trapped CO_2 and CH4 into the atmosphere. As CO_2 and CH4 are GHGs, atmospheric temperature is likely to increase in turn, resulting in a feedback loop with more permafrost thawing. Climate modelling results have pointed that global warming signals are amplified in high-latitude regions due to which the potential for permafrost thawing and consequent greenhouse gas releases is large.

Advances have been made in the study of strength and variability of global-scale ocean circulation to investigate its role as "passive recipient of climate forcing" or a "diagnostic consequence of climate change" or "a contributor." The interactions between atmosphere and ocean circulations have been studied in depth specially in the context of understanding the 'El Niño-Southern Oscillation (ENSO) phenomenon.'

Climatologists construct complex mathematical representations of the atmosphere by way of 'equilibrium climate models' to gauge the effects of changes in the atmospheric composition. These climate models offer generalized scenarios of the potential changes. Most models indicate that at the current levels of greenhouse emissions, the global mean temperatures would rise rapidly within the next few decades and the consequences would be potentially catastrophic. Climate systems display an inherently non-linear behaviour and climate scenarios rely upon the use of numerical models to evaluate future climate changes and these have evolved over time. However, despite the undeniable progress the amplitude of cloud feedbacks for instance are highly uncertain. Intercomparison of existing models and ensemble model studies are undergoing rapid development and have seen marked improvement from IPCC's FAR to the TAR.

Climate Change – Features and Policy Implications

In the context of climate negotiations, climate change refers to a change in climate "attributed directly or indirectly to human activity that alters the composition of the atmosphere and which is in addition to the natural variability observed over comparable time periods" (UNFCCC, 1992, art. 1).

Climate change has proved to be an extremely knotty issue for the policymakers. Several of its aspects militate against easy solutions and policy prescriptions. It is crucial to understand some of the complexities surrounding the issue as they significantly affect the scope of governmental response.

Climate change epitomizes the idea that "everything is related to everything else" (Skolnikoff, 1990). Greenhouse emissions are intimately connected to a vast array of

human activities related with energy, industry, transport, food production, and patterns of consumption and resource use. Industrial development was engendered by fossil fuels and continues to draw sustenance from it. Emissions are further shaped by policies affecting technological innovations, economic development, population growth, and lifestyle choices.

The issue involves interplay of the human and physical systems, each with inbuilt inertia, and where fundamental changes are very slow and difficult to obtain. Addressing climate change requires multipronged action by diverse individuals and institutions at all levels of public and private sectors. The actions range from intensified scientific research, technological innovations, better environmental education, heightened environmental awareness, and major changes in corporate and consumer behaviour. This implies a direct involvement of core socio-economic and political stakeholders and virtually all governmental ministries and international organizations. The sheer breadth of such interests, "overlapping jurisdiction, differing agendas and priorities, varying knowledge and influence, and competition for budgets and power" (Skolnikoff, 1990) make coordinated policy tough to achieve. The associated trade-offs and interaction of multitudinous interests suggest that the chosen policies may produce significant unexpected consequences.

Uncertainty is the central feature of climate change. Climate science is rife with uncertainties regarding chemistry of the atmosphere, nature of the feedback processes, and sinks of greenhouse gases. The IPCC acknowledges scientific "uncertainties in our

prediction" and states that the "complexity of the system is such that we cannot rule out surprises" (Houghton, 1997, p. 157.) Scientific uncertainties pose major policy dilemmas.

First, scientific framing of the issue implies that scientists can be found on either side of the issue unless there is unambiguous and monotonic evidence of a phenomenon. The impressions of an unsettled dichotomous debate between believers and contrarians, and the media projection of the same, confound public and policy actors. Second, climate models deal with inherently chaotic behaviour of the climate systems. The inexactitudes complicate the measurement of current state of climate change and inferring of future trends from the available data for devising optimal policy strategies. Third, the climate issue is symptomatic of "part of a continuing struggle to convert contestable science into prudent policy" (Hempel, 2006, p. 285.) This is seldom smooth, especially in the face of tentative scientific consensus inimical to the "crystallized objectives of interest group politics" (p. 289.) Fourth, the scientific uncertainties are large, contentious and slow to be resolved. As a result, the policymakers may opt to bound the uncertainty, reduce the uncertainty or incorporate the uncertainty into policymaking. Each of the options works against precipitate policy action. Fifth, the politics of "need for action" begins with scientific risk assessment and concludes with a political judgment about "acceptable risk" (p. 290.) There are few parallels that exhibit dependence of policymakers on scientists, especially if there are significant uncertainties and differences of opinion.

It is not possible to identify a strict causal relationship between greenhouse build-up and individual climate episodes, or predict the actual incidence, timing and location of such episodes at the present levels of knowledge. Anecdotal reporting of extreme weather

variability may be the policymakers' best indicators of global climate entering a phase of rapid transitions. Economists like Nordhous contend that measures just to stabilize the greenhouse concentrations in the atmosphere may involve investments upward of "$30 trillion in discounted income over a period of 1985-2105" (Lee, 1995, p. 5) comparable to a "no controls" policy. Others calculate costs in terms of impacts under "business as usual" scenarios ranging from 1-1.5% of gross domestic product (GDP) for developed countries to 5% of GDP for developing countries (Houghton, 1997.) Studies show that given the momentum in the system, emissions control may only slightly retard the warming. Moreover, the time horizons of policy intervention must necessarily be long and spaced out. Even small mitigation measures require committing large amounts of resources in the present when the benefits may not be realized for decades. Both too much investment with few known benefits, and too little in the face of calamitous outcomes, are imprudent policy decisions. Cooperation on environmental issues can only yield intangible benefits of avoiding an uncertain harm in the future whereas governments have more interest in pursuing short term economic welfare and obtaining concrete results.

The climate change issue has global dimensions. Emissions from "all sources from all countries" (Baumert & Kete, 2002, p. 4) contribute to greenhouse concentrations. No nation can solve the issue unilaterally, nor can it insulate itself from the consequences of another's actions. This very characteristic necessitates global cooperation for curtailing emissions. The difficulties in reaching agreements in climate negotiations are deep rooted. There are huge disparities among nations in terms of their cumulative and per capita emissions; vulnerability to the potentially irreversible and unevenly distributed impacts of

climate change; and their capabilities to adjust or cope with the impacts. Energy is germane to every nation's economy and nearly 80% of all anthropogenic emissions ensue from burning of fossil fuels (Chasek et al., 2006.) These facts raise moot normative concerns about who should bear the costs and what should be the equitable bases on which the national targets are set. For instance, should the criteria be "variations in historical and cumulative emissions," "ability to bear the biggest burden," or "current total and per capita emissions" and so on (Brown, 2002, p. 10.) There are profound differences between the developed and the developing world in terms of causes, consequences, and national priorities vis-à-vis climate change. The former are responsible for at least 63% of all anthropogenic CO_2 while the latter house 80% of the population and contribute only 37% of the anthropogenic CO_2 (Baumert & Kete, 2002.) Disparities in emissions reflect the uneven distribution of the sources of energy and patterns of energy use in the world. The developing countries face urgent problems like poverty alleviation and public health and safety. They are reluctant to put additional burden of paying for the alleviating measures on their economies citing their minimal role in creating the problem in the first place. The inclusion of developing countries in any agreement would entail bargains like provision of additional funding, expansion of development assistance, and transfer of technologies from North to South among others.

From an economist's perspective, global environmental problems, including the climate problem, are a result of unpriced inputs and "resource misallocation caused by externalities" (Baumert & Kete, 2002, p. 11.) Any international agreement must involve participation by all parties to overcome the incentives for free-riding. Countries are linked

through international trade in goods and services. Actions by one country, say lax environmental regulations as covert protection, may lead to loss of economic competitiveness by another. To meet the needs of its stakeholders, a climate protection treaty must include "provisions for controlling GHG emissions, managing economic costs, and promoting accountability, among other things" (Baumert & Kete, 2002, p. 1.) Since climate change is a crescive problem, the treaty design needs to be innovative, flexible, and equipped with features to accommodate the findings of continuing scientific research.

Due to economic and scientific uncertainties, the perceptions of the problem would remain in a state of flux. International negotiations need to be sequential, "from an initial position where there is no cooperation between countries to a full cooperative equilibrium" (Ulph, 2001, p. 6.) Discussing the architectural requirements of an international climate treaty, Ulph opines that even though a "coalition of all countries" will be beneficial for all, a "stable coalition would still be small" (p. 3). Ulph, however, also points out that the hypothetical models for international agreements do not take into account the time-path of emissions and ignore the uncertainties about the extent of damages. Given the various asymmetries among the states in terms of their dominant domestic politico-economic interests, cost benefit analyses, and different perceptions of equitable solutions to the pressing environmental issues, some are more motivated to join an international agreement than others. Legitimate differences in economic, political and social interests among states jeopardize the chances of a strong consensus required for concerted international action. The ability of any state to block or weaken multilateral agreement is an important impediment to reaching international consensus.

Climate change thus is as much an economic, political, and diplomatic challenge, as a techno-scientific one. In the face of widespread uncertainties miring the problem, the governments can opt for three alternative courses of action: "wait-and-see" approach that would advocate reducing uncertainties prior to cost effective response, emphasis on research, and postponing programmatic investment; adaptation, or investing in technologies that would facilitate adjusting with the impacts of climate change as and when they emerge; or mitigation initiatives, which would be credible measures to stabilize atmospheric greenhouse concentrations, reduce greenhouse emissions, and enhance the sinks of greenhouse gases (Lee, 1995.) Recognizing that fact that climate change has serious socio-economic and human costs that cannot be solved by singular decisions of states, the international efforts have tended in the latter direction. The implementation of cost-effective mitigation strategies could slow the rate of greenhouse build-up, provide additional time to improve our understanding of the climate system, and, promote sustainable development. This basic idea gave impetus to the international negotiations that resulted in UNFCCC and the subsequent Kyoto Protocol 1997 and Paris Agreement 2015.

Global Environmental Politics – Concepts and Principles

For a proper appreciation of the global efforts to combat climate change, it is important to briefly review some of the characteristics of global environmental politics; environmental policy norms; and, concepts employed in international environmental negotiations.

Global environmental politics may be defined by two dimensions: the environmental consequences of the economic activity, and the state and nonstate actors

involved (Chasek et al., 2006.) If the actors and the consequences transcend national boundaries, it is considered a global environmental issue. Global environmental problems are a result of externalities or unintended consequences of one's action that are borne by others. These externalities are akin to Hardin's "tragedy of the commons"; commons being defined as "natural resources and vital life support services that belong to all humankind rather than to any one country" (Chasek et al., 2006, p. 13.) The global climate system is representative of the "commons." All sectors of the international community and institutions are engaged in addressing the various aspects of global environmental issues. Nations have multiple combinations of political and economic interests that influence their environmental policies.

One of the distinctive features of global environmental politics is the importance of veto power, or states whose cooperation is critical to a successful agreement. Veto power is not entirely indicative of a state's international political or economic prowess. The relative strength of domestic economic and bureaucratic forces as well as environmental constituencies determines whether a state would lead, support, or veto an international environmental regime. A veto power cannot be coerced into compliance and is strong enough to withstand the pressures from otherwise more powerful states. Also, the military strength of a state has no bearing on its position and outcomes of bargaining. Global environmental politics does not give rise to hegemonic powers. The decentralized overarching international political system affords sovereign states freedom to act on their definitions of national interest. Another typical feature of global environmental politics is that public opinion and the national and international nongovernmental organizations have

a "substantial if not decisive influence on the outcomes of global bargaining" (Chasek et al., 2006, p. 16.)

A coordinated effort towards action on environmental issues takes the form of an international regime which establishes "principles, norms, rules, operating procedures, and institutions" (Chasek et al., p. 16) to regulate action and adopts legal instruments or conventions. Global environmental problems are considered within "framework convention-protocol approach." This allows the Parties to first define the "normative scope of a formal instrument in a very general language" (Davenport, 2006, p. 2) with stated intent and provision for future protocols containing specific obligations.

Some of the most important concepts and principles predicating the international environmental policies tend to be abstract and subject to a variety of interpretations (Soroos, 2004). The "most influential" and one of the widely used concepts is that of *Sustainable Development*. According to the Brundtland Commission sustainable development refers to development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987: 8). It is the overarching vision that that seeks to reconcile the aspirations of the peoples for economic development in ways that do not significantly degrade the natural environment upon which human civilizations depend. The vision of sustainable development offers humanity a sense of direction and a challenge to devise new strategies of development that harmonize economic and environmental goals.

The *principle of Prevention* requires states to exercise their sovereignty over natural resources in a manner which ensures that activities within their jurisdiction or control do not significantly damage the environment beyond their territorial boundaries. This principle is intrinsic to a core preference in international law for preventing environmental harm rather than compensating for harm that has already occurred. The prevention principle is well established as a rule of customary international law, supported by relevant practice in many environmental treaties and major codification initiatives.

The precept of *Precautionary Principle* is a response to a growing recognition that prompt international action is often needed to effectively address emerging threats to the environment. As expressed in Article 15 of the Rio Declaration on Environment and Development adopted at the 1992 Earth Summit, the precautionary principle provides that "where there are threats of serious or irreversible damage, lack of full scientific uncertainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation" (United Nations Conference on Environment and Development, 1992). The significance of this principle is that it encourages an anticipatory rather than reactive approach to environmental problems.

Under the *Polluter Pays principle*, the states are required not only to take measures against environmental pollution, but also to cooperate on liability regimes. This norm has a firm legal basis as a principle of law deriving from a variety of legal sources, including treaties and regional customs, particularly in Europe. The polluter pays principle is expressed in Principle 16 of the Rio Declaration, regional instruments and texts drafted by civil society.

Under the *Common Heritage principle*, certain natural features and archaeological treasures like the seabed (Convention on the Law of the Sea 1982); moon and the celestial bodies (Moon Treaty 1979); Grand Canyon and the Taj Mahal (Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972) and global environment should be looked upon as the common heritage of humanity (Myers, 1979.)

The *concept of Ecological Security* invites comparisons of the seriousness of environmental threats with other types of perils, including military ones that have traditionally been the focus of security studies. The concept has been interpreted in two ways – first, resource scarcities and environmental stresses increase the likelihood of tensions that may lead to armed conflict either within or between states. Thus, environmental degradation becomes a threat to military security; second, environmental changes may be looked upon as a direct threat to human health and well-being. Thus environmental security can be enhanced either by reducing human impacts on the environment or by enhancing the capacity of states and communities to adapt or cope with environmental changes (Soroos, 1994; 1997.) A Pentagon report argues that "climate change should be elevated beyond a scientific debate to a US national security concern," which eclipses the threats to global security posed by terrorism. The report warns that abrupt climate changes within the next twenty years could bring trigger nuclear conflict, mega-droughts, famine, and widespread rioting across the world (Townsend and Harris, 2004.)

The *principles of Environmental Justice and Human Rights* call attention to how lower income and working-class people, as well as racial minorities, have borne a

disproportionate share of harms resulting from pollution and other forms of environmental degradation. Internationally, the high consumption life styles of the industrial countries cast what Peter Dauvergne (1997) refers to as "ecological shadows" on the environments of developing countries through activities such as resource extraction and international trade in toxic wastes. The principle of environmental justice is closely related to a growing recognition that people have environmental rights because a polluted and degraded environment jeopardizes the enjoyment of other human rights, such as the right to health, and accordingly to life itself, one of the most fundamental of all human rights (Trinidad, 1992.)

The *concept of Environmental Democracy* is generally constituted by the principles of access to information, participation in decision-making and access to environmental justice. The specific requirement that States should make environmental information held by public authorities available to the public is expressed in foundational instruments of international environmental law, United Nations instruments, regional instruments and texts drafted by civil society. The specific requirement that States should ensure effective and affordable access to administrative and judicial procedures to challenge the acts or omissions of public authorities or private persons that contravene environmental law is expressed in Principle 10 of the Rio Declaration.

The framing of *Cooperation as a principle* of international environmental law through the adoption of supplementary instruments and norms by conferences of parties serves the progressive development and dynamic evolution of treaty law. The states are required to contribute to the conservation, protection and restoration of the integrity of the

Earth's ecosystem. This entails an obligation to cooperate in good faith and in a spirit of global partnership towards the fulfilment of this objective. The concept of cooperation is vital to the objective of preventing the degradation of the environment and human health that may be caused by certain dangerous activities and substances, particularly with respect to developing States.

The *principle of Intergenerational Equity*, a logical extension of the concepts of sustainable development, the precautionary principle, and environmental justice, indicates the ways in which conflicts can arise between generations and the ethical responsibilities that they have to one another (Soroos, 1976.) International agreements acknowledge the imperative of conserving the environment for future generations, including those that are not yet able to speak up for their interests.

The *principle of Common but Differentiated Responsibilities and Respective Capabilities* developed from the application of equity in general international law. In the Rio Declaration, the principle of common but differentiated responsibilities refers to instances where developed countries have contributed more to the environmental problem at stake and have greater capacity to respond to the environmental challenge. Multilateral environmental agreements ensuring participation of all states, operate with categories of developed and developing country parties, with substantively stronger obligations for developed and less onerous obligations as well as entitlements to financial, technological or capacity-building support for developing country parties and parties with economies in transition.

The *principle of Non-regression* is relatively new to the field of environmental law is based on the idea that once a human right is recognized, it cannot be restrained, destroyed or repealed. Non-regression aims at ensuring that environmental protection is not weakened, while progression aims at the improvement of environmental legislation, including by increasing the level of protection, on the basis of the most recent scientific knowledge. The Paris Agreement 2015 is explicit in this regard and provides, in article 4, paragraph 3, that each successive nationally determined contribution "will represent a progression beyond the Party's then current nationally determined contribution and reflect its highest possible ambition" (Paris Agreement, 2015, art. 4.)

Principles Enshrined in the UNFCCC

A characteristic feature of international environmental regime formation is the development of legal norms and doctrines that serve as policy guides for more concrete standards. The principles of intragenerational and intergenerational equity imply equitable utilization of earth's resources between societies and generations. They espouse an obligation to decrease disparities in standards of living of the majority and that the present generation should meet its needs without compromising the ability of the future generations to do so. The Convention endorses the notion of equity again in the principle of "common but differentiated responsibilities and respective capabilities" (UNFCCC, 1992, art. 3.1). It incorporates the "leadership principle," implying that while all countries have the common responsibility of protecting and ameliorating the environment, the "developed country Parties" should take the lead and greater burden for doing so. This principle is based on the consideration that developed countries have and continue to pollute more than the

developing countries. Additionally, the same standards may lead to "disproportionate or abnormal burden" (art. 3.2) on the developing countries. This also has the echoes of the "polluter pays" principle based on the notion that the cost of environmental degradation should be borne by the Party producing or specifically benefiting from such an activity.

The Convention alludes to a precautionary approach based on the idea that lack of scientific certainty should not preclude effective policy measures to check environmental degradation especially if there is threat of irreversible damage (art. 3.3). The Convention promotes sustainable development by stating that "Parties have a right to and should promote sustainable development" (art. 3.4). Sustainable development balances the fulfilment of human needs with the protection of natural environment. This concept incorporates procedural and substantive elements. The substantive aspect includes right to social and economic development, efficient use of natural resources, and minimization of environmental impacts. The procedural aspect reckons environmental considerations to be integral to developmental policymaking. The Convention states: "Policies and measures to protect the climate system . . . should be appropriate for the specific conditions of each Party and should be integrated with national development programs, taking into account that economic development is essential for adopting measures to address climate change" (art. 3.4.) UNFCCC encourages "a supportive and open international economic system" and, forestalls "arbitrary or unjustifiable discrimination or a disguised restriction on international trade" (art. 3.5.)

Climate Change – Impacts on India

An understanding of the potential impacts of climate change on the prospects of the nation is a necessary point of ingress to comprehending its climate policy, politics and response to international negotiations. Although it is tough to call out a one on one correspondence between specific climate events and anthropogenic forcing of climatic forces in the context of a nation or a region, and the science of attribution studies is still an emerging one, studies have shown the likely impacts of climate change in India. India's high vulnerability to climate impacts has perhaps been the most important factor shaping its approach and actions both domestically and internationally.

Based on the observations recorded by the Indian Meteorological Department during the period 1902 – 2010, the all India annual mean surface temperature appears to have increased by 0.6 °C, most of which is seen in the pre-monsoon and winter seasons (Rajeevan & Naik, 2017.) Similarly, the sea surface temperatures in the oceans around India have also risen by 0.6 °C in the past fifty years with the largest increase around the equatorial Indian ocean. The number of heatwaves in the pre – Monsoon period has shown an increasing trend. In the period from 1975 – 2005, the number of hot days (defined as days with maximum temperature in the top ten percentile) increased from 2 to 20 in the West coast of India while simultaneously the number of cold days decreased by 10 (Srinivasan, 2019.) The annual average all India rainfall does not show any significant trends but the regional trends such as in Kerala and Chhatisgarh have suffered a declining trend in rainfall. This is evidenced in the increasing number of floods and droughts in different parts of the country. The total cloud cover during the Monsoons has declined from

72% to 66% during 1959 – 2009 and the area under drought has increased from 10% to 20% (p.39.) There has been a noticeable shift in the distribution of rainfall towards more extreme rainfall events. There has also been a decrease in winter snowfall in the Western Himalayas between 1990 and 2010. Retreat of glaciers which are largely responsible for the world's fresh water supplies and their melting can exacerbate the sea level rise is another major impact of warming. In the Indian Himalayas the small glaciers of area less than one square kilometer have been retreating at a rapid pace. In the Chenab basin the area of the small glaciers has diminished by 38% while that of the large glaciers by 12% between 1964 and 2004. It is feared that many small glaciers in the Himalayas may disappear completely in the next fifty years (p.37.) Rise in sea levels due to rising sea surface temperatures threaten the lives in coastal and deltaic regions of West Bengal and Gujarat. Deterioration in the air quality standards and climate change pose further challenges.

The current climate models are still not sophisticated enough to provide durable insights on regional climate feedbacks and projections of regional hydroclimate variability. However, the prediction of the future climate trends in India through the climate models indicates an increase of surface air temperature by 2 – 4°C. A rise of temperature by 0.5 to 1.5°C can have an estimated 2 – 5% decrease in the yield potential of wheat and maize (p.40.) It is also said that the yield of crops can decline by as much as 50% when the ground level ozone is very high. The increase in surface temperatures and changes in rainfall patterns would have a huge impact on vector borne diseases. The adverse impacts of climate change are likely to be felt more acutely in India than many other nations due to our high population density, large numbers of people inhabiting the coastal regions, larger

spatial and temporal variability of rainfall and a sizeable number of people lacking the means to adapt to climate variability.

The science of extreme weather attribution has emerged as a field of climate research in the past few years (Achuta Rao, 2019.) The attribution studies typically rely on 'fingerprint' that is unique to different drivers of climate change with the main purpose of separating what is natural from what is human induced (p.48.) After taking all possible sources of uncertainty into account the findings of such studies point towards the fact that the observed warming is attributable to anthropogenic factors with a very high level of confidence. The three published attribution studies in India relating to record breaking heat in Rajasthan in 2016, a large-scale heat wave in Andhra Pradesh in 2015 and massive Chennai flooding in 2015 point to how climate change may not be the major player in two out of the three events (p.58.) However, the authors quickly add that the sample of attribution studies in India are very small and has to be read in conjunction with the broader global literature that finds global warming playing a substantial role in extreme weather events world-wide.

Touching upon the fact that the complex social and climate systems are intertwined and operate within the context of changing agrarian realities, gender relations and caste dynamics, Nagraj Adve provides an interesting analysis of ethnographic and documentary material to present a qualitative narrative of how the people experience and negotiate climate change in different parts of India. In the Sundarbans delta straddling between Bangladesh and India and home to 4.3 million people, 1.5 million of whom live below the poverty line, there is evidence of coastal erosion, salt water intrusion, inundation of habitats

and large-scale displacement of people towards inland. Farmers in these areas have resorted to cultivation of salt tolerant varieties of rice as a part of their adaptation strategy. This intensifies the vulnerability of the people who barely manage to sustain at the subsistence level without any access to electricity or health care facilities. Adve calls the Sundarbans delta the "proverbial canary in the coal mine" for India (Adve, 2019, p.68.)

Due to the rise in the temperatures by 1.19°C in the period from 1901 – 2014 in the Hindukush Himalayas, there has been an upward shift in the flora and the fauna. Similarly, the drastic decrease in the snowfall and precipitation in Kashmir valley and Himachal Pradesh adversely affect the water availability in the streams and rivers during the summer months. The water crisis affects women the most in these areas. The incident of cloud burst and incessant rain in the June of 2013 in Uttarakhand was attributed to 'anthropogenic forcing of climate system' by Bulletin of the American Meteorological Society (p. 73.)

Thus, the effects of climate change on India have been severe and uniformly negative. The weaker sections of the society including the women have been most vulnerable to the impacts. The palpable shifts in the climatic patterns and their deleterious effects in the day to day life of the common man in India help transform the abstract idea of climate change negotiations into a perceptible reality.

Climate Change – India's Position

India has historically played an important role in global environmentalism and has been a critical actor in the negotiations of various global climate regimes under the FCCC. Home to 1.3 billion or a fifth of humanity, India is also the third largest emitter of GHGs – in 2015, India's total GHG emissions were 3,202 million metric tons of carbon dioxide

equivalent (MtCO2e) or 6.55% of global GHG emissions (Global Climate Change, 2020) although in per capita terms it was extremely low at 2.7tCO2e, around a seventh of the US and less than half of the world average of 7.0tCO2e (Home, Carbon Brief, 2020.) The majority of India's emissions (68.7%) are produced by the energy sector including transport, industry and residential consumption; followed by agriculture (19.6 %); industrial processes (6%); land-use change and forestry (3.8%); and, waste disposal (1.9 %.)

Constructive engagement with the international climate debate is fundamental to India since as a country it remains deeply vulnerable to climate impacts; its overriding priority of poverty eradication sets it on a developmental trajectory which cannot remain innocent of climate change concerns; and, climate change features prominently in India's engagement with the global community with significant implications for its economy and foreign policy. The duality in India's position of simultaneously being a large current and future emitter of GHGs and yet bearing no historical responsibility for the phenomenon to which it remains highly vulnerable, means that India occupies a unique role in global climate politics. Understandably, broad swaths of interests within the nation have legitimate stakes in the national and international policy responses by the Indian government. As a result, the international climate negotiations have generated an important political and policy discourse, ranging from advocacy to repudiation.

Over the course of the three decades of international climate negotiations, the Indian narratives have been primarily moored along risk – responsibility, development – environmental protection, North – South binaries rooted in the ideas of equity and climate

justice. Despite the broad consistencies and continuities in its negotiating positions, India has rapidly transitioned from a protest voice on the fringes of global climate policy to the one that is actively shaping international efforts to combat climate change.

The bedrock of India's negotiating position in the various phases of international climate change treaties can be broadly understood thus:

- **1990 – 2008 {UNFCCC 1992, Kyoto Protocol 1997}:** During this phase India's negotiating position was enmeshed in the North – South debate attributing the historical responsibility of precipitating the climate crisis to the development path followed by the North; issues of equity for developing countries; protection of its space for socio – economic development while simultaneously pushing developed countries to take stringent action and greater onus for mitigation under the principle of Common but Differentiated Responsibilities and Respective Capabilities (CBDR & RC). This intellectual tradition prioritised economic development, poverty eradication, energy sufficiency and importantly, to resist call to arms for climate action.
- **2009 – 2015 {Copenhagen Accord 2009, Paris Agreement 2015}:** This phase is characterised by notable shifts in India's climate policy due to strong economic growth impulses; formation of Brazil, South Africa, India, China (BASIC) grouping as advanced developing economies as distinguished and different from G 77 and expectations on these countries to take lead in influencing outcomes of global climate governance; and acceptance of the position that developing countries should participate in global mitigation effort on voluntary basis in line with their capabilities. Prior to COP 15 at Copenhagen, India announced its National Action Plan on Climate Change

(NAPCC) 2008 setting a voluntary target to reduce emissions intensity of its GDP by 20 – 25 % against 2005 levels by 2020 and never exceed the per capita emissions of the Annex I countries.

This was a far cry since Kyoto where India had vehemently refused any notions of voluntary commitments. Additionally, the interregnum between Copenhagen Accord 2009 & Paris Agreement 2015 unravelled the rapidly disintegrating firewall between North & South for climate action laying foundation for a new global agreement applicable to all, marking a significant shift in global climate politics with no mention of historical responsibility, per capita emissions, or economic development as priority for developing countries.

In the final version of Intended Nationally Determined Commitments (INDC) submitted in October 2015, India committed to installing clean energy capacity equivalent to 40% of total installed electrical capacity in the country by 2030; pledged to reduce carbon intensity of its economy by 33 – 35 % by 2030 compared to 2005 levels, and announced a goal to install carbon sinks worth an additional 2.5 to 3 billion tons of CO2 equivalent through additional forest and tree cover by 2030. In COP 21 culminating in the Paris Agreement 2015, India accepted the 1.5°C reduction target potentially closing gates on the logic of permissible carbon emissions from late industrialising nations such as itself in absence of more stringent emissions reductions from developed countries. India also launched global solar alliance on the side lines of COP 21 and is aggressively pushing for the expansion of its renewable energy program. Prime Minister Modi's announcement in 2014 of the domestic goal of 175 GW of renewable energy by 2022, is demonstrative of

India's muscular leadership in global climate action. Also, India quickly ratified the Paris Agreement to help bring it into force without insisting on developed countries first fulfilling their pre 2020 commitments under Kyoto Protocol 1997.

Evidently, there has been a steep inflection in India's traditional negotiating stance as an initial naysayer to targets and commitments on climate mitigation to 'all hands on deck' approach at COP 15 Copenhagen and beyond. It signifies a paradigm shift in policy narrative from economic development as a competing interest with environmental protection to an active participant in the process voluntarily accepting the mitigation targets.

Thesis Framework

Aims and Objectives

While there has been a significant analysis of the climate narratives in India and India's shift in the negotiating position over time, there is little analysis of the motives behind this shift. India's departure from strict differentiation between developed and developing countries in global climate governance regime towards a loosely differentiated regime, beg the following research questions:

1. What factors motivated the changes in India's negotiating positions?;
2. Reasons for the timing of these shifts?; and,
3. What forces drove and shaped India's climate policy narratives at all levels?

To fully understand India's actions, the analysis purports to attempt the following:

- To study the dominant policy images and narratives dotting the Indian climate debate.

- To assess the significance of venues in issue framing and their bearing on the nature of political and policy response and key issues and processes.
- To explore the role of principal actors – Negotiators, Policy actors, and Civil Society advocacy groups in sustaining the policy images.

The chosen timeline (2009-2015) represents a yeasty period in the Indian conversation on climate change and affords an interesting survey of the generation and outcome of India's climate policy dynamics vis a vis concomitant international developments.

The study employs a mixed research strategy and an exploratory, descriptive research design. To answer the research questions posited above, the study delves into the relevant secondary literature texts of the UNFCCC, Kyoto Protocol 1997, Copenhagen Accord 2009 , Paris Agreement 2015, IPCC reports, NAPCC 2008, INDCs, White Papers, Government Policy documents and Submissions to the COP/ UNFCCC; speeches made by prominent leaders/ participants/ negotiators/ other actors during the climate negotiations; relevant books, articles and presentations in the national and international journals and fora; analysis of media reportage in leading national English language newspapers. Interviews were conducted with few experts and climate negotiators, policy makers, media persons, academics and research scholars, and prominent civil society advocacy groups in order to understand their perspectives around climate change negotiations.

Methodology

The study tries to understand the origin and evolution of the Indian climate policy in the context of international climate negotiations between 2009 and 2015 utilizing the concepts of the 'punctuated equilibrium' model of analysis to track the policy images,

venues and the influence of forces setting off positive feedback mechanisms during this phase of climate policy development.

Public policy is never a discrete, unitary phenomenon and its analysis entails treatment of critical issues with tools of systematic enquiry. Policy relevant information may be interpreted in various ways depending on the frames of reference, or the policy paradigm, employed. Policy analysis generates critical information about the ways in which problems are defined since this ultimately determines the search and identification of appropriate solutions. Policy analysis is carried out through various models which are theoretical and conceptual constructs that envelope assumptions, values, and practices constituting a way of viewing the creation and application of public policy. Models help identify important aspects of policy issues, and the logic and variables involved in policy development and change. They indicate long term policy trends as well as short term cycles of policy actions.

The 'Punctuated Equilibrium' (PE) proposed by Baumgartner and Jones (1993) posits that political world is never at equilibrium; points of stability are created and destroyed at critical junctures throughout the process of issue development; and, a single process can explain the interplay of forces of stability as well as change. To elucidate the functioning of the PE model, Baumgartner and Jones have developed the concepts of policy monopoly, images, venues and feedback mechanisms. Policy monopoly can be understood as policy subsystems or dominant policy community that construct hegemonic interpretations of policy issues and solutions. They have the ability to control the interpretation of issues and the way they are deliberated, and thus manipulate the policy

"image." Policy images are an admixture of "empirical information and emotive appeals" that frame and define the issue and thus determine the way in which a given policy is understood and discussed (Baumgartner & Jones, 1993, p. 25.) How the issue gets defined has an important bearing on the nature and the eventual outcome of the conflict.

Policy venues are institutions, or groups of institutions, having the authority to make decisions concerning the policy issue. Jurisdiction over the resolution of the issue is granted to an institution depending on how the issue comes to be understood. Each venue carries with it a specific decisional basis and policy entrepreneurs constantly search for favourable venues to make their case for policy action. The dynamic interaction between the policy image and venue may produce forces of stability as well as of rapid change. When policy images are in a flux, policy venues or institutional jurisdictions can be expected to change, thus also changing the terms of the debate. When venues are "tightly controlled," the likelihood of image changes diminish. Political systems display characteristics of both negative and positive feedback processes but the two do not operate simultaneously for the same issue. Negative feedback processes induce stability and incrementalism in public policy. Here, shocks introduced to the system are effectively dampened by self-correcting homeostatic mechanisms to restore the system's balance. Positive feedback processes with their momentum, bandwagon effects, thresholds and cascades have the potential of effecting dramatic and unpredictable changes to public policy. Positive feedback mechanisms therefore accentuate rather than counterbalance a trend. Baumgartner and Jones state that policy punctuations are a function of positive feedback mechanisms.

Application of PE model for study of environmental policies has been justified on the grounds that environmental policy arena contains several high profile policy initiatives and appears to be a "fertile ground" for search of positive feedback processes that can create new dynamics and upend policy stability (Baumgartner, 2006.) Environmental policies tend to be conflictual as there are powerful symbols and significant contests associated with policy outcomes on all sides. Ideologically, environmental protection is pitted against economic development and the proposed policy nostrums involve trade-offs between the two. Also, the environmental policies have not been known to develop in steady incremental fashion but in "fits and starts" (Repetto, 2006.)

The theoretical concepts of the PE model have been employed for analysis in this study since they can comprehensively deal with the circumstances of Indian policy developments in response to international climate negotiations. Accordingly, the analysis identifies the policy images that the climate discourse acquired; locates the venues where this issue played out; and, infers the elements of the feedback mechanism that shaped the climate policy in our period.

Rationale

In order to appreciate the changes in India's response to different stages of the international climate negotiations, it is imperative to assess the national framing of the challenge posed by climate change and the proposed mitigation efforts; appreciate the linkages between the domestic political processes and the international policy; and analyse the key issues, actors, and significant events that have informed the Indian position. This study is an effort at understanding the dynamics of India's response to international efforts

at addressing climate change in decades since it became a problem par excellence. It looks at the climate policy pursued by India within the context of international climate treaty negotiations between Copenhagen Accord 2009 to Paris Agreement 2015.

The uniqueness of this study lies in the fact that it attempts to situate the Indian climate politics in the context of international negotiations and gauges India's response at the vital decision points. Evolution of scientific consensus, the fundamental norms and principles of global environmental politics, and crystallization of international response by the way of the framework convention and the COP process from 1992 to 2008, serve as the background to understanding the complexities and the changing context of climate negotiations.

India's stance and postulations internationally and climate policy developments domestically are studied in detail between 2009 and 2015, the period which noted an inflection in India's long held positions. The manifest changes in the policy images, the venues where the issue got reconfigured and the factors that sustained the positive feedback mechanisms that sustained the changes are analysed through the theoretical tools of the PE model of policy analysis.

Thesis Organization

The thesis is organized into four chapters. The first chapter contains Introduction, Statement of the problem, Research objectives, Rationale, Research Question, Research Design & Literature Review; description and the scientific basis of the phenomenon of climate change, its major characteristics in terms of their policy implications; precepts of international environmental law predicating climate regime formation and the normative

principles enshrined in the UNFCCC as these form the basis of international climate negotiations. The second chapter presents a chronological account of emergence of scientific consensus, formation of IPCC, UNFCCC and the COP process, and international climate negotiations from 1990 to 2008 to serve as a background for the contextual understanding of India's response to climate negotiations. The third chapter goes into the details of India's climate policy vis a vis international climate negotiations during the period under study from 2009 – 2015 and other related concomitant international developments. The last chapter analyses the policy narratives surrounding the climate policy decision points, the main venues, principal actors, and feedback processes involved in the formulation of Indian climate policy; and the role of the principal civil society groups, industry and the media in influencing India's international negotiating positions. It also discusses the conclusions, inferences and way forward.

Literature Review

Survey of the existing literature on the subject indicates that there is a plethora of research available on India's climate policy, its impact on various sectors and adaptation and mitigation strategies. Scholarship also exists on India's climate policy vis-à-vis concomitant international negotiations, albeit mostly as a subset of India's foreign policy. In depth analysis of the main triggers to changes in India's negotiating stance through the various stages of international negotiations, especially since the first major shift in its stated position in COP 15 (Copenhagen) 2009 and then during the run up to COP 21 (Paris) 2015 has been sparse. The role of some of the principal actors in fostering and sustaining the

dominant narratives that informed our negotiating strategy requires a focussed academic enquiry.

Arguably, the most important works in the field are the two seminal works edited by Navroz Dubash of Centre for Policy Research: 'Handbook of Climate Change and India – Development, Politics and Governance' 2013 and 'India in a Warming World – Integrating Climate Change and Development' 2019. With contributions from eminent academicians and practitioners in the field including veteran negotiators and diplomats, the books provide a synoptic view of the formation of India's climate policy in the context of emerging science and climate impacts, international negotiations, politics, policy and economic development. The study has traced the arc of Indian Climate politics from the period of centrality of equity narratives to the emergence of the idea of co-benefits based action that deliver both development and climate gains. Enunciation of the co-benefits paradigm is an important contribution in the field. Mohan Aniruddh (2017) has studied the evolution of India's climate policy through the perspective of its broader foreign policy strategy, arguing that India's engagement with international climate politics can be better understood by locating its climate policy as a subset of its foreign policy agenda. Changes in India's climate change negotiating stance is seen as a part of its overall foreign policy adjustments in favour of greater responsibility in management of the global commons.

The author concludes that external events played their part but it was India's own foreign policy calculus which primarily impacted India's climate policy. Atteridge Aaron, Shrivastava Manish Kumar, Pahuja Neha & Upadhyay Himani (2012) analyse the material and ideational drivers that strongly influence policy choices at different levels, from

international negotiations down to individual states. The authors argue that at each level of decision making in India, climate policy is embedded in wider policy concerns. In the international realm, it is being woven into wider foreign policy strategy, while domestically, it is being shaped to serve national and sub national development interests. The analysis highlights that there are some common drivers at all levels, it also finds that their influences over policy are not uniform across the different arenas. Their study talks about the influence of norms and interests at domestic level and ideas and aspirations at international level, but does not discuss all the actors and factors that determine the policy imperatives and drive action especially vis a vis international climate negotiations.

Gupta Himangana, Kohli Ravinder Kumar and Ahluwalia Amrik Singh (2015) have traced the major transition points in India's negotiating position over the years and provide a descriptive context of its climate related concerns. They have analysed the interview responses of top 15 scientists, experts and negotiators to build upon the core areas of climate change issues in India, its future role and position in the negotiations. The interviewees, in general were in favour of protecting the carbon space for the poor who had very low emissions. The article aptly traces the chronology of India's changing climate policy positions vis a vis international climate negotiations and the triggers for the change. It also predicts the stand India was likely to take in the COP 21 Paris discussions. However, the linkages between the scientific opinion and India's climate policy position are not clearly brought out. Vihma, Antto (2011) examines the new dynamics affecting the Indian position in global climate negotiations and how the domestic policy dialogue is shifting toward a more "internationalist" and proactive approach. Thaker, Jagdish and Leiserowitz,

Anthony (2014) have investigated the factors driving the shifts in India's official positions on international negotiations and elite discourses by interviewing the key agencies influencing the same.

Hochstettler, Kathryn & Milkoreit, Manjana (2015) examine the BASIC countries' own joint statements and their individual and collective submissions to multilateral climate negotiations to identify the rationalist and principled arguments they have made about climate burden sharing requirements that developed countries, developing countries and they themselves should face in global climate governance. Sadat Anwar (2014) and Rajmani Lavanya have written about India's treaty practice. Billet, Simon, Mittal, Radhika and Jogesh Annu write about the reportage of climate issue in the English language print media. Kapur Devesh, Khosla Radhika, Mehta Pratap Bhanu (2009) have highlighted some key issues raised in the conference "India's Options in Climate Change Negotiations" to cover the multiple dimensions of the enormously complex challenges posed by climate change. Similarly, several other authors have concentrated on some or the other aspect of India's climate policy.

Conclusion

Attempts at documenting and understanding climate science have proved to be complex and have followed an uneven pace. There has also been a rapid improvement in understanding and treatment of uncertainty. Essentially, the progressive development and understanding of climate science has been the basis for coordinated multilateral international policy action to tackle the problem. Research and awareness about the interactive processes in the climate system have predated the IPCC and the emergence of

the issue on international policy agenda by several decades. However as climate science and earth's climate have continued to evolve in the recent years, there has been a growing evidence of anthropogenic interference in the planetary climate system, and which cannot be explained by natural variability alone. The progressive improvements in testing of the scientific findings have accelerated understanding of the phenomenon and consolidated the consensus that in spite of inherent limitations to predictive capacity, there is need for immediate and coordinated action.

Concepts and principles of internal environmental laws and conventions inform the way in which environmental treaties can be interpreted and implemented. Such principles include the duty of States to prevent significant environmental harm beyond their national boundaries, exercise precaution in making decisions which may harm the environment, provide reparation for environmental harm, provide public access to information and decision-making involving potentially significant environmental harm and cooperate in environmental protection. Several of the principles – global commons, sustainable development, principle of prevention, precautionary principle, polluter pays principle, common heritage, ecological security, environmental justice and human rights, environmental democracy, principle of cooperation, intergenerational equity, common but differentiated responsibilities and respective capabilities, principle of non-regression – have been incorporated into the issue-specific contexts of many multilateral environmental agreements.

Climate change issue has been described as part of continuing struggle to convert contestable science into prudent policy. Climate change is an example of "third generation

environmental issues"—global in scale; long term in scope; grounded in scientific uncertainties; escaping parameters of conventional policy designs and institutions; and requiring contingent, collaborative and innovative policy measures (Hempel, 2006). Its characteristic features – interplay of human and physical systems, inherent uncertainties, direct involvement of core socio-economic and political stakeholders, steep cost of mitigation and adaptation and associated trade-offs, and applicability of almost every concept and principle of international environmental law and conventions – make the process and politics of climate regime formation both interesting and extremely complicated. The scientists, environmentalists and the governments, have firmly secured climate change on the international policy agenda as a clear and present danger, gaining urgency with passage of time. How has India grappled with its climate policy in the context of international climate negotiations forms the quest of the rest of the study.

****

CHAPTER TWO

This chapter chronicles the evolution of the climate change issue as the centre of international political attention between 1990 and 2007. Bodansky (1994) notes: "What is striking about climate change is not how slowly the issue has developed—but how quickly" (p. 45). A concise history of the emergence of scientific consensus on climate change, and its transformation into an urgent international concern, serves as a backdrop to the review of later institutional and diplomatic initiatives. A brief review of formation of UNFCCC and the COP process, and the climate negotiations from their inception in 1992 to 2007 provide a valuable background for a contextual understanding of the nuances of India's response to concomitant international developments in climate negotiations during the period of our study, 2009 – 2015.

Emerging Scientific Consensus and First Responses

As brought out earlier, the first successful calculation of the effects of combustion of fossil fuels on natural climate system was carried out by the Swedish chemist, Svante Arrhenius, in 1896. Arrhenius postulated that doubling of CO_2 levels in the atmosphere would raise the earth's temperature by 4 to 6°C (Brown, 2002.) The popular scientific belief in the first half of the 20th century was that the oceans absorbed the vast majority of anthropogenic CO_2 emissions, thus maintaining the levels of atmospheric composition. Scientists Roger Revelle and Hans Suess questioned the validity of this assumption by showing that much of the CO_2 emissions were not absorbed by the oceans and significant amounts in the atmosphere could eventually cause warming. These findings were corroborated by the chemists who gathered data on atmospheric CO_2 levels from the

observatory set up in 1958 near Mauna Loa volcano in Hawaii. By the late 1960s it had been established that the CO_2 build up in the atmosphere was increasing in direct proportion to fossil fuel usage.

In the early 1970s, the "Study of Critical Environmental Problems" and the "Study of Man's Impact on Climate" denoted global warming as a potentially serious problem, calling for more scientific research (Bodansky, 1994.) Around the same time, advent of supercomputers and satellite sensing data aided development of general circulation models which form the current basis of predictions about global warming. Towards the late 1970s, the US National Academy of Sciences concluded that if CO_2 concentrations in the atmosphere continue to rise, significant climatic changes may result. In the 1980s, studies of climatological record indicated that the historical trend was consistent with global warming forecasts. A general scientific consensus began developing that the earth was warming but there was uncertainty regarding whether the warming was a result of anthropogenic factors or due to natural climate variability. Also, in the 1980s, scientists started focusing on the greenhouse potential of other gases like nitrous oxide (N_2O), methane (CH_4), and chlorofluorocarbons (CFCs) and found that they could have similar effect as CO_2, making the global warming threat doubly serious. In the US, a 1980 report by the President's Council on Environmental Quality concluded that we should own up our responsibility of the CO_2 problem and act in a way that "recognizes our role as the trustee for future generations" (Brown, 2002, p. 16.)

In February 1979, the United Nations Environment Program (UNEP), the World Meteorological Organization (WMO), and the International Council of Scientific Unions

(ICSU) sponsored the First World Climate Conference in Geneva to examine the scientific basis for climate change. The conference led to the creation of the World Climate Program (WCP). The report from first conference held under the WCP in 1980 in Villach, Austria, concluded that the rising concentrations of CO_2 posed a grave danger to atmospheric composition and needed to be urgently addressed. The second WCP conference at Villach in 1985 was attended by scientists from 29 countries. The conclusion drawn at this conference was that although there were persistent uncertainties, "it is highly probable that increasing concentrations of greenhouse gases will produce significant climatic change" (Bodansky, 1994, p. 47.) The report also noted that understanding of the greenhouse situation was sufficiently developed for the scientists and policymakers to "begin an active collaboration to explore the effectiveness of alternative policies and adjustments" (Cass, 2006, p. 21.) The report went on to recommend that the UNEP, WMO and the ICSU take action to initiate, if required, consideration of a global climate convention.

As a follow-up to the 1987 Brundtland report "Our Common Future" of the World Commission on Environment and Development, the Canadian government sponsored an international conference on "The Changing Atmosphere: Implications for Global Security" in Toronto, 1988. The theme of the Toronto conference was effectively captured in its starting lines: "Humanity is conducting an unintended, uncontrolled, globally pervasive experiment whose ultimate consequence would be second only to a global nuclear war . . . . It is imperative to act now" (Bodansky, 1994, p. 49.) The conference called for 20% reduction in CO_2 emissions below 1988 levels by the year 2005; formation of a global convention as a framework for negotiating protocols to protect the atmosphere; and

establishment of a World Atmosphere Fund financed by a levy on fossil fuel consumption in industrialized countries. Bodansky calls the Toronto conference statement "the high watermark of policy declarations on global warming" (p. 49).

In the 1980s, some additional factors may have also catalysed interest in global warming. First, a number of scientists and nongovernmental actors (NGOs) promoted awareness about climate change through conferences, loose research networks and assessments, and personal contact. The WCP workshops held at Villach in 1985 and 1987 and Bellagio in 1987 especially helped consolidate scientific consensus regarding global warming and communicate the same to policymakers. Second, the discovery of the ozone hole and the successful negotiation of Montreal Protocol for the protection of the ozone layer in 1987 demonstrated that human activities can indeed affect global atmosphere, and, there were prospects of cooperation among nations on the issue of climate change. Third, the avid media interest in global warming in the period following the 1985 Villach conference popularized the global warming postulations and created grounds for policy action. Agrawala (1998) comments that global warming "arrived" on the international policy agenda. Fourth, the heat wave and other extreme weather events experienced in the US in 1988 gave a boost to the greenhouse proponents in the US. NASA scientist James Hansen testified to the Congress that he was 99% certain that global warming had begun.

Research conducted in the US by the Climate Impact Assessment Program, the National Research Council (NRC), Environmental Protection Agency (EPA) and the Department of Energy (DoE) took different positions but demonstrated the level of interest in the subject. The NRC assessments emphasized scientific uncertainties and

recommended a "wait and see" approach, while the EPA assessments dwelled on potentially catastrophic consequences of unchecked global warming. By the late 1980s, the scientific hypothesis about global warming was not so much in doubt as the timing and magnitude of climatic impacts. A strong international consensus, especially among European nations was beginning to emerge about need for urgent action.

Formation of IPCC and Publication of Assessment Reports

At the request of the governments, the WMO and the UNEP established the IPCC in April 1988 with the assigned task of internationally coordinated assessment of available scientific information on climate change; assessment of environmental and socio-economic impacts of climate change; and formulation of realistic response strategies for the management of the climate change issue. The original 1988 mandate for IPCC was extensive and included: '(a) Identification of uncertainties and gaps in our present knowledge with regard to climate changes and its potential impacts, and preparation of a plan of action over the short-term in filling these gaps; (b) Identification of information needed to evaluate policy implications of climate change and response strategies; (c) Review of current and planned national/international policies related to the greenhouse gas issue; (d) Scientific and environmental assessments of all aspects of the greenhouse gas issue and the transfer of these assessments and other relevant information to governments and intergovernmental organisations to be taken into account in their policies on social and economic development and environmental programs' (UNIPCC, 1991.)

The IPCC has three Working Groups and a Task Force. Working Group I (WGI) assesses the scientific aspects of the climate system and climate change, while Working

Groups II (WGII) and III (WGIII) assess the vulnerability and adaptation of socioeconomic and natural systems to climate change, and the mitigation options for limiting greenhouse gas emissions, respectively. The Task Force is responsible for the IPCC National Greenhouse Gas Inventories Programme. The main activity of the IPCC is to provide on a regular basis an assessment of the state of knowledge on climate change. The IPCC also prepares Special Reports and Technical Papers on topics for which independent scientific information and advice is deemed necessary, and it supports the United Nations Framework Convention on Climate Change (UNFCCC) through its work on methodologies for National Greenhouse Gas Inventories. IPCC's first assessment report (FAR) of 1990 played an important role in the discussions of the Intergovernmental Negotiating Committee for the UNFCCC in 1992.

Through the IPCC, thousands of experts from around the world synthesize the most recent developments in climate science, adaptation, vulnerability, and mitigation every five to seven years. Governments request these reports through the intergovernmental process and the content is deliberately policy-relevant, but steers clear of any policy-prescriptive statements. Government representatives work with experts to produce the "summary for policymakers" (SPM) that highlights the most critical developments in language accessible to the world's political leaders.

The IPCC's technical reports derive their credibility principally from an extensive, transparent, and iterative peer review process that, as mentioned above, is considered far more exhaustive than that associated with a single peer-reviewed publication in a scientific journal. The IPCC has issued comprehensive assessments in 1990, 1996, 2001, 2007 and

2013, and methodology reports, technical papers, and periodic special reports assessing specific impacts of climate change from time to time.

IPCC was a political initiative strongly supported by the US to reassert governmental control over the climate issue. Agrawala writes that "founding fathers of the IPCC sought to advance what many thought was an oxymoron: quality scientific assessments by democratic consensus" (Agrawala, 1998, p. 605.) IPCC adopted an expedited work schedule to produce its FAR in time for the UNGA, the World Meteorological Congress and the Second WCP conference in 1990. On December 6, 1988, the UNGA adopted a resolution endorsing the IPCC and urging the governments, the intergovernmental and nongovernmental organizations, and the scientific institutions to accord climate change a priority status.

The First Assessment Report of the IPCC (1990), as well as a supplemental report prepared in 1992, supported the establishment of the United Nations Framework Convention on Climate Change (UNFCCC) at the United Nations Conference on Environment and Development (UNCED, commonly known as "The Earth Summit") held in Rio de Janeiro, Brazil, in 1992. The UNFCCC treaty serves as the foundation of international political efforts to combat global warming. The IPCC's reports were also influential at the first Conference of the Parties (COP) to the Climate Convention, held in Berlin, Germany, in 1995. Attendees produced the so-called Berlin Mandate, setting out the terms for a negotiation process that would produce binding commitments by industrial countries to reduce their heat-trapping emissions after the year 2000.

The WGI FAR was completed under the leadership of Bert Bolin (IPCC Chair) and John Houghton (WGI Chair) in a plenary at Windsor, UK in May 1990. It made a persuasive but not a quantitative case for anthropogenic interference with climate system. It also ascertained that "emissions resulting from human activities are substantially increasing the atmospheric concentrations of the greenhouse gases: CO_2, CH4, CFCs, N2O." It concluded thus: "Our judgement is that: global mean surface air temperature has increased by 0.3 to 0.6°C over the last 100 years.." (FAR) due to natural variability as well as human induced greenhouse warming and went on to state that the unequivocal detection of the enhanced greenhouse effect is not likely for a decade or more.

The Second Assessment Report (SAR), under Bert Bolin (IPCC Chair), John Houghton and Gylvan Meira Filho (WGI Co-chairs), contained intensive chapters on the carbon cycle, atmospheric chemistry, aerosols and radiative forcing. The WGI SAR culminated in the government plenary in Madrid in November 1995. The most cited finding from that plenary, on attribution of climate change, has been consistently reaffirmed by subsequent research: "The balance of evidence suggests a discernible human influence on global climate." The SAR provided key input to the negotiations that led to the adoption in 1997 of the Kyoto Protocol to the UNFCCC.

The Third Assessment Report (TAR) , under Robert Watson (IPCC Chair) and John Houghton and Ding YiHui (WGI Co-chairs), was approved at the government plenary in Shanghai in January 2001. The predominant summary statements from the TAR WGI strengthened the SAR's attribution statement: "An increasing body of observations gives a collective picture of a warming world and other changes in the climate system", and "There

is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities." The TAR Synthesis Report (IPCC, 2001b) combined the assessment reports from the three Working Groups. By combining data on global (WGI) and regional (WGII) climate change, the Synthesis Report was able to strengthen the conclusion regarding human influence: 'The Earth's climate system has demonstrably changed on both global and regional scales since the pre-industrial era, with some of these changes attributable to human activities.'

The Fourth Assessment Report (AR4, 2007) emphasized "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level." It goes on to say that most of the global average warming over the past 50 years is "very likely" (more than 90% probability) due to human activities. It predicted that the impacts of climate change will very likely increase due to increased frequencies and intensities of some extreme weather events. (Sec. 6.2) "Unmitigated climate change would, in the long term, be likely to exceed the capacity of natural, managed and human systems to adapt" (Sec. 6.3) The report however expressed that many impacts of climate change can be reduced, delayed or avoided by mitigation.

The Netherlands Environmental Assessment Agency carried out two reviews of AR4 in 2009 and 2010 and were largely supportive of its conclusions. A literature assessment by the US National Research Council (US NRC, 2010) concludes:

"Climate change is occurring, is caused largely by human activities, and poses significant risks for—and in many cases is already affecting—a broad range of human and natural

systems… This conclusion is based on a substantial array of scientific evidence, including recent work, and is consistent with the conclusions of recent assessments by the U.S. Global Change Research Program…, the Intergovernmental Panel on Climate Change's Fourth Assessment Report ..., and other assessments of the state of scientific knowledge on climate change."

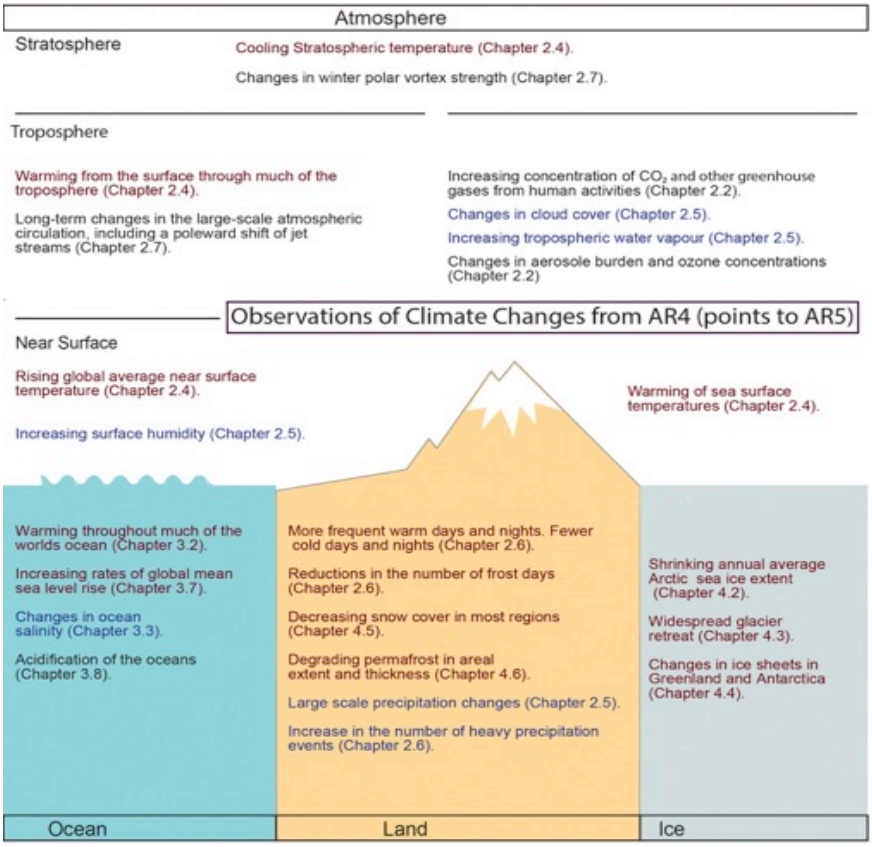
In December 2007, the IPCC was awarded the Nobel Peace Prize "for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change". The award is shared with Former U.S. Vice-President Al Gore, for his work on climate change and the documentary "An Inconvenient Truth."

The IPCC's Fifth Assessment Report (AR5) was completed in 2014. It asserted that "human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history." It further states that "human influence on the climate system is clear. It is extremely likely (95-100% probability) that human influence was the dominant cause of global warming between 1951-2010." (p. 2, 13) These findings informed the climate negotiations resulting in the Paris Agreement of 2015, in which 197 countries committed to limiting global warming to below 2°C. In tandem with the Paris agreement 2015, the Conference of Parties (COP) invited the IPCC to provide a special assessment on the impacts of climate change when global temperature reaches 1.5°C above pre-industrial levels.

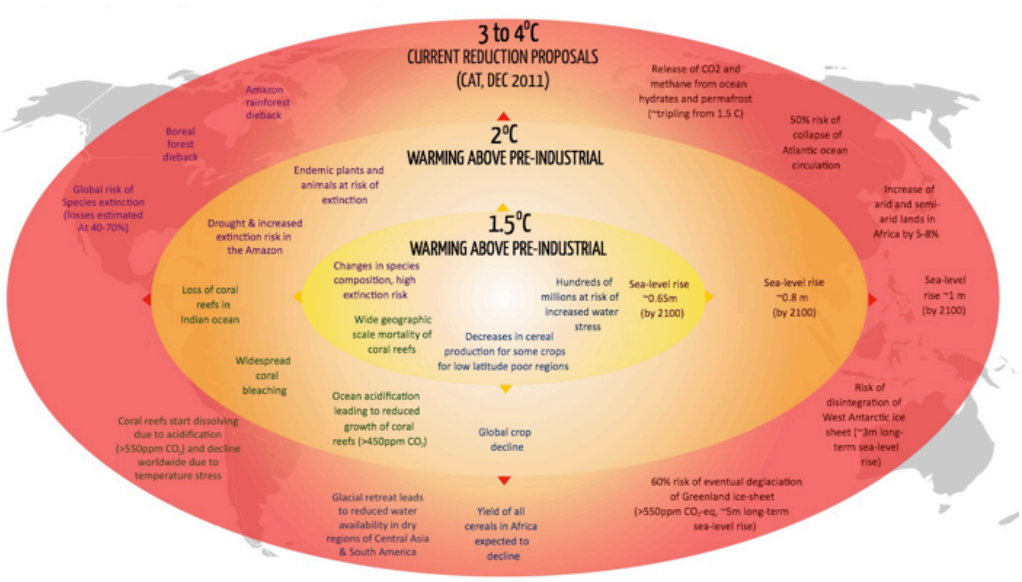
AR 5 was followed by IPCC Special Report titled "Global Warming of 1.5 °C, an IPCC special report on the impacts of global warming of 1.5 °C above pre-industrial levels

and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty" dated Oct. 8, 2018. The report summarizes the findings of scientists, showing that maintaining a temperature rise to below 1.5 °C remains possible, but only through "rapid and far-reaching transitions in energy, land, urban and infrastructure..., and industrial systems." (website:https:www.ipcc.ch/sr15)

The following graphs are based on IPCC reports and reproduced here with permission from Director, Climate Action Network South Asia in whose presentation they first appeared. They are illustrative of the deleterious consequences of rising global surface temperatures on natural and human ecosystems.



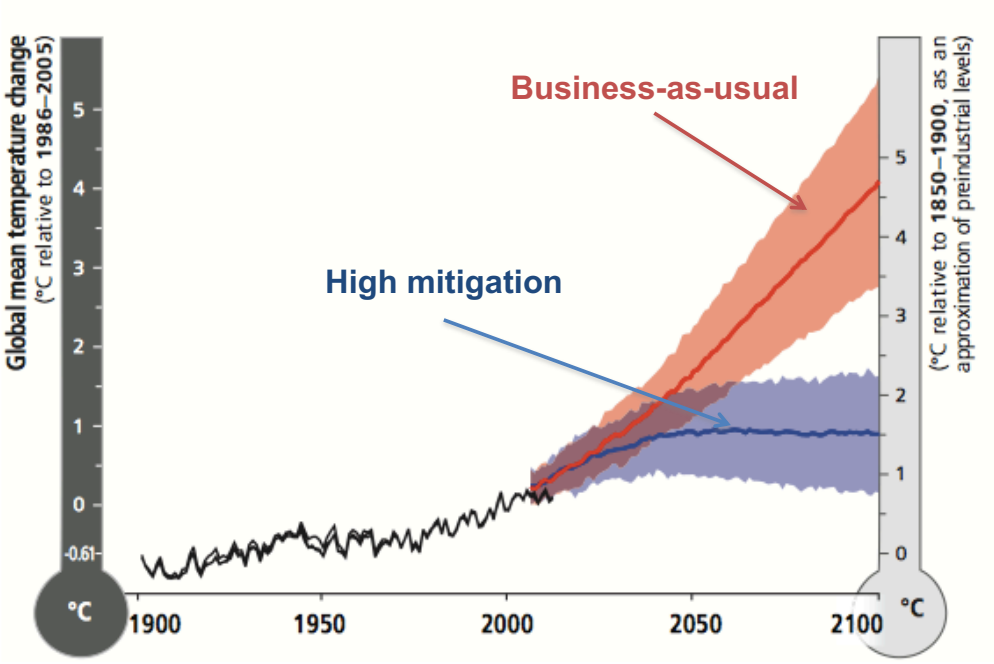
Source: Climate Action Network South Asia (CANSA)



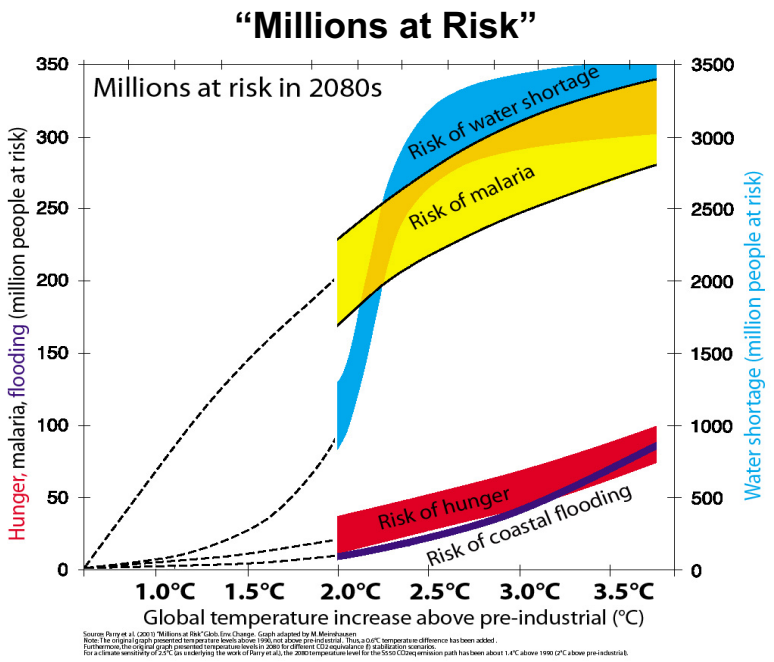
Source: Climate Action Network South Asia (CANSA)

Global Average Temperature Increase

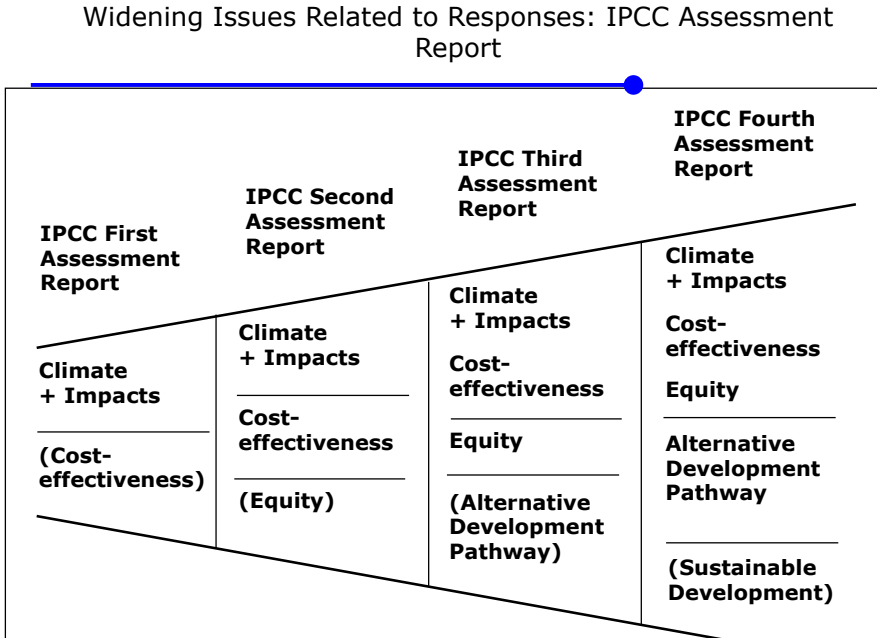
= +1.7 to 4.8° C above Pre-industrial



Source: IPCC AR 5 WG II (http://www.ipcc-wg2.gov)



Source: IPCC AR 5 WG II (http://www.ipcc-wg2.gov)



Source: Najam et al., (2003)

Intergovernmental Negotiating Committee Negotiations

Discussions on climate change continued to intensify and gain widespread political interest throughout 1989-1990. In March 1989, The Netherlands, France and Norway sponsored The Hague Summit on global environmental issues attended by 17 heads of state, who discussed the development of new institutional authority to deal with the climate problem. The pressing need to limit greenhouse emissions dominated the discussions and communiqué at G-7 summit at Paris, US-Soviet Summit at Malta, the Non Aligned Summit at Belgrade, and Commonwealth Heads of the Government meet at Langkawi. The Noordwijk conference, held specifically on the issue of climate change, was attended by 66 states. The declaration adopted here recommended the states to develop effective strategies to control, limit and reduce greenhouse emissions; explore the concept of CO_2 equivalence to form the basis for negotiating response measures for different greenhouse gases; and, set targets for enhancing the world's forest cover. The declaration noted the view of "many industrialized countries" to achieve stabilization of emissions "as a first step" by the year 2000 (Bodansky, 1994.) At the same time UNGA adopted UN Resolution 44/ 207 calling for a 'Framework Convention' for climate change.

In 1989, pursuant to Global Change Research Act, the US established the Global Change Research Program to support research on global warming issues. The US also hosted a conference on global warming in April 1990 where President George H. W. Bush (Bush 41) called for further research on the issue even as leaders of European Economic Community (EC) declared that it was time for action.

The IPCC Working Groups finalized their first assessment reports in June 1990. The report noted gaps in present understanding of the complex climate phenomenon and feedback mechanisms, but predicted that under business as usual, the global average surface temperature would rise by an average of 0.3°C per decade in the 21st century, a rate unprecedented in human history. The report also did not rule out climate surprises due to accelerated warming, altered ocean circulation patterns, and on set of strong positive feedback mechanisms.

The Second World Climate Conference (SWCC) was convened in November 1990 in Geneva. This meeting was attended by more than 130 states and included scientific and ministerial components, reflecting an elevated international interest in climate change. The second WCP provided the political and policy mandate for negotiating a framework convention on climate change. The ad hoc groups disagreed on whether the convention and protocols be negotiated simultaneously; whether the negotiations be conducted under the aegis of Northern dominated UNEP and WMO, or the more politically representative UNGA; and on how to accommodate the varied interests of the Parties. The significance of the SWCC lay in the fact that the developing countries participated as equal partners for the first time and it was clear from the outset that negotiations would be extremely complex and prominently along North-South lines. It was also clear that the Convention negotiations would be hinged on the contested and dichotomized thrusts of development and environmental protection. Bodansky (1994) remarks that this was a "dress rehearsal for the Intergovernmental Negotiating Committee (INC), with countries already jockeying for positions" (p. 56).

On December 21, 1990, the UNGA adopted UN Resolution 45/212 which established INC as a "single intergovernmental negotiating process" charged with the responsibility of negotiating a convention containing "appropriate commitments," taking the IPCC findings into account (Bodansky, 1994, p. 59.) The INC convened five times between February 1991 and May 1992, to finalize the text of the convention just in time for the Earth Summit at Rio de Janeiro in June 1992.

Meanwhile at the 'Conference of Select Developing Countries on Global Environmental Issues' held in 1990 in New Delhi, India was successful in winning the support of the developing world to its basic premise in international climate negotiations (Sengupta, 2019.) First, the primary responsibility for reducing GHG emissions rested with the developed world due to their historical responsibility in precipitating the problem. Second, the GHG emissions of the developing countries very low and essential to meet their primary requirement of poverty eradication and hence they could not be subjected to mandatory emission reduction targets. Third, any formal treaty on climate change should necessarily contain provision of funds and technology transfer to the developing countries to help them address the challenge (MoEF 1990.)

Literature on the negotiations reflects a number of ways in which the key players have been conceptualized and identified. Yamin and Depledge (2004) describe the regime participants as: Parties—the 189 members to the Convention; Groupings—the traditional United Nations regional groups like Latin America and Caribbean, political negotiating coalitions such as the G-77 and OECD, umbrella groups etc.; Non – Governmental Organizations; Intergovernmental Organizations like the IEA; UN bodies and specialized

agencies like the UNEP, IPCC etc.; and the media. Chasek et al. (2006) distinguish three main groups of negotiating states, the distinction based on their "energy culture" (p. 117). First, those "relatively dependant on imported energy and thus have learned to maintain high living standards while reducing their use of fossil fuel" (p. 117). Countries in this group include most of the European Union (EU) states including Germany, Italy, France, Netherlands, Denmark, Finland and Sweden. Second, those with "large supply of energy resources and a culture of highly inefficient energy use" (p. 118). This set includes US, Russia, India, China, Brazil and Mexico. Third, those states which are highly dependent on fossil fuel exports for income such as Arab states, Australia, Norway and initially the U.K. Paterson and Grubb identify the negotiating blocks along "several major fault lines": North-South divide particularly over allocation of burden of reducing greenhouse emissions and transfer of technology and financial assistance; split between producers and exporters of fossil fuels over the question of reducing their use; and split among states according to their vulnerability to the threat of climate change. Gupta (1997) discusses the concept of coalitions, a process in which the "world groups and regroups itself" into formations of countries based on similar interests (p. 101). She sees this as happening in the Convention negotiations on the basis of: common institutional framework and legal identity—European Union; geography—Africa; perceived common interest—JUSSCANNZ (Japan, US, Switzerland, Canada, Norway and New Zealand); and predicament—Alliance of Small Island States (AOSIS). Gupta, however, notes that at an "abstract level" the negotiations proceeded between the North and South with the G-77 and China largely representing the latter. Porter and Brown (1996) contextualize a state's

negotiating position and "definition of interest" in its domestic socio-political balance. They explain the role of nation state actors as falling in one of the four categories in the negotiations.

First, Lead state—state having a strong commitment to effective international action on the issue. European Union has consistently belonged to this category. Norway and Australia were early lead states due to domestic pressures and initial emphasis on vulnerability but later turned into veto states. Second, Supporting state—state lending support to the proposal of the lead states. Japan would now fall into this category even though it still questions the practicality of future emission reduction commitments. Third, Swing state—state that may demand a significant concession to its interests as a price for acquiescing with the agreement. The OPEC states would belong to this category as their interests were particularly accommodated in the Convention. Fourth, Veto state—or blocking state that either rejects the agreement outright or attempts to weaken it. US was the main veto state in the Convention negotiations with Russia, China, India and Brazil performing the veto role during the negotiations. Non-state actors like the environmental NGOs, industry and business coalitions, and, epistemic communities also participated in large numbers and played a significant role in the negotiations and associated side events.

The first INC session was held at Chantilly, Virginia, February 4-14, 1991. This meeting was of a procedural nature and created two working groups on "commitments" and "mechanisms." The former, Working Group I, was entrusted to contemplate greenhouse emissions limits, sinks and reservoirs, adequate and additional funding to developing country Parties and, technology transfer. The "mechanisms," or the Working

Group II, was asked to design procedures related to scientific cooperation, monitoring and compliance, and assessment and review. Differences among Parties surfaced as skirmishes over EC's proposal for targets and time tables, the extent of developed and developing country participation, and India's proposal for "new and additional funding" (Bodansky, 1994, p. 64).

The second INC session was convened in Geneva, June 19-28, 1991. The substantive discussions did not make much headway on the issues of emission reduction targets and sinks. The US maintained its unequivocal opposition to targets and timetables with its policy paper firmly stating that specific commitments for emissions reductions should not be included in the UNFCCC. One significant development in this meeting was the unanimous agreement by Working Group II that science would be the basis for the Framework Convention. The EC rejected Japan's "pledge and review" proposal as a potential compromise on the issue of targets and timetables polemicizing it as "hedge and retreat" and "twin ghosts that have been haunting" the negotiations (Cass, 2006, p. 78).

INC's third session convened in Nairobi, September 9-20, 1991. There was little progress towards consensus as Working Group I produced "ever longer compilations of alternative proposals" (Bodansky, 1994, p. 66.)

The fourth INC session met at Geneva, December 9-20, 1991. The negotiating Parties reiterated their previously held positions, reintroducing the proposals and wordings that had been omitted in the working groups' texts. The most notable feature of this INC session was the breakdown of unity among members of G-77 and China on the issue of what commitments to support. Small island nations, which were most vulnerable to the

threat of global warming, supported strong commitments whereas the Oil and Petroleum Exporting Countries (OPEC) members like Saudi Arabia firmly opposed strong commitments. Large industrializing countries like India and China took a somewhat middle position. The developing countries were, however, categorically opposed to accepting any mandatory obligations for themselves.

The fifth INC session was divided into two parts since the earlier sessions had yielded little consensus or negotiating success. Intensive negotiations began in the first phase that was held in New York, February 18-28, 1992. Here, G-77 and China chose to concentrate on issues of financial resources and technology transfer. Organization for Economic Cooperation and Development (OECD) countries frequently caucused under chairmanship of Sweden to narrow their differences regarding emissions reduction targets and time tables while US continued its fierce opposition of the same. The OECD held extended bureau meetings in April 1992 in Paris to iron out their differences on issues of targets and timetables, and financial resources and mechanisms. Finally a compromise was reached when the UK declined to reintroduce the bracketed texts on targets and timetables. The second phase of INC 5 resumed in New York from April 30 to May 9, 1992, to flesh out the basic text of the Convention. The US-UK compromise was heavily criticized by the developing countries led by India, and Iran threatened to reintroduce its previously rejected proposal of "right to development." On May 1, 1992, INC chairman Jean Ripert, offered a draft text containing no targets and timetables to the delegates. The text of the Convention was finally adopted by acclamation on May 9, 1992 to be presented at the Earth Summit in Rio de Janeiro in June 1992.

During the entire process, India worked closely with the developing countries to ensure that the INC operated directly under the United Nations General Assembly to "allow for openness, transparency, universality and legitimacy" and "full participation of all states." (Sengupta, 2019, p. 116). Significantly, even though FAR had noted that both the developed and developing countries had common responsibilities on climate change, India together with the developing countries managed to ensure that it was amended to become CBDR of industrialised and developing countries.

United Nations Framework Convention on Climate Change, 1992

Responding to the concern that human activities are exacerbating the natural greenhouse effect, more than 160 nations signed the UNFCCC at the United Nations Conference on Environment and Development, also known as Earth Summit, held at Rio de Janeiro in June 1992. It is a legally nonbinding treaty with the stated objective to achieve: "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system," enabling "development to proceed in a sustainable manner" (UNFCCC, 1992, art. 2). All the Parties hold a general commitment to develop national greenhouse inventories; national mitigation and adaptation programs; and promote scientific research, education, training and public awareness. The developed country Parties, or Annex I Parties, commit to "return by the end of the present decade to earlier levels of anthropogenic emissions" (art. 4.2a). The OECD countries listed in the Annex II of the Convention, commit to funding the incremental costs of the agreed upon mitigation measures and provide "transfer of, or access to, environmentally sound technologies and know how" (art. 4.5). Article 7

establishes Conference of Parties (COP) to be the "supreme body of this Convention" entrusted with the task of meeting annually; assessing the progress in dealing with climate change; and, negotiating protocols to the Convention as required. Article 7.6 allows the participation of non-state actors in the negotiations. Articles 8, 9 and 10 establish the institutions of the Convention: the Secretariat; the Subsidiary Body for Science and Technological Advice; and, Subsidiary Body for Implementation respectively. Article 11 defines the "financial mechanism" entrusted with "existing international entities" or the World Bank controlled Global Environmental Facility (GEF). To ensure a "transparent system of governance" in the financial administration of the Convention, it is purported to have "an equitable and balanced representation of all Parties" (art. 11.2). Article 12 establishes the reporting or "communication of information" mechanism. Article 14 establishes procedure for settlement of dispute under the COP.

The Convention imposed three basic obligations on the developed nations: gradual return to 1990 levels of greenhouse emissions; provision of financial resources and technology transfer to developing countries to promote sustainable development; and provision of data on sources and sinks of greenhouse emissions. The text of the Convention contained no specific commitments on the targets for greenhouse emissions or timetables for achieving them and appeared to be written in a "weak compromise language" (Bodansky, 1994, p. 65). The plethora of positions held during the Convention negotiations emanated from a multitude of factors such as domestic politico-ideological suasions and economic situations, trade-offs between environmental values and economic growth, notions of equity and allocation of responsibility for the problem, vulnerability to the threat,

cost-benefit considerations and so on. The arguments, however, were structured in the larger context of the North-South politics even though neither side presented a monolithic front.

The biggest challenge to the Northern position came from the US, by far the most important actor in the international system, and whose "participation is singlehandedly decisive" (Davenport, 2006, p. 180) for success or failure of any international effort. Jean Ripert, Chairman of the first plenary session of the INC, expressed that the US entered the negotiations "predisposed towards a weak general framework for the Convention" (Mintzer & Leonard, 1994, p. 26). When faced with opposition from other OECD nations, Bush 41, then American President, made his attendance at the summit conditional to global acceptance of the American position, earning the epithet "dead weight of environmental world order" (Panjabi, 1997, p. 174). Bo Kjellen, the Swedish Chief delegate to the INC, remarking on North's position, states that some of the "most difficult episodes" of the negotiations were the struggle of the OECD countries against the hard line position of the US (Kjellen, 1994, p. 33).

It is instructive to note the extent to which the varied positions of the Parties were reflected in the institutions and the content of the Convention. For all the countries to agree, the Convention had to reach an artful compromise and consequently be ambiguous in its text. The text of the Convention is replete with adjustments. One of the biggest examples of deference to the Southern position is the incorporation of Article 3 (Principles) into the Convention. Inclusion of the idea of "common but differentiated responsibilities and respective capacities" (CBDR & RC) set the tone for differential obligations. Essentially,

obligations enumerated in the Convention are commensurate with the economic capacities of the nations. The Convention takes cognizance of the "legitimate priority needs of developing countries for sustained economic growth and eradication of poverty" (UNFCCC, 1992). Article 3.4 of the Convention states: "Parties have a right to and should promote sustainable development." Article 3.2 promotes full consideration of "those Parties, especially developing country Parties that would have to bear the disproportionate or abnormal burden under the Convention." OPEC's concerns are accommodated in stating that "special needs of those countries whose economies are particularly dependent on fossil fuel production, use and exportation . . . measures taken to combat climate change should not constitute . . . disguised restriction on international trade." The aspects of financial assistance and technology transfer also especially cater to the South's position. Underscoring the importance of adequacy and predictability of flow of funds, Article 4.5 calls for "transfer of, access to, environmentally sound technologies and knowhow" for developing countries. Significantly, per Article 4.7 of the Convention, the participation of the developing countries is contingent on: "the effective implementation by the developed country Parties of their commitment under the Convention related to the financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties." Article 5 encourages cooperation for improvement of the "endogenous capacities and capabilities" of the South. The North commits to training experts "in particular for developing countries" per Article 6. Articles 8, 9, and 12 reiterate

that developing countries will be assisted with technical and financial support in compiling and communicating information as required by the Convention.

It is apparent that the phraseology of the Convention strongly endorsed the concerns of the South. However, the single largest instance of Northern victory reflected in the text of the Convention was the inclusion of the US demand of no targets and timetables. The US even managed to have the bracketed text in the draft proposal setting the goal for stabilization of greenhouse emissions at 1990 levels by the year 2000, removed. The final "compromise text" in Article 4.2 calls for returning to "earlier levels" by the end of the decade and review the adequacy of the commitments at the first COP. As compared to the rest of the OECD nations, the US had strong reservations about proposals for significant North-South transfers. It is noteworthy that the World Bank controlled GEF remained the chief financial mechanism of the Convention. Also, the language of the Convention regarding financial and technological assistance to developing countries is more in the nature of general guidelines than concrete promises.

The historical responsibility of the North and per capita rights to the global carbon budget were adopted by India's climate negotiators as the bedrock of India's position in the first climate change negotiations (Dubash, 2013). Identifying itself with the G 77+China grouping of developing nations, India urged the developed country parties to take stringent action on climate change while maintaining that developing countries may take on voluntary commitments conditional on receipt of financial support and technological transfers from developed countries. The inclusion of principles of equity through CBDR & RC in the text of the Convention was hailed as on important victory for

the developing nations with Indian negotiators claiming a significant influence over this intervention.

As a product of highly contentious negotiations, the Convention got colourful international press. One commentator remarked: “It’s anything from a last ditch attempt to save a dying planet to a cynical plot to impose a socialist industrial order” (Panjabi, 1997, p. 150). Some reported that the negotiations were a “futile exercise,” nothing more than “photo opportunities and a façade of consensus” (Schoon, 1992). Skeptics even remarked that given the media blitz and the public visibility of the process, the “INC was doomed to success” (Bodansky, 1994, p. 61). Others called the Convention “a pragmatic first step toward a new vision of international cooperation on global environmental problems” (Dowdeswell & Kinley, 1994, p. 131).

The UNFCCC was opened for signature on May 9, 1992 and upon receiving instruments of ratification by a majority of the signatory nations, entered into force on March 24, 1994. India ratified the Convention on November 1, 1993. Article 4.2 d of the Convention stated that at the first COP, the Parties shall review the adequacy of their commitments to ascertain whether they can credibly meet the objectives of the Convention.

During the Convention negotiations, India made ‘equity’ and ‘per capita convergence’ the “central plank of its negotiating stance” (Sengupta, 2019, p.116) India’s success is evident in the acknowledgement in UNFCCC of the historical responsibility of the developed world in having caused the bulk of global emissions; that the future per capita emissions share of developing countries is required to meet their social and development needs; and, that the developed country parties need to take the lead in

stemming climate change. The high mark of Indian success was twofold – insertion of CBDR & RC in the text of the Convention; and confinement of the review function only to the developed country commitments while assessing the commitments and communications of developing countries in aggregated terms (Art. 10.2) Sengupta observes that during this phase India displayed its "ability to engineer creative alliances" and shape international negotiations to protect its strongly defined interests within the "sharply differentiated architecture" of the UNFCCC (p. 118).

Berlin, 1995 – COP 1

In the first COP held in Berlin in 1995, the Parties expressed apprehension about the industrialized nations' ability to meet the voluntary stabilization targets by 2000. These were expressed in a United Nations ministerial declaration known as the Berlin Mandate. The latter established a 2-year "Analytical and Assessment Phase" to negotiate a "comprehensive menu of actions," and Ad Hoc Group on Berlin Mandate (AGBM) to negotiate a binding agreement or protocol for the post 2000 frame (Justuce & Fletcher, 2001.)

The Berlin Mandate invited the Parties: "to elaborate policies and measures, as well as to set quantified limitation and reduction objectives within specified time frames" (Berlin Mandate, 1995.) Significantly, the Berlin Mandate reiterated that the developed nations should take lead in combating global warming, and exempted the non-Annex I countries from additional binding obligations in keeping with the principle of common but differentiated responsibilities. Article II.2.b of the Berlin Mandate states that the new

protocol "should not introduce any new commitments for Parties not included in Annex I." US negotiators argued that before setting definite targets it was essential to obtain thorough review of the environmental and economic trade-off of the proposed approaches but accepted the exemption of the developing countries from the proposed protocol obligations. The AGBM met eight times between August 1995 and December 1997 to work out the details of negotiations on the proposed protocol.

The first COP thus established a negotiating mandate for a Protocol under the UNFCCC.

IPCC's Second Assessment Report, 1995

The IPCC published its Second Assessment Report in 1995. This report indicated that the Earth's surface in the 20th century had been the warmest since 1400. The report stated that prior to industrial revolution in 1750, the concentration of carbon dioxide in the atmosphere was about 280 parts per million, which had risen to 358 parts per million by 1990s. In the business as usual scenario, the emissions would continue rising at the rate of about 1.5 parts per million a year to reach 500 parts per million by the end of the 21st century. This report fine-tuned its previous predictions and indicated a possible temperature rise of 2°C (uncertainty range 1.03.5°C) and sea level rise of 15-95 cm by 2100. The report found that the mathematical models that took into account anthropogenic emissions ran closer to the observed data than those based solely on natural factors. It asserted: "The balance of evidence suggests that there is a discernible human influence on global climate" (UNIPCC, 1995.) The report acknowledged scientific uncertainties and

recommended that the decision process for policy making needed to be sequential in order to incorporate new information.

Geneva, 1996 – COP 2

The second COP held at Geneva recognized and endorsed the scientific findings by the IPCC in its *Second Assessment Report* of 1995 as the most authoritative assessment of climate science; called for legally binding mid-term targets for overall reductions of the greenhouse emissions; and called for rejection of harmonized emissions reductions policies in favour of flexibility. All Parties, including the US, confirmed their support for legally binding limits on greenhouse gas emissions.

In July 1997, the US Congress passed the unanimous bipartisan Byrd-Hagel resolution expressing the sense of the Senate that the exemptions afforded to the developing countries by the Berlin Mandate were inconsistent with the need for global action on climate change and hence, economically and environmentally flawed. President Clinton acknowledged US responsibility and obligation to support and fully participate in the international efforts on numerous occasions and laid out US proposals for the Kyoto negotiations on October 22, 1997. The proposal included goals achievable at little or no cost to the economy; return of greenhouse emissions to 1990 levels by the budget period of 2008-2012; modest incentives for greenhouse cuts; no new taxes or regulations; essential developing country participation; and inclusion of joint implementation and other flexibility mechanisms for meeting international targets.

In the run up to the Kyoto Protocol, the US delegation initially flatly rejected the inclusion of binding targets and timetables while the other JUSSCANZ members argued

for differentiated targets based on a number of potential criteria such as per capita emissions, carbon intensity of the economy, emission trend lines, etc. The European Union (EU) suggested that the developed countries commit to reducing emissions of three greenhouse gases by 15% below the 1990 levels by 2010; with an interim target of 7.5% by 2005 (Brown, 2002.) The AOSIS proposed that nations agree to reduce their greenhouse emissions by 20% below their 1990 levels. India under the aegis of G-77 and China recommended that the developed nations reduce their CO_2 to 1990 levels by 2000; 15% below 1990 levels by 2010; and 35% below 1990 levels by 2020. Developing countries staunchly rejected US proposal to accept binding targets for themselves. As the negotiations progressed the debate settled around the issues of timeframes for reduction; differential targets; and, indicators to be used for differentiation. The US finally agreed for "realistic, verifiable, and binding medium-term emission target" (Cass, 2006, p. 155.)

Kyoto Protocol, 1997 – COP 3

The third COP was held in Kyoto, Japan, in December 1997.Then Japanese Foreign Minister, Keizo Obuchi, summed up the essence of the multinational negotiations held at Kyoto in December 1997, in following words: "These ten days could change the history of humankind" (Online Forum, 1997.) The Kyoto conference was attended by 6,000 delegates from more than 160 nations, 360 members of environmental groups, and 3,500 reporters apart from numerous government observers and industry operatives (Brown, 2002.)

The negotiations commenced with significant internal differences within the OECD, particularly between the positions of the US and the EU. The first week of the negotiations saw little progress as countries made charges and counter charges. On the

fourth day of the talks, The New York Times declared that only a "near miracle" could salvage the negotiations (cited in Brown, 2002, p. 34). At several junctures it appeared that the negotiations would fail since the US would often disagree on the magnitude of reduction targets being proposed by other nations. When the negotiations hit an impasse due to these dissonances, Vice President Gore made a 16-hour trip to Kyoto on December 8, 1997, and asked the US negotiators to display "increased negotiating flexibility" (Agrawala & Andresen, 1999, p. 465.) After intense negotiations, the Parties adopted the Kyoto Protocol.

At the Kyoto negotiations, India successfully defended its stated position and then Environment Minister declared that: "India categorically rejects ideas suggesting any new commitments for developing countries. Any idea that seeks further to deprive us of our equitable entitlement to grow can never be allowed to take root." (Sengupta, Dubash 2019, p.119.)

Kyoto Protocol – Main Features

The Kyoto Protocol (KP) is an amendment to the UNFCCC and explicitly enumerates the obligations of the Parties. The Protocol separates the participating countries into Annex I Parties, which include industrialized countries as well as those undergoing transition to a market economy, and non-Annex I Parties comprising the developing countries. Article 3 of the Protocol stipulates that all Parties included in Annex I, individually or jointly, shall reduce their overall emissions of six greenhouse gases by at least 5% below their 1990 levels between 2008 and 2012 (*Kyoto Protocol to the United Nations*, 1997). Annex A of the Protocol lists the six greenhouse gases to be carbon

dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride. The country specific quantified reduction commitment, calculated as percentage of base year 1990, is listed in the Annex B of the Protocol. Article 3 of the Protocol allows the Parties to use their emissions sequestrations by sinks resulting from "direct human-induced land-use change and forestry activities, limited to afforestation, reforestation and deforestation since 1990" to receive or transfer emissions reduction credits. The Protocol establishes a reporting requirement in a "transparent and verifiable manner" and necessitates "demonstrable progress" in achieving the commitments by 2005 (*Kyoto Protocol to the United Nations*, 1997).

The Protocol reiterates existing commitments of the Parties to the UNFCCC. It encourages them to promote sustainable development in implementing their reduction commitments. Article 2 of the Protocol calls for the Parties to implement policies that enhance energy efficiency and protect reservoirs and sinks of greenhouse gases. It asserts that the measures adopted by the Annex I Parties "must attempt to minimize adverse social, environmental and economic impacts on the developing countries" (*Kyoto Protocol to the United Nations*, 1997).

The provision of flexibility is one of the key features of the Protocol. There are no uniform reductions and emissions targets vary by country and specific type of gas. The Annex I Parties undergoing process of transformation to market economy have been given the option to use a "historical base year" in place of 1990. The 5-year commitment period (2008-2012) gives the parties flexibility in achieving their targets taking into account

"annual fluctuations for example from business cycles" (*Kyoto Protocol to the United Nations*, 1997).

To alleviate the costs of achieving emissions targets, the Protocol recommends the parties to use three flexibility mechanisms. Article 6 of the Protocol lays provision for Emission Trading whereby Annex I Parties may "transfer to, or acquire from any other such party emissions reductions units resulting from projects aimed at reducing anthropogenic emissions by sources or enhancing anthropogenic removals by sinks of greenhouse gases" (*Kyoto Protocol to the United Nations*, 1997). The most important proviso to this clause is that acquisition of emission reduction units should be supplemental to domestic action.

Article 4 of the Protocol outlines the mechanism of Joint Implementation between and among Annex I countries. It states that Annex I Parties could agree to fulfil their aggregate emissions reduction targets jointly. This mechanism includes the creation of a voluntary group or a "bubble" as suggested by the EU. Members of the "regional economic integration organization" thus formed would be responsible for meeting their targets both jointly and individually. Cost effectiveness and comprehensive regional approach in place of country by country regulatory approach to meet reductions are the main rationale of this mechanism.

Article 12 of the Protocol defines the Clean Development Mechanism (CDM). It is a modified version of Joint Implementation mechanism between Annex I and non-Annex I Parties. Under the CDM, developed countries may finance or invest in projects that avoid greenhouse gas emissions in developing countries and receive credit that may apply

towards meeting mandatory limits on their own emissions. Its rationale is to "assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Annex I Parties in achieving compliance with their quantified emissions reduction commitments under Article 3." These mechanisms were subject to the authority of COP (*Kyoto Protocol to the United Nations*, 1997).

Article 12 of the Protocol stipulates that the subsequent COP would develop elaborate modalities and procedures for the working of the flexibility mechanisms. Article 7 requires the Parties to submit annual inventories of greenhouse gas emissions and periodic national communication regarding implementation. Article 17 defers the definition of relevant rules and guidelines for verification, reporting and accountability to future meetings of the COP. Similarly, Article 18 requires the Parties to develop procedures for dealing with non-compliance. Article 25 states that the Protocol shall enter into force upon ratification by governments of 55 five nations representing 55% of the total carbon dioxide emissions for 1990. Article 24 opened the Protocol for signature at the United Nations Headquarters in New York from March 16, 1998, to March 15, 1999 (*Kyoto Protocol to the United Nations*, 1997).

Legally binding emissions reduction commitments and flexible implementation mechanism were the key features of the Protocol. The three mechanisms of emission trading, joint implementation and clean development mechanism typified the co-option of market forces in the world's struggle to contain climate change. The negotiation of the Protocol thus illustrated the way "in which economics and international law intersect"

(Stiles, 2006, p. 161). The fundamental idea behind the incorporation of these market based mechanisms was that they could achieve a reduction in greenhouse emissions on a large scale at relatively low associated costs. It is important to note that the Protocol was predicated on UNFCCC's "precautionary principle" since the science of climate change was still not definitive.

The KP did not include specific guidelines for accounting emissions and sinks from agricultural, land use and forestry related activities; the flexibility mechanisms; commitment for subsequent periods; and climate change adaptation actions among others. Parties had resolved to seek agreements on broad principles and leave the details for consideration in subsequent COPs. The novel concepts of emissions banking and flexibility mechanisms set a daunting task for future negotiations.

Buenos Aires, 1998 – COP 4

The main agenda at COP 4 was to chalk out the details for implementing the KP. The issues that needed resolution included: rules and guidelines for "market mechanisms" including Joint Implementation, Emissions Trading, and Clean Development Mechanism; guidelines for transfer of cleaner technologies to the developing nations; and rules about how to calculate sinks that could count as credits towards national emissions reduction targets.

Developing countries, on their part, had successfully resisted attempts at imposing mandatory limits on their emissions throughout the climate negotiations. The UNFCCC as well as the Berlin Mandate had precluded the developing nations from binding targets. Hence, the legal hurdles to achieving developing country participation were daunting.

Brown (2002) quotes a COP 4 observer who stated that the developing countries have adopted a "wait and see" approach; they wish to "wait and see if the developed countries begin taking steps to meet the obligations they agreed to in Kyoto" (p. 39). The developing countries continuously pointed out that it was unfair to demand binding obligations of them when the US, with the highest levels of gross domestic product (GDP) and greenhouse emissions, had been shy in making substantial commitments.

The US tried its best to persuade developing countries to commit in some form to the binding Kyoto obligations for a better part of 1998 and 1999. In April 1998, President Clinton issued a joint statement with the president of Chile asserting that "developing countries should participate meaningfully in efforts to address climate change" (Cass, 2006, p. 175.) In October 1999, the US signed an agreement with India to expand their bilateral collaborations on cleaner energy sources and obtained India's commitment to implement CDM.

Bonn, Germany, 1999 – COP 5

The fifth COP, held at Bonn between October 25 and November 4, 1999, was primarily a technical meeting and the Parties did not arrive at any major agreements. The US push for flexibility mechanisms remained controversial and the EU group split over the issue of Emissions Trading.

The Hague, 2000 – COP 6

The monumental task of converting the Kyoto Protocol into a working and enforceable treaty was the primary agenda at COP 6. The divergent perspectives and strategies of the Parties transformed the discussions into high level negotiations over

disputatious political issues. There were three major sources of deadlock: setting rules governing Kyoto's flexibility mechanisms; accounting for carbon sequestration through sinks; and developing country participation in emissions reduction commitments. The UNFCCC secretariat had sponsored frequent workshops and meetings to promote agreement on technical issues but the intransigence of Parties forestalled the same.

The US lobbied hard to get the developing countries to commit to some form of participation as it was essential for the Protocol's ratification by the US Senate. It attempted to use the review clause of the UNFCCC which required the Parties to periodically review the adequacy of commitments. Developing countries led by India and China were unyielding in their opposition and repeatedly affirmed the norm of taking domestic actions as a primary measure for containing global warming. China declared that G-77 would not be coerced into new commitments "in whatever guise or disguise" citing the historical responsibility of industrialized nations in having created the problem in the first place (Cass, 2006, p. 205.)

IPCC Third Assessment Report 2001

The IPCC released its *Third Assessment Report* in January 2001. Among the key conclusions were: confidence in the ability of models to project future climatic variations had increased; greater evidence that nearly half of the warming in past 50 years was attributable to human activity; and the "most optimistic" outcome assumed an aggressive campaign to reduce greenhouse emissions while the most pessimistic outcomes emanated from business as usual scenarios (UNIPCC, 2001). The report affirmed that the globally averaged surface temperatures have increased by 0.6 ± 0.2°C over the 20th century; and

that, for the range of scenarios developed in the IPCC Special Report on Emission Scenarios (SRES), the globally averaged surface air temperature is projected by models to warm 1.4 to 5.8°C by 2100 relative to 1990. The globally averaged sea level is projected by models to rise 0.09 to 0.88 m within the same period.

US Withdrawal from Kyoto Protocol, 2001

In the US, George W. Bush (Bush 43) won the highly contentious US presidential elections in 2000 with a tenuous margin. Development of a new energy strategy had been a central feature of the Bush campaign, and Bush had repeatedly denounced the Kyoto Protocol as flawed and unfair. In March 2001, Bush 43 announced the US decision to withdraw from the Kyoto process characterizing the Protocol as "fatally flawed in fundamental ways" (Bull, 2007e). The administration advised its negotiating partners its intent of remaining engaged on the issue of climate change but not supporting the Kyoto Protocol. The US faced worldwide condemnation for this decision.

COP 6 "bis" resumed at Bonn between July 17 and 26, 2001. Interestingly, the agreement reached on the issue of flexibility mechanisms placed no quantitative limits on the credit a nation could claim from the use of the mechanisms. On the issue of carbon sinks, credit was agreed for existing forests, cropland management and revegetation again with no caps on the amount of credit so drawn. Parties agreed to establish three new funds to provide assistance for financial needs associated with compliance. Action on procedures and mechanism to address the issues of noncompliance with Kyoto measures was deferred to the COP 7 to be held at Marrakech later in 2001.

Marrakech, Morocco 2001 – COP 7

At COP 7, the operational details of the Buenos Aires Plan of Action were finalized setting the stage for ratification of the KP in the form of Marrakech Accords. The package included decisions on operational rules for emissions trading, joint implementation and CDM; compliance regime outlining consequences for failure to meet emissions targets; accounting procedures for flexibility mechanisms; and, review of adequacy of commitments paving the way for discussions on future commitments by developing countries. There was a move from planning to pilot implementation by establishing support mechanism to least developed countries in the form of National Adaptation Programme of Action, Least Developed Countries Expert Group, Least Developed Country Funds, Special Climate Change Fund and Adaptation Fund.

The United States delegation maintained its observer role, declining to participate actively in the negotiations while others worked towards achieving requisite numbers for enforcement of KP. The date of the World Summit on Sustainable Development (August–September 2002) was put forward as a target date by which to enforce the KP.

The Marrakech Accords thus concluded the first phase of climate regime building with finalization of the KP mechanisms.

New Delhi, India 2002 – COP 8

The Delhi Ministerial Declaration adopted during COP 8 called for transfer of technology on the part of developed countries and minimize the impacts of climate change on developing countries. After US and Australia's refusal to ratify the KP, Russia's joining the treaty became imperative for its enforcement. India ratified the KP.

Milan, 2003 – COP 9

At COP 9, the parties agreed to use the Adaptation Fund established at COP 7 in 2001 primarily in supporting developing countries better adapt to climate change and capacity building through technology transfer. The Parties also agreed to review the first national reports submitted by 110 non-Annex I countries.

India had seen KP's CDM mechanism which allowed for developed countries parties to invest in specific emissions reduction projects in developing countries and use the credits so generated to fulfil their mitigation targets as a good opportunity to gain foreign investments and clean technology (Sengupta, 2019, p. 120.) In furtherance of the thinking, India established its own national CDM authority under the aegis of Ministry of Environment and Forest in 2003.

Buenos Aires, 2004 – COP 10

COP 10 laid special emphasis on climate change mitigation and adaptation while reflecting the progress made in the first decade since the COP process began. The Buenos Aires Plan of Action was adopted to facilitate the developing countries to better adapt to climate impacts. The parties also began discussing the post-Kyoto mechanism, on how to allocate emission reduction obligation following 2012 at the culmination of the first budget period. Russia ratified the KP thus reaching the critical number required its enforcement. KP went into effect in 2005.

Montreal, 2005 – COP 11

COP 11 at Montreal served as the first Conference of Parties to the KP (CMP 1) while simultaneously initiating a parallel dialogue process to look beyond the KP. The coming into force of KP in 2005 after ratification by Russia, triggered discussion on further

course of action for the period beyond KP's first commitment period concluding in 2012 (UNFCCC, 1997, Art 3.9). There were other glaring factors to be considered: first, with only industrialized countries committed to reducing emissions, KP's success was suspect especially due to the US decision of not ratifying the KP and pulling out of it in 2001; second, the emissions from Organization for Economic Co-operation and Development (OECD) countries between 1990 and 2004 grew continually as a result of which they remained far 'off track' their agreed mitigation targets (United Nations Development Programme (UNDP) cited in Sengupta, 2019, p. 121); third, the combined emissions from the developing countries, especially the major emerging economies were slated to surpass those of the developed countries – China was projected to surpass the US as the world's largest GHG emitter in 2007 and India was projected to become the world's third-largest GHG emitter by 2015 (International Energy Agency [IEA] 2007: 11) – making a strong case that long term solution was possible only with active engagement of all the parties.

In a step towards resolution, COP 11 launched a dual-track process to not only discuss the post-2012 'second commitment period' mitigation targets of Annex I parties (Montreal Action Plan) that had ratified the KP (the KP track), but also a separate parallel 'dialogue' on 'long-term cooperative action' (the LCA track) to discuss the future commitments of those countries that had either refused to ratify the treaty (such as the US or Australia) or had no binding emission reduction obligations under it, that is, developing nations (UNFCCC 2006). The idea that any climate mitigation agreement seeking to address the problem of the global commons cannot be resolved satisfactorily on any but a

universal support began to crystallize. COP 11 was thus hailed as providing a map for the future.

COP 11 also established the “Nairobi work program on impacts, vulnerability, and adaptation to climate change,” “Reducing Emissions from Deforestation & Forest Degradation in Developing Countries” (REDD) and the EU Emission trading scheme came online.

Nairobi, 2006 – COP 12

COP 12 made some progress in the areas of support for developing countries. The parties adopted a five-year plan of work to support climate change adaptation by developing countries, and agreed on the procedures and modalities for the Adaptation Fund. They also agreed to improve the projects for clean development mechanism.

IPCC Fourth Assessment Report 2007

The IPCC released its Fourth Assessment Report (AR4) in January 2001. For the first time it was concluded that global warming is "unequivocal" and that human activity is the main driver, "very likely" causing most of the rise in temperatures since 1950. The report also said that the average global temperatures would probably increase by 4 deg. Celsius during this century in Business as Usual scenario with 1.8 deg. Celsius increase certain even in the most optimistic scenario based on a declining world population and a rapid switch to clean technology. AR4 is the first IPCC report in which the scientists declare with near certainty (more than 90 percent confidence) that carbon dioxide and other greenhouse gases arising from human activities are the main cause behind the global warming since 1950. While stating that the world is committed to centuries of warming

due to anthropogenic forcing of climate, AR4 mentioned that global warming can be substantially slowed by prompt action.

AR4 also concluded that if carbon dioxide concentrations in the atmosphere reach twice their pre-industrial levels, the global climate will likely warm by 2.4 – 6.4°C (relative to 1980-1999 temperatures) and the sea level rise is expected to reach 0.26 – 0.59 m at 2090-2099 (relative to 1980-1999). Continued GHG emissions at or above current rates would cause further warming and induce many changes in the global climate system during the 21st century that would very likely be larger than those observed during the 20th century. The rising temperatures could force hundreds of species to become extinct and trigger conflicts in countries struck by droughts and severe flooding.

Another significant development in 2006 was that China's GHG emissions exceeded that of the US and it became the world's largest emitter.

Evolution of climate change through the emergence of scientific consensus, formation of IPCC and periodic publication of its assessment reports, UNFCCC and the COP process shows how quickly it got propelled as a collective and pressing international concern. The world community took note of the scientific and environmentalists' framing of the issue and efforts coalesced to seek the most optimal policy prescriptions and action plans. The UNFCCC established the process of dialogue among a cross section of people and countries representing a full range of power, resources, sizes and capabilities. The negotiations were attended by "democracies, dictatorships, theocracies, autarchies, environmental groups, indigenous peoples, epistemic communities, human rights

organizations and international business community" (Gupta, 1997, p. 173)—each with their own separate ideas and agendas.

While climate change as an issue got strategically defined on the basis of science, the policies and actions required to tackle it were political in nature. The seriousness of the problem made it a valence issue inasmuch that immediate mitigation action was seen as the only legitimate way forward (Baumgartner & Jones, 1993.) However, like a typical valence issue the paradox lay in the fact that it was tempting to bring up but genuinely difficult to resolve. There were tall political assurances rather than clear action plans for redressal.

This phase of climate negotiations from 1992 – 2007 was characterized by a remarkable consistency and continuity in India's negotiating position. India's twin national objective of poverty eradication and economic development through industrialization primarily defined its negotiating stance. Championing the cause of the developing nations side by side with China under the G 77 grouping, India emphatically advocated the principles of equity, climate justice, historical responsibility, CBDR & RC and polluter pays and ensured their inclusion in UNFCCC and KP. There were fundamental shifts in the international position and also India's approach by the mid of the first decade of climate negotiations in this century. Survey and analysis of the impulses of this change forms the basis of this study.

****

CHAPTER THREE

In the immediate aftermath of IPCC's AR 4 and the emerging scenario that KP was by now substantially weakened due to withdrawal by several nations, the world community was seized with a certain sense of urgency about dealing with climate change. Science's verdict on the "unequivocal" anthropogenic forcing of the climate system was firmly established and the work on a stronger, more consensual and inclusive treaty to replace KP began in earnest. However, by now, several realities that had underpinned the climate negotiations from the beginning had begun to slowly shift.

This chapter chronicles the significant developments from the focal point of India to discern how it navigated the shifts in international climate negotiation after the initial phase of regime 'creation and defence' (1990 – 2007) to the phases of regime 'contestation and transition' (2007 – 2010) and regime 'change and acceptance' (2011 – 2015) (Sengupta, 2019). Against this backdrop, it is instructive to track the generation and outcome of climate policy positions taken by India along the significant decision points in the international climate negotiations between 2009 – 2015.

Phase I - First Significant Shifts in India's Climate Policy (2007-09)

The years between 2007 and 2009, remained essentially a period of North –South deadlock. The North united in its demand that KP type Annex I and non-Annex I differentiation, or 'firewall' between the developed and developing countries must break down, and the major developing countries or the 'major emerging economies' cannot continue to remain immune to emissions target for a meaningful, long term solution. Unlike earlier, when the South was represented largely by G 77 & China, new coalition groupings

like BASIC (Brazil, South Africa, India and China,) emerged as a prominent negotiating block. The latter tried to remain true to the fundamental provisions of 'equity', CBDR & RC, 'new and additional finance' and 'overriding priorities of poverty eradication and development' hardwired in UNFCCC. At this time, China earned the dubious distinction of being the largest GHG emitter, surpassing the emissions of US and EU. The growing salience of climate change is also reflected in the fact that it found a prominent place in the agenda of other politically important 'minilateral' forums dominated by the developed countries and where traditional developing country coalitions held significantly lesser sway (Sengupta, 2019, p. 123.)

This phase also marked the first significant shifts in India's climate policy and positions. The Indian government undertook a host of domestic policy measures indicating the importance the issue was accorded – launch of 8 missions under National Action Plan on Climate Change (NAPCC) in 2008 to promote development objectives while also yielding *co-benefits* for addressing climate change effectively'; setting up of Prime Minister's Council on Climate Change (PMCCC) 2008; and, making important declarations at various international fora among others. Debates and discussions on climate change gave it a greater visibility in the public domain. However, by and large India's stated positions in the international negotiations remained the same.

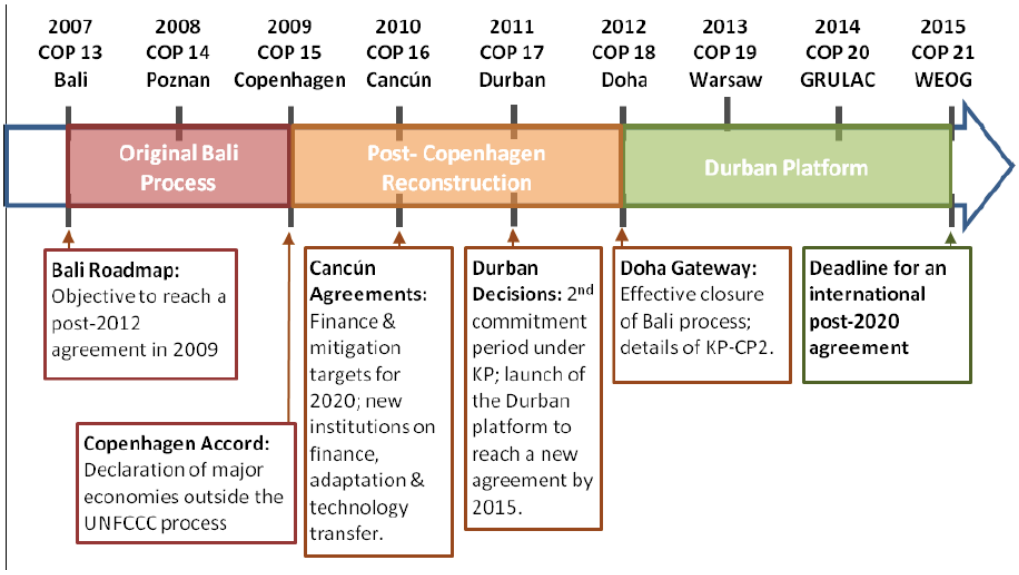
Bali Action Plan - COP 13

Responding to the findings of AR 4 that warming of the climate system is unequivocal, COP 13 held at Bali, Indonesia adopted the Bali Action Plan (BAP) with two fold objective of finalising the operational details of the KP Adaptation Fund (AF), and to

put together a roadmap for negotiations on strengthening the UN climate change regime beyond the initial commitment period of the Kyoto Protocol set to expire in 2012. The BAP stood on five pillars: shared vision, mitigation, adaptation, technology and financing. The term shared vision referred to a long term vision for action on climate change including long term goal for emissions reduction. The timeline and structured negotiation on the post-2012 framework was to accrue from an 'agreed outcome' under the long term cooperative actions (LCA) track to be reached by COP 15 in Copenhagen in 2009. The Ad hoc Working Group (AWG) was set up for LCA for scaling up the implementation of Convention up to and beyond 2012 and split up the work streams into components under the five pillars.

India staunchly defended its position that it would not allow for any breach in the fundamental architecture of the UNFCCC under the LCA track to culminate in the desired treaty at Copenhagen. It worked closely with developing country parties to ensure that the content of the purported treaty was consistent with KP. This also meant ensuring a clear 'differentiation', or 'firewall' between the responsibilities of the developed and developing countries for climate mitigation, and especially that climate mitigation on the part of developing countries be made contingent on the financial support from developed countries. Additionally, on the issue of international measurement, reporting, and verification (MRV) of developing country mitigation efforts, it tried to ensure that only those actions which were supported by developed countries would be subject to external scrutiny.

In its closing statement India averred: "The road to Bali was in principle strong, the road from Bali must be much stronger. We need to move forward to Poland to Denmark, and beyond, for what is at stake is saving our future generations. And therefore it is not a question of what you will commit or what I will commit. It is a question of what we will commit together to meet that challenge!" (Mulleri, 2008.)



Source: Climate Action Network South Asia

At home, the Government of India set up the Prime Minister Council on Climate Change (PMCCC) in 2007 under the chairmanship of Hon'ble Prime Minister for evolving a coordinated response to issues related to climate change; provide oversight for formulation of action plan in the area of assessment, adaptation, technology support and mitigation of climate change; and periodically monitor key policy decisions. An Executive Committee on Climate Change (ECCC) was also set up under the chairmanship of Principal Secretary to Prime Minister to assist PMCCC in evolving a coordinated response to issues

relating to climate change at the national level and to monitor the implementation of the eight National Missions under National Action Plan on Climate Change.

In June 2007, in a meeting of G8+5 (China, India, Brazil, South Africa, and Mexico) in Heiligendamm, Germany, focussed on climate change, then Prime Minister Manmohan Singh, reiterated India's core positions stating the time was "not ripe for developing countries to take quantitative targets as these would be counter-productive on their development processes", and significantly "India's per-capita GHG emissions are not going to exceed those of developed countries even while pursuing policies of development and economic growth" (Singh, 2007.)

As a part of India's Initial National Communication to the UNFCCC vulnerability assessment and adaptation studies of climate change were made in various areas such as water resources, agriculture, forests, natural eco-systems, coastal zones, health energy and infrastructure, resulting in the formulation of National Action Plan on Climate Change (NAPCC). Released in June 2008, it outlined India's domestic strategy to meet the challenge of climate change while enhancing the ecological sustainability of India's development path. The eight missions - National Solar Mission, National Mission on Enhanced Energy Efficiency, National Mission on Sustainable Habitat, National Water Mission, National Mission for Sustaining the Himalayan Eco-system, National Mission for a Green India, National Mission for Sustainable Agriculture and National Mission on Strategic Knowledge for Climate Change – form the core of NAPCC. Emphasizing the importance of moving from a fossil fuels-based economy to one based on non-fossil fuels and renewable sources of energy, the Solar Mission set an ambitious goal of generating 20

GW of solar energy by 2022, a steep increase from current levels. Nuclear energy, contributing 3 percent to India's electricity generation, is targeted to increase five-fold by 2020. The National Mission on Enhanced Energy Efficiency (NMEEE), built on the Energy Conservation Act of 2001, established a market mechanism for trading energy efficiency certificates in energy-intensive sectors. With plans for a full roll-out by April 2011, India would be the first developing country to put in place a market-based mechanism to control energy-related emissions.

The PMCCC was made in charge of the overall implementation of the plan. Emphasizing the overriding priority of maintaining high economic growth rates to raise living standards, the plan "identifies measures that promote development objectives while also yielding co-benefits for addressing climate change effectively." (Singh, 2008.) It says these national measures would be more successful with assistance from developed countries, and pledges that India's per capita greenhouse gas emissions "will at no point exceed that of developed countries even as we pursue our development objectives" (NAPCC 2008.)

Prioritizing India's development imperatives, the NAPCC for the first time established a concrete framework to address climate in the domestic context. As such, the release of NAPCC marked a turning point in India's engagement on the climate issue. However, NAPCC did not lead to any shift in India's position in the international climate negotiations. The commitment met with a lukewarm response internationally, since it did not signal India's readiness for undertaking mitigation actions.

2008 also marked the beginning of KP's first budget period. Delegates to COP 14 held in Poznan, Poland, agreed on the Adaptation Fund to help the poor nations to adapt to climate impacts and approved mechanism to incorporate forest protection in climate protection efforts. Primary focus remained negotiation of successor to KP.

2009 was a year of great ferment in India's engagement with climate change and marked a significant shift in its climate policy position. Several important international initiatives marked the run up to COP 15 at Copenhagen in 2009. Major Economies Forum on Energy and Climate (MEF) was launched by the US president Barack Obama in April, 2009 to facilitate dialogue among the 17 major developed and developing GHG emitting countries to garner political leadership needed to advance efforts to address climate change. In its first meeting in Washington DC, the participants while acknowledging that MEF was not a substitute to UNFCCC, shared the view that climate change posed a clear and present danger and could add momentum to the Copenhagen process in their collective effort to achieve a low carbon future.

India signed the 'MEF Leaders' Declaration on Energy and Climate' at a meeting held alongside the G8 Summit in L'Aquila, Italy in July 2009, which declared for the first time, that the rise in global temperature 'ought not to exceed 2°C' and that the MEF countries would work together to identify a 'global goal' to reduce 'global emissions by 2050' (Major Economies Forum on Energy and Climate, 2009.) Though a non-binding political declaration, it signalled for the very first time, India's willingness to cap its future emissions (Ramachandran, 2009.)

India's Minister for Environment, Jairam Ramesh, announced on the floor of the Parliament that India would voluntarily reduce the 'emissions intensity' of its gross domestic product (GDP) by 20–25 per cent by 2020 compared to its 2005 level through domestic mitigation actions, arguing that to do so would be in India's own best interests (Lok Sabha 2009.) The minister pushed for a 'per-capita plus' approach whereby specific 'performance targets' could be assigned through domestic legislation, or executive action, to key sectors of the country's economy. He also suggested taking a more flexible stance on the question of allowing external reviews of India's domestic mitigation actions (Sethi, 2009.)

Formation of the BASIC Group

An important development pre-Copenhagen was the alliance formed by India with other major emerging economies, Brazil, South Africa and China, creating the BASIC grouping of countries in November 2009. Credited with playing a key role in the conceptualisation of this bloc, India committed to act jointly at the Copenhagen climate summit towards defining a common position on emissions reductions and climate aid money. BASIC has since emerged as a powerful voice within the negotiations and plays a leadership role among the developing countries. This move signalled the acceptance by the major developing economies, including India, that their collective responsibility towards climate change is different from the other developing countries.

The expectation with COP 15 and the CMP 5 in Copenhagen in 2009 had been a legally binding comprehensive climate mitigation treaty beyond 2012, concluding the AWG – LCA & AWG – KP tracks laid down in the BAP 2007. In the run up to COP 15 in

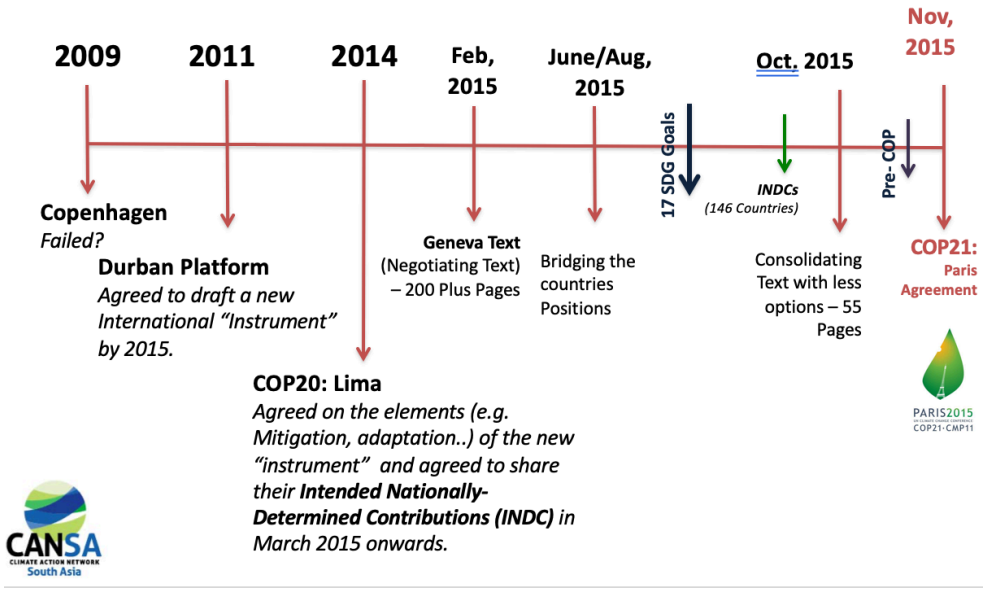
December 2009 in Copenhagen, several rounds of AWG – LCA meetings were held throughout the year in Bonn, Bangkok and Barcelona to deliberate the draft negotiating texts to include a 25 – 40% reduction in the emissions to avoid the worst damages of climate change in the purported treaty as the reluctance of the Annex I countries to fulfil their KP commitments became increasingly clear. The Parties volunteered their proposed actions should a common binding agreement be achieved even as consensus eluded the world community.

Sengupta calls it "essentially a period of North–South deadlock" (Sengupta, 2019, p. 122) with the North aggressively demanding the participation of major developing economies and the majority of South, now under the new grouping of BASIC (Brazil, South Africa, India and China,) maintaining its unflinching, almost non-negotiable support for the fundamental provisions of 'equity', CBDR & RC, 'new and additional finance' and 'overriding priorities of poverty eradication and development' which were hardwired in UNFCCC. The latter continued to insist on the implementation of a 'top-down', 'strictly differentiated', 'legally binding', 'targets and timetables'-based approach, exemplified by the UNFCCC and its KP, while key developed states, especially the US, advocated a radically altered regime that would replace Kyoto with a 'more voluntary', 'less differentiated', 'bottom-up', 'pledge and review'-type system that would also require significant mitigation commitments and accountability from key developing countries.

Copenhagen Accord – COP 15

The COP 15 culminated in a 13-paragraph non-binding 'political accord' negotiated mostly by 25 parties including US and China, only 'noted' by the COP and considered an

external document, not negotiated within the UNFCCC process. It was not a legally binding treaty with commitments apportioned to the parties. It mentioned restricting temperature rise to 2°C, registering and monitoring the mitigation commitments and actions of developed and developing countries including forestry and investment through international institutions, and collective developed country commitments on finance to the tune of US$30 billion for the period 2010–2012. BASIC countries ensured that the key provisions of UNFCCC and KP were referenced and recorded in the accord. Other important decisions, such as extension of KP beyond 2012 and long term financing options were postponed for the following year.



Source: Climate Action Network South Asia

The Copenhagen Accord was essentially a political agreement brokered by US President Barack Obama and the leaders of the BASIC countries. It struck a fine balance between the asks of the developed and developing countries. Additionally, India played a crucial part as a facilitator between US and China, the two largest GHG emitters. There

had been significant concern in China and India about MRV leading to potential infringements of their national sovereignty. However, India's introduction of the concept of 'international consultations and analysis' allowed for creative latitude in its interpretation of what the process for transparency would include and removed references to 'verification' which was considered intrusive by both India and China. This once again affirmed India's position as a deal maker in the international climate negotiations.

Prior to the Copenhagen summit, India's political leadership seemed willing to reconsider its international stance and reframe India's traditional position on climate change. Through his statements, India's Environment Minister Jairam Ramesh, had sought to introduce a degree of flexibility in India's negotiating brief. These new ideas provoked a great deal of domestic debate in the country, including within government, which saw strong concerns about the seemingly unilateral nature of these concessions being expressed by senior members of India's official climate negotiating team itself. As a result, both pre and post Copenhagen phase saw extensive debates on India's climate policy on the floor of the parliament.

There was a general consensus among the law makers that based on incontrovertible scientific evidence, climate change was a 'clear and present danger' and addressing the issue was no longer a choice but an 'imperative' (Suresh Prabhu, 2013.) B. Mehtab, MP from Cuttack implored that India should lead in negotiations during the Copenhagen summit. He averred: "Government has spelt out that India cannot accept a cap and that the ultimate carbon abatement, per capita, must converge for the rich and poor nations. But we need to do more. We need to become leaders in progressing the

conversation and the best way to do this is to take our self-interest seriously, then commit to it internationally…" (p. 236.)

Jairam Ramesh, Minister of State for Ministry of Environment and Forests assured the Parliament on December 3, 2009, just prior to the COP 15 at Copenhagen, that he had been mandated to be "constructive and proactive" during the summit and even though it had not caused the problem of global warming, India was to be a part of the solution (p. 238.) Calling per capita basis emissions as the only "instrument ensuring equitable distribution," the Minister laid out India's non negotiables at Copenhagen: first, India will not accept any legally binding emissions reduction target; second, Indian will not accept an agreement which stipulates a peaking year for it; third, India would be prepared to subject all its mitigation actions supported by international finance and technology to international review.

The verdict on Copenhagen accord was uncomplimentary in the majority section of the world media. BBC news commented that unlike in KP negotiations where the key governments took into account each other's concerns, in Copenhagen they stuck to their positions – "everyone talked but no one really listened" ("BBC News - Why did Copenhagen fail to deliver a climate deal?", 2009.) The ambitious statements made in the multilateral fora like the G 8, MEF, Asia – Pacific Economic Cooperation Forum (APEC) dominated by the "big players" were not negotiated and were not legally binding. The adversarial legalism of the US political system, where the President is not able to commit what the Congress and Senate would not ratify affected the outcomes of US negotiations. This was also the first year of Obama presidency and he was dealing with a severe

economic crisis, attempts to curb US emissions and initiate his healthcare reforms. He had been awarded the Nobel Peace Prize in anticipation of his leadership on issues of import and as such he had a lot of expectations riding on him but he could deliver only little. There were comments on how the host nation, Denmark under the presidency of Lars Lokke Rasmussen could not handle the talk efficiently. Sacking of the Danish negotiator Thomas Becker and differences with Danish Climate Minister Connie Hadegaard did not bode well of the success of the summit. The 24-hour news culture saw a blitzkrieg being mounted by Obama White House with the US President announcing a deal live on TV even before most of the involved governments knew that some deal had been done. Observations have also been made about EU's lack of firm stand and how the campaigners got their strategies wrong.

Copenhagen accord was appreciated as a step forward inasmuch that it promised in the very least a cut in emissions, set up of emissions verification system, and reduced deforestation by some. John Prescott, Climate Change rapporteur for Council of Europe called the accord a "statement of principle." He found it remarkable that 192 countries to the final admission to curb temperature rise to 2°C above pre-industrial level. Rajendra Pachauri, then Chairman of the IPCC remarked that there were three major achievements of the accord – science finally had influence on negotiators defining what would represent dangerous anthropogenic interference with the climate system; BASIC and US agreed on a tricky issue; and $ 30 billion had been included in the accord for funding developing country actions (Vaughan & Adam, 2020.) The official India too felt that India stood its ground on norms and principles and did not agree to emissions targets. However,

progressive commentators and journalists like Urmi Goswami castigated the accord as a document "consigned to the footnotes of the UNFCCC" (in conversation.)

Immediate Aftermath of COP 15, Copenhagen

The immediate aftermath of the COP 15 at Copenhagen generated even more debates and discussions on the floor of the Parliament and the Copenhagen accord was discussed threadbare by the lawmakers. Then Leader of Opposition, Arun Jaitley led the charge that India's acquiescence to the plurilateral Copenhagen accord, "a global disappointment" was a betrayal of weak and poor developing nations; vide para 2 of the accord (Copenhagen accord, para 2.) India had agreed to the concept of peaking year even though it had been stated that it be longer for the developing nations; and, the document obliterated the distinction between supported and unsupported actions and any lack in them on our part may lead to imposition of trade sanctions. He went on to point out the language of the accord, per Para 5 of which, the non-Annex I countries "will" implement mitigation actions, instead of recording "may" or "could" implement mitigation actions. Regarding funding for mitigation action, vide Para 8 the accord stated that funding for adaptation will be prioritised for the most vulnerable developing countries such as LDCs, small island developing states and Africa implying that India would remain bereft of the same. Member of Parliament, Sitaram Yechury expressed concern that the accord jettisoned the UNFCCC, the KP and the BAP, the main plank of which had been historical responsibility. Yechury also pointed out that the accord had effectively negated India's demand of technology transfer without the IPR regimen.

Jairam Ramesh, as the head of India's negotiating team defended India's signing of Copenhagen accord by stating that was not a demise of KP but merely an "alternative alignment" to take the negotiations forward for the period beyond 2012. He stressed on how the developing nations were no longer interested in keeping their KP commitments in the face of US' withdrawal even as US accounted for 22% of global GHG emissions. He defended India's prescription of 'consultation and analysis' instead of 'review, scrutiny, verification or assessment.' For the 'peaking year' issue, the Minister pointed out that the concept was implicit in MEF's L'Aquila declaration about India's per capita emissions never exceeding those of the developed countries' emissions. However, the most important point that the Minister made was that in Copenhagen, India had worked hard along with its BASIC partners to work on a viable accord and not become the "blame boys" and held responsible for the failure of the talks. He was confident that India could emerge as a leader in green technology and did not require any international aid. On the issue of technology and fund transfer, he quite tellingly stated that "A country like India should be able to stand on its own feet and we will do what we have to do on our own" (Ramesh, 2018.)

Shyam Saran, Indian Prime Minister's special envoy on climate change, recalls Copenhagen talks trenchantly as smacking of competitive dynamics with neither the developed or the developing countries willing to rise above their narrowly defined near term interests and yielding as little as possible (Saran, 2019.) He points out that China took more hard-line positions than India, but ironically, the latter ended up being 'pilloried for being recalcitrant and obstructionist.' However, in the ultimate analysis, Saran writes that

Copenhagen accord began the process of "attrition and systematic hollowing out of the UNFCCC" (p.168). India's complicity in the same was undeniable.

This phase concluded with the clarity that despite the flexibility and spirit of accommodation shown by India, the "*ancien régime* was now under severe contestation and in a period of definite transition" (Sengupta, 2019, p. 125.)

Phase II - Continuities and Changes in India's Climate Positions (2010-14)

The pall of Copenhagen continued in the early part of 2010 with the Environment Minister Jairam Ramesh fielding questions in the Parliament over India's role in the international climate negotiations. In his response to MP Ishwar Singh's question, the Minister answered about the meetings of AWG – LCA and KP in Tianjin, China and preparations about the COP 16 to be held in Cancun, Mexico in 2010 (Pillai and Ghotge, 2010.) He also informed the Parliament about developed countries' insistence that emerging economies such as India and China should take on substantial initiatives on mitigations including commitments to curb GHG emissions. However, the BASIC group reiterated the principles of CBDR & RC enshrined in the UNFCCC and strongly opposed such moves from the developed countries. He stressed that economic growth and eradication of poverty were a priority to enhance the adaptive capacity of the poor.

In January 2010, the Planning Commission of Government of India appointed an Expert Group to prepare a report on "Low Carbon Strategies for Inclusive Growth in India." It was mandated to present inter alia, a report on alternative low carbon options with analysis of their cost benefit analysis and relative merits and demerits; action plan comprising critical sector specific low carbon initiatives along with suggested timelines to

be undertaken; and, list enabling legislation, rules and policies as required to operationalize low carbon roadmap.

In the BASIC summit at Cape Town in April, 2010, the Environment Ministers of the four nations called for a legally binding global agreement on long-term cooperative action under UNFCCC and KP to be concluded in Cancun stating that the slow legislative progress in the United States should not be allowed to dictate the pace of global agreement. They also demanded "equitable space for development," and technological and financial capacity building support to be provided by developed countries to the developing countries based on their "historical responsibility for climate change" (Tianjin News Update, 2010.)

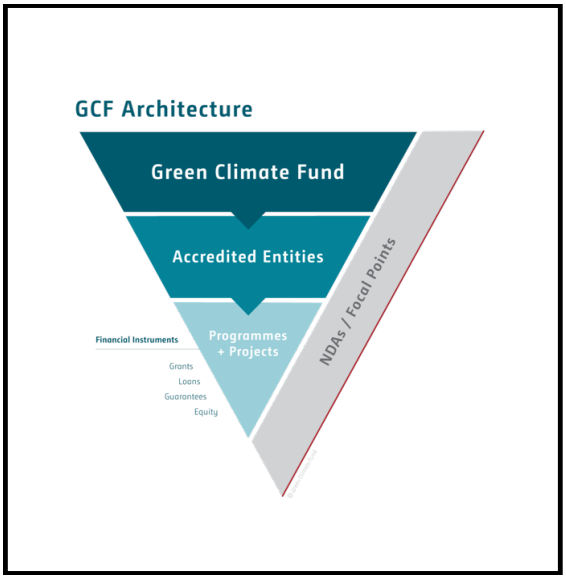
To build momentum for the COP 16 to be held in Cancun, first Petersberg Climate Dialogue was held in May 2010 in Bonn at the behest of the German Chancellor, Angela Merkel. India was a part of the dialogue. The initiative was launched as a result of the "failed" climate negotiations at Copenhagen and with the goal of creating space for constructive exchanges among the Environment Ministers in order to provide an "implementation track" to supplement and support the "negotiation track". The following priority areas were identified – reducing GHG emissions in developed and newly industrialising countries, setting up and international system for monitoring mitigation activities, supporting adaptation measures in developing countries, and financing international climate protection.

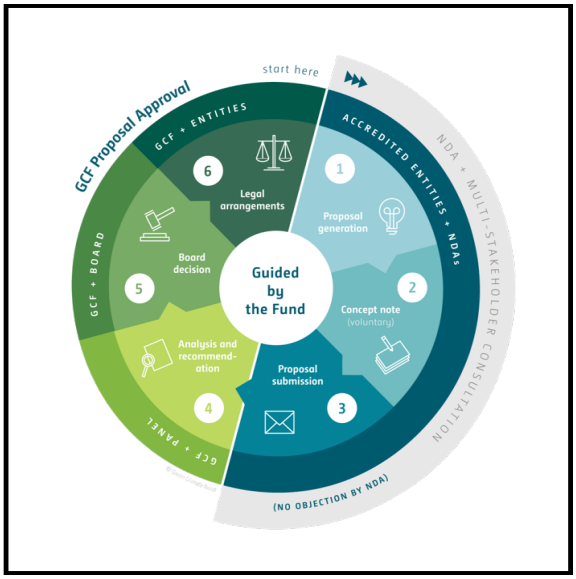
The MEF meeting at various places throughout 2010 discussed goals for successful outcome in Cancun. The seventeen participating nations including India expressed hope to

agree on a balanced set of decisions informed by the Copenhagen accord. The latter represented an important an "important political consensus" for the way forward (MEF, 2010.)

Cancun Adaptation Framework – COP 16

COP 16 was held in December 2010 in Cancun, Mexico. It recognized the AR 4 of IPCC and held that all parties should attempt to adhere to the goal of 2°C warming above the pre-industrial levels recognizing that the time frame for peaking would be different for the developed and developing country parties due to the socio-economic development and poverty eradication priorities of the latter. Although the commitment to KP 2 were not agreed on, it was decided that the base year shall be 1990 and the global warming potentials shall be those provided by the IPCC. Parties agreed on US$100 billion per annum Green Climate Fund (GCF) and a Climate Technology Centre. However, the sources of funding of the GCF was not agreed upon.





Source: Climate Action Network South Asia

The conference also established the Cancun Adaptation Framework and the Adaptation Committee, and invited Parties to establish and strengthen regional adaptation centres and networks. For developing countries, it set up a registry to record the Nationally Appropriate Mitigation Actions (NAMAs) in the context of sustainable development enabled by technology, financing and capacity-building (called internationally supported mitigation actions) subject to MRV.

In an important plenary during the COP 16, Minister Jairam Ramesh said that "all countries must take binding commitments under appropriate legal form" (Goswami, 2011) creating a flurry of reactions from all quarters in India. This statement was construed as India's willingness to take on emissions targets unconditionally, a position that was wholly unacceptable to most in the government and surprising to many in the Indian negotiating team. The Minister tried to explain that he had implied that "India is not against legal form but against legally binding agreement, that is a red line." Under criticism at this apparently unilateral stand, the Minister belaboured the point that he was only "nuancing" India's position and "expanding our option" so that India did not get isolated. Goswami astutely states that the Minister's statement reflected a realization within the government that legally binding agreement could not be staved off forever.

In the Petersberg Climate Dialogue II "Rising to the Climate Challenge" held in July, 2011 in Berlin, the participants stressed that the level of ambition of existing commitments and actions was insufficient to limit the global temperature increase to below two degrees and that countries should urgently consider how to raise their level of ambition both at the national and international level (Petersberg Climate Dialogue II, 2011.)

Similarly at the MEF meeting in April 2011 at Brussels, while all the participants agreed on the need for environmental integrity, there were substantial differences about the continuation of the KP under a second commitment period beyond 2012. Some supported the move as KP was a legally binding treaty, many opposed it stating that it was an inappropriate legal vehicle for mitigation commitments, since it covered only a small fraction of global emissions and therefore not protective of the environmental integrity. A strong opinion began emerging that the second commitment period under KP could move forward only if it entailed action from all major economies and was merely transitional to a global agreement. These trends set the stage for deliberations during COP 17 held in Durban, South Africa in 2011.

Durban Platform For Enhanced Action – COP 17

The most important decision taken in COP 17 at Durban, South Africa was to terminate the 'dual track' negotiations by the end of 2012 and launch a singular negotiating track for development of a 'protocol, another legal instrument or an agreed outcome with legal force under the Convention' by COP 21 in 2015, which would be 'applicable to all Parties' and be implemented from 2020. This Durban Platform for Enhanced Action made no differentiation between the developed and developing country parties, unlike the BAP 2007. It also did not include any mention of the core foundational regime principles of 'equity' and 'CBDR&RC' unlike the Copenhagen Accord 2009 and the Cancun Agreements 2010 (Sengupta, 2012.) There was progress regarding the creation of US 100 billion GCF to help LDCs adapt to climate impacts, cooperation on clean technology and forest protection.

The head of the Chinese delegation confirmed China's willingness to undertake binding commitments to limit GHG emissions post 2020 subject to accountal of historical contributions of US and EU in atmospheric accumulation of GHGs and sustainable economic needs of developing countries such as China and India.

The head of Indian delegation firmly stated that India would not compromise on the centrepiece of equity or dilution of CBDR & RC – "firewall of CBDR must not be broken. Equity in the debate must be secured' (MoEF 2011.) It was through India's determined efforts to avoid any 'universally applicable' legally binding instrument and through last minute huddle with EU, that the third option of 'an agreed outcome with legal force' was included in this mandate (Dubash and Rajamani, 2015.) Sengupta remarks that COP 17 witnessed a great Northern unity and fragmentation within South including the BASIC group, leaving India "isolated and fighting in its own corner" (Sengupta, 2019, p. 126.) It was also clear that by this time KP had become marginal to the climate negotiations process.

The new 'Durban Platform for Enhanced Action' made no distinction between the developed and developing countries thus shattering the firewall which had been the hallmark of all the accords and treaties up until The BAP. Also, the Durban document made no mention of UNFCCC's foundational regime principles of equity and CBDR & RC – which held currency in both the Copenhagen Accord and the Cancun Agreements (Sengupta, 2012.)

The Durban Platform marked a fundamental departure in international climate negotiations and critically altered its character and narrative. India stirred to brace the new

realities while still holding on to the cherished principles. Responding to European Union Climate Commissioner, India's new Environment Minister and head of Indian delegation, Jayanthi Natrajan remarked: "We have shown more flexibility than virtually any other country. But equity is the centrepiece, it cannot be shifted. This is not about India. Does fighting climate change mean we have to give up on equity? We have agreed to protocol and legal instrument. What's the problem in having one more option? India will never be intimidated by any threat or any kind of pressure. What's this legal instrument? How do I give a blank cheque? We're talking of livelihoods and sustainability here. I'm not accusing anybody, but there are efforts to shift the (climate) problem to countries that have not contributed to it. If that is done, we're willing to reopen the entire Durban Package. We did not issue a threat. But are we being made into a scapegoat? Please don't hold us hostage" (IANS, 2011.)

This brought equity and fair distribution of responsibility back on the negotiation table. The newly set up Ad Hoc Working Group on the Durban Platform for Enhanced Action (AWG – DP) began its efforts to develop a new global compact that would come into force by 2015 to replace the Kyoto Protocol contained the legally ambiguous phrase "agreed outcome with legal force" in its final declaration. This was seen as a compromise between India's red line of equity and EU's red line of coming up with a "legally enforceable mandate applicable to all" (Powell, 2015.)

The year 2012 marked the conclusion of the first budget period (2008 – 2012) of the Kyoto Protocol. The Convention had to "mind the gap" (Sanjay Vashishth, CANSA, in conversation) and have some sort of package in place before the next treaty could be

finalized in 2015 as per the Durban document. An amended and extended version of KP, a KP 2, was the chief concern of the world climate negotiators and the got discussed in the various minilateral fora.

The Petersberg Dialogue III, titled 'Matching Ambition with Action' held in July 2012 in Berlin attempted to provide a "realistic perspective and a possible policy path" for COP 18 at Doha, Qatar (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2012.) It focussed on three things: first, the ambition gap between targets set so far and actions proposed to meet the 2°C target; second, transformation to a low emission economy as a strategy for growth and modernization; and third, the new all - inclusive new climate treaty to be negotiated in 2015.

In the two rounds of meeting held under the MEF forum at Rome in April, 2012 and in New York in September, 2012, efforts to operationalize the Durban document were discussed in detail. Recognizing that AWG – LCA and KP would conclude their work in Doha, it was noted that the Annex I parties may convert their commitment targets to Quantified Emissions Limitations and Reduction Objectives (QUELROs) and agree on rules for a second commitment period. For the 2015 treaty, opinions converged on how it's design should be flexible, dynamic, and durable attracting participation of all parties and promoting ambition. On the issue of equity, it was expressed that the treaty should be considered "equitable" by parties and discussed how CBDR & RC should be applied in the new treaty. There was discussion on "bottom up" approach to promote "applicability to all" and a "top down" approach to promote ambition and even a hybrid of the two. It was also discussed that while the contributions may differ in quantum and content, their

"bindingness" would be the same. Significantly on the issue of finance, the countries considered options to leverage private sector finance in order to scale up the public and private sectors towards the goal of $100 billion in 2020 (Earth Negotiations Bulletin, 2017.)

In the statement by China submitted to COP 18 chair on behalf of the BASIC group, it was asserted that the consensus reached by leaders in Rio + 20 summit regarding protection of climate system on the basis of principles of equity and CBRD & RC, should provide "the highest political guidance" to the Doha conference. It was also asserted that despite sustainable development and poverty eradication continuing to be the overriding priorities, the BASIC nations were ready to take on ambitious emissions reduction actions and that our mitigations actions were greater than those of the developed nations who bore greater historical responsibilities. Full operationalization of AF, GCF and the standing committee on Finance and Technology was also urged. The statement also expressed support for the Ad Hoc Working Group – Durban Platform (AWG – DP) to strengthen the climate regime beyond 2020 based on the abiding principles of equity and CBDR & RC (BASIC, 2012.)

The Doha Climate Gateway – COP 18

The COP 18, 2012 culminated in 'The Doha Climate Gateway' which contained an eight year extension of KP (2012 – 2020) limited in scope to only 15% of global CO2 emissions due to withdrawal from KP of Canada, Japan, Russia, Belarus, Ukraine, New Zealand and the United States and since China, India and Brazil had no binding reduction targets. It also incorporated for the first time the concept of "loss and damage," an

agreement in principle that richer nations could be financially responsible to other nations for their failure to reduce carbon emissions. Little progress was made towards the funding of GCF. The extension of KP as KP 2 was agreed upon by the developed country parties at the insistence of South.

The activities of the following year began with the Petersberg dialogue, 'Shaping the Future' held in Berlin in May 2013 focused on generating political momentum for international climate policy: how to ensure an ambitious, effective and fair climate agreement with active participation by all nations; how to ensure climate action at national level up to 2020 with an eye towards the 2°C target; how to create incentives for private investments to advance transformation towards low emission economy; and, important milestones on the path to 2015 beginning with COP 19 at Warsaw.

At the MEF leaders' meetings in Washington DC and Krakow in April and July 2013 respectively, the main agenda remained discussing the nitty-gritty of the climate 2015 treaty under the AWG – DP track. They emphasized aligning ambition with science and converged on the idea that the efforts should be voluntary, ambitious, based on national circumstances, provide technical assistance where required and include a non-intrusive way of taking stock. Other ideas included spelling out the type of contributions the Parties would make, developing strong transparency provisions and clear accountancy standards and the role of financial and technical incentives. Regarding the norms of equity and CBDR & RC, there was convergence that the parties would be expected to make contributions in line with their national circumstances and capabilities with provision of financial and technical support to the developing countries.

On May 12, 2013, scientists from US National Oceanic and Atmospheric Administration and Scripps Institute of Oceanography measuring the Keeling Curve (graph showing the CO2 levels in the atmosphere) posted that CO2 in atmosphere had exceeded 400 parts per million for the first time in the measurement history of 55 years, and 3 million years of Earth's history. This climate milestone indicated that the planet was warmer by 2 – 3°C and rapidly moving towards an uncertain climate future (Kunzig, 2013.)

Assessment Report 5, IPCC

The IPCC published its fifth assessment report (AR 5) in 2013. Indicating that there was a clear human influence on climate, AR 5 asserted that it was 'extremely likely' that human influence has been the dominant cause of observed warming since 1950, with the level of confidence having increased substantially since AR 4. The period between 1983 and 2013 was likely to be the warmest in the last 1400 years; it was virtually certain that upper ocean had warmed with 90% energy accumulation between 1971 and 2010; and, the most significant driver in radiative forcing of the earth system relative to 1750 was increase in atmospheric concentration of CO2. The most important future projection in AR 5 is that the surface temperature increase by the end of the 21st century is *likely* to exceed 1.5°C relative to the 1850 to 1900 period for most scenarios, and is *likely* to exceed 2°C for many scenarios.

Just prior to the COP 19 meeting, China presented a statement on behalf of the BASIC group at the opening plenary of the Durban Platform in November, 2013. The statement sent out a firm message that the outcome of the Durban Platform would be under the Convention and guided by its principles, particularly those of equity and CBDR & RC.

It was by no means to "renegotiate, rewrite, restructure or reinterpret the Convention, its principles, provisions and annexes" (UNFCCC Secretariat, 2013.)

The statement went on to say that the 2015 climate treaty would be negotiated under Articles 4 & 12 of the Convention, which fully reflected the fundamental principles. The developed countries should take lead in combating climate change as per their historical responsibilities by undertaking ambitious, quantified, economy wide emissions reduction target while also fulfilling their commitments regarding provision of finance and technology support to the developing countries. The statement also stressed that the pre-2020 ambition must be addressed through the implementation of the second commitment period of KP and the agreed outcome of the BAP.

Warsaw Framework and Intended Nationally Determined Commitments – COP 19

The most important takeaway from COP 19 held at Warsaw, Poland in December, 2013 was that all the parties to UNFCCC were invited to voluntarily prepare and communicate their 'bottom-up' national-level pledges on climate action, called the Intended Nationally Determined Commitments (INDCs) in preparation for the 2015 agreement.

India's Environment minister stressed on the importance of climate finance and capitalization of GCF prior to the meet since no headway had been made in that direction. She went on remind that developed countries must fulfil their commitments as parties to the COP. At home, the government informed the Parliament that India had been working closely with Like Minded Developing Countries (LMDC) in the context of G 77 and

BASIC groups with a view to developing positions adequately reflective of the concerns of developing nations (Ministry of External Affairs, 2019.)

Action on the climate treaty to be finalized in COP 21 at Paris in 2015 gained momentum throughout 2014 with efforts being made from all negotiating blocks to ensure a desirable outcome in the form of a workable treaty. As a result, many old arguments made a comeback, and many positions toughened.

Petersberg Climate Dialogue V, "Addressing the Urgency – Stepping up our Contributions" held in Berlin in July, 2014 deliberated strategies to accelerate progress in the UN climate negotiations and how to enhance climate action in their respective countries. The main focus areas were: broadening consensus on the 2015 climate treaty; preparing ground for INDC and commitments; mobilizing ambitious climate action before 2020; and, consider the possible deliverables for COP 20 in Lima, Peru later in the year (Petersberg Climate Dialogue V, 2014.)

There was a renewed attempt from the developing world led by BASIC group and the newly created Southern alliance of LMDC, of which India was a core member, to bring back the issue of differentiation. In a strong statement on behalf of the BASIC group to the closing plenary of the AWG – DP meeting at Bonn, Germany in March, 2014, India categorically stated that the objective of the final 2015 agreement must have at its core "strengthening and enhancement of the implementation of the provisions" of the Article 4 of the Convention in a manner that gives full effect to the principles of equity and CBDR & RC. The NDCs of the developed countries may therefore retain the already agreed upon commitment of quantified economy wide reduction targets while clearly defining their

commitments to the provision of finance, technology transfer and capacity building support to the developing countries for implementation of their commitments as per Article 4.7. As such, the 2015 agreement must incorporate the recognition of the Convention that the developing countries may be expected to meet their commitments to the extent the developed countries came through with the required support.

At an informal roundtable held in New Delhi prior to COP 20 at Lima the Indian negotiating team reiterated the view that equity and CBDR & RC as enshrined in the Convention would remain India's red lines.

Lima Call For Action – COP 20

COP 20 was held in Lima, Peru in December 2014 with the goal of working towards developing the contours of the new agreement to be finalized in COP 21 in Paris. The aim was to contain the global temperature increase to 2°C above current levels. The preparations remained high but optimism quite low about the prospect of reaching a legally binding agreement in Paris in 2015.

Phase III - India in Paris: Paris Negotiations and Signing of Paris Agreement (2015)

From the beginning of the year there was a flurry of activities to ensure a successful outcome at COP 21 in the form of a consummate climate treaty, the Paris Agreement (PA). Brazil, making a statement on behalf of the BASIC nations at the opening session of AWG – DP meeting at Geneva in February, 2015, declared that the 'Lima Call for Action' had clearly underscored that 2015 outcome should be guided by the principles and provision of the Convention – "The Paris Agreement should enhance the full, effective and sustained

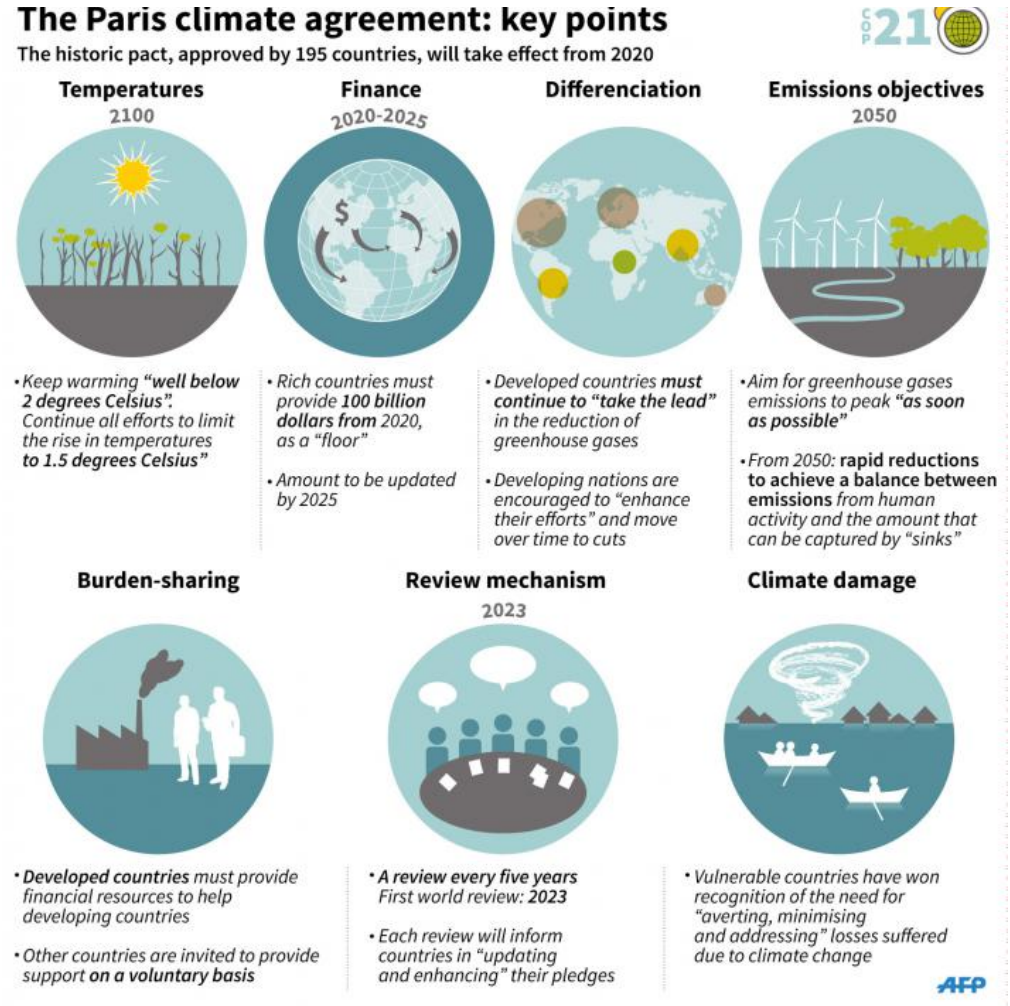
implementation of the Convention, not create a new regime or restructure, reinterpret or rewrite the Convention" (UNFCC Secretariat, 2015.)

It stressed for differentiation between developed and developing countries and application of the principles of equity and CBDR & RC, stating explicitly that the "self-differentiation" approach of the draft negotiating text was not in keeping with the Convention, Durban Platform or the Lima Call for Action.

Regarding the pre 2020 ambition, it noted that KP remained the essential and legally binding basis for addressing the same. It also observed with concern the gaps in fulfilment of pre 2020 commitments as per science and equity on the part of the developed countries and that it may lead to 'trust deficit' in the process leading up to Paris. Through intense negotiations by the LMDC and BASIC group in which India played a key role in the months leading up to COP 21, it was ascertained that the ideas of 'equity' and 'differentiation' remained registered in different operational parts of the new climate treaty. However, the PA incorporated the principle of differentiation very differently (national circumstances and capabilities) from the manner in which it had been originally conceptualized under the UNFCCC and the KP.

The Petersberg Dialogue VI, "Reaching for Paris Outcome" held in May 2015 in Berlin, concentrated on ways to accelerate progress towards an ambitious agreement at COP 21 in Paris. The key message included: designing an ambitious and balanced Paris outcome; ambitious National contributions for Paris; means of implementation and their role in raising ambition in the pre and post 2020 period; establishing sound rule base for the agreement; and, "improving the view for Paris" (Petersberg Climate Dialogue VI,

2015.) The draft text of the agreement was produced at the Bonn Climate Change Conference in October 2015.



Source: Climate Action Network South Asia

Prior to the conference, 146 national climate panels publicly presented a draft of national climate contributions, the INDCs estimated to limit global warming to 2.7 °C by 2100 and reduce emissions per capita by 9% by 2030. India submitted its "balanced and comprehensive" INDCs on October 2, 2015 (GoI 2015) in which it pledged among others

to reduce the emissions intensity of its GDP by 33 to 35 Per Cent by 2030 from 2005 level; create additional Carbon Sink of 2.5 to 3 Billion Tonnes of Co2 Equivalent through Additional Forest and Tree Cover by 2030; and, anchor a Global Solar Alliance. India significantly enhanced its earlier pre-Copenhagen pledge of 2009 apart from including specific time-bound targets to increase both the share of the country's national energy that would be derived from non-fossil fuel sources and its national tree and forest cover, among other measures. It, however, took care to note that its INDC did 'not bind it to any sector specific mitigation obligation or action' and that its successful implementation would be 'contingent upon an ambitious global agreement including additional means of implementation to be provided by developed country parties', in accordance with specific articles of the UNFCCC (GoI 2015: 30) The 8 INDCs ranged from "lifestyle to mitigation, adaptation and capacity building, finance and technology transfer, and creation of additional carbon sink and a major shift to non-fossil fuel based installed capacity. India's INDCs were well received both at home and abroad. It signalled India's willingness to "play its part" in resolving a global crisis.

In the months preceding the COP 21, the international spot light was on India and its reputation of being a tough negotiator, especially from the US. In a familiar rhetoric, the latter insinuated that India must brace up to the "changing world and changing economic circumstances" and share responsibility of reducing emissions and providing finance in equal measure by developed and developing countries in equal measure (Lavasa, 2019.) The pressure on India exacerbated since the conventional South unity had been altered after China announced in a joint statement with the US in 2014 that its CO2

emissions would peak by 2030, thus in a way obtaining "an anticipatory bail" for raising its emissions levels for another fifteen years up to 2030 (p.171.) China also offered USD 3 billion in finance to support poorer countries as a part of 'South – South' cooperation. US pushed for a similar statement from India and also tried to impose the responsibility of mobilising finance on the non-Annex I countries. Indian side assiduously maintained that the negotiations must proceed as per the norms of the Convention. It also took lead to speak with different negotiating blocks for a treaty which was balanced and comprehensive in scope. India's approach during the Paris negotiations was guided by a cabinet mandate based on national consensus around the long term interests of India for development space and growth. In September 2015, India hosted a meeting of senior negotiators of the LMDC in which the parties agreed to move forward on a balanced negotiating text for the AWG – DP meet on the Paris climate treaty.

The COP 21 held in Paris in Nov – Dec 2015, negotiated the Paris Agreement which represented the consensus of 196 attending parties. The treaty called for the goal of limiting global warming to "well below 2°C" compared to the preindustrial levels, and zero net anthropogenic GHG emissions to be attained during the second half of the 21st century. The Parties are implored to pursue efforts to limit the temperature increase to 1.5 °C through zero emissions sometime between 2030 and 2050. The PA would enter into force after being joined by at least 55 countries which together represent at least 55 percent of global GHG emissions. The agreement establishes a "global stocktake" which revisits the national goals to "update and enhance" them every five years beginning 2023. However,

no detailed timetable or country-specific goals for emissions were incorporated into the Paris Agreement in sharp contrast to the KP.

India, under the new government led by Prime Minister Narendra Modi welcomed the adoption of Paris Agreement. At the COP 21 meeting, the Prime Minister tried to position India as a country that realized its global responsibilities on the climate issue. As a mark of its commitments towards mitigating climate change, India launched the "International Solar Alliance" together with France on the side lines of the COP 21. Aimed at significantly expanding the adoption of solar energy especially around the tropics, this was in addition to India's domestic commitment to increase its national solar power generation from 20 GW to 100 GW by 2022, compared to the original goal stipulated in NAPCC, 2008.

India continued to demonstrate its political support of the Paris Agreement and ratified it October, 2016, the treaty successfully went into effect in November 2016. India continued to support the PA after the June 2017 decision by the US president Donald Trump to withdraw the US from the treaty. At a joint press conference, Prime Minister Modi along with the French President Emmanuel Macron asserted that "protection of the environment and the mother planet is an article of faith" (Sengupta, 2019, p. 129.)

Paris Agreement – Main Features

On 12 December 2015, 196 Parties to the UNFCCC adopted as a decision of the COP 21, the new legally-binding framework for an internationally coordinated effort to tackle climate change in the form of Paris Agreement. PA represents culmination of six years of intense international negotiations for obtaining a comprehensive, all-inclusive

treaty to replace the Kyoto Protocol 1997. PA's complementary functions include: provision of framework under which it is adopted; guidance on pre 2020 climate action; regulation and organization of action before PA goes into force; and, guidance on how to develop and formulate NDCs.

Art. 2 of the agreement defines a universal, legal framework to 'strengthen the global response to the threat of climate change' with requirement for mitigation and adaptation measures of individual countries to be expressed in nationally determined contributions (NDCs) to be communicated to the Secretariat of the Convention.

Art. 2.1a of the agreement aims to hold global temperatures 'well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C.'

Art. 2.2 stipulates that the agreement will be implemented 'in the light of different national circumstances' implying that developed countries have to continue to take the lead in mitigating climate change and support the actions taken by developing countries. This is in recognition of the different starting points and responsibilities of the countries, and perhaps a tacit and implicit acknowledgement of CBDR & RC enshrined in Convention and KP.

Art. 4.1 of the agreement states that a peak of global emissions must be reached, "as soon as possible" so as to "achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century." This means that the world has to reduce GHG emissions to a point where there is a balance between emissions and sequestration, and then ramp up options to sequester the GHG emissions. (*Paris Agreement to UNFCCC*, 2015.)

Art. 4.4 requires all Parties communicate and maintain successive NDCs every five years. Developed countries should adopt economywide absolute emission reduction targets immediately, and developing countries should aim for this over time. Each subsequent NDC will have to represent a progression beyond the Party's last NDC in a way that ensures environmental integrity. Parties shall provide information necessary for clarity, transparency and understanding (Art. 4.8). Information submitted will undergo a technical expert review (Art. 13.11). This process foresees a continuous progression of ambition with each NDC (Art. 4.3). Parties may also at any moment adjust their NDCs with a view to enhance its level of ambition (Art. 4.11). However, importantly, though the PA provides binding, procedural rules for the preparation and assessment of NDCs, implementing NDCs is not a part of the agreement.

Under Art. 6.2 and 6.4, parties may formulate joint NDCs within a regional economic integration organization; through a mitigation partnership between two Parties; or through voluntary partnerships. The Agreement also defines a sustainable development mechanism that allows private and public entities to support mitigation projects that generate transferrable GHG emissions (Art. 6.4). Programs and projects developed under this new mechanism can issue tradable carbon units, a feature which recalls the operations of the KP's Clean Development Mechanism.

The mandate of the Art. 5 is sustainable management, conservation and enhancement of biological carbon reservoirs referring to forests and other ecosystems in developed and developing countries. In encouraging Parties to support existing frameworks for REDD+, the Paris Agreement endorses previous UNFCCC decisions on

REDD+, from the Cancun Safeguards, to the Warsaw Framework for REDD+, to the methodological guidance provided by the UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA). Although noting that adaptation and low greenhouse gas development should be undertaken 'in a manner that does not threaten food production' (Art.2.1.b) and the preamble notes the 'fundamental priority of safeguarding food security,' the text does not provide a framework for addressing emissions from food production, thus precluding any direct reference to agriculture.

Art. 13 provides an 'enhanced transparency framework for action and support' that will provide a clear understanding of mitigation action and available climate finance. It is mentioned that the developed Parties shall provide information on financial, technology transfer and capacity building support provided to developing parties and the developing parties shall provide information on support needed and received. Experts will check the consistency of information provided and identify areas of improvement. The transparency framework hence contains elements of a third party review while being 'facilitative, non-intrusive, non-punitive [in] manner, respectful of national sovereignty' (Art. 13.3). The COP will take stock of the implementation of the Agreement every five years (Art. 14.2) with the first stocktaking scheduled for 2023. The stocktake has a wide remit, covering all of the procedural and substantive elements of the agreement.

With the aim to enhance 'adaptive capacity, strengthening resilience and reducing vulnerability to climate change' (Art. 7.1), the agreement creates a global goal on adaptation. Here the decision to work within the Cancun Adaptation Framework is a commitment to continue with the National Adaptation Plans (NAPs), according to which

developing countries set out medium and long term adaptation needs, with Least Developed Countries receiving specific support for NAP preparation and implementation.

To enable and help developing countries to meet their commitments, the Agreement mandates that developed countries provide financial resources (Art. 9), notes the importance of technology transfer (Art. 10), and calls for Parties to cooperate and enhance capacities (Art. 11). The language on finance does neither provides concrete figures for climate finance nor a timetable for disbursement, though it does note the 'significant role of public funds' in climate finance (Art.9.3). Developed countries are asked 'to take the lead in mobilizing climate finance' (Art.9.3), but all Parties are 'encouraged to provide or continue to provide such support voluntarily' (Art.9.2). This was seen as a major concession on the part of the developing countries for whom greater levels of climate finance was a key demand. However, the COP Decision clarifies that the 'existing mobilization goal' (i.e. USD 100 billion per year from 2020) will continue through 2025, and that from 2025, 'Parties to the Paris Agreement shall set a new collective quantified goal from a floor of USD 100 billion per year' (Para. 54 of the Decision). Art 9.7 does require developed countries to submit biennial 'transparent and consistent' reports on levels of assistance provided through public interventions. Art. 10.4 establishes the framework to provide guidance on the Technology Mechanism. Art. 11.1 stresses the need for capacity building through appropriate institutional arrangements as a means for developing countries to take action. The agreement does however provide that developed countries should enhance support for capacity building in developing countries.

Art. 8 of the agreement extends the time-bound Warsaw International Mechanism for Loss and Damage and anchors it into the long-term climate framework. The question of whether and how to compensate vulnerable countries damaged by climate impacts has been a contentious issue for a number of years, and eventually, language clarifying that the mechanism does not provide a basis for liability or compensation was introduced into the Decision (Para. 52) at the insistence of developed countries, led by the United States. The Decision also requests the Executive Committee of the Warsaw International Mechanism to create a task force to develop recommendations 'to avert, minimize and address' the risk of displacement (Para. 50).

Art 15.2 of the agreement establishes a facilitative compliance mechanism that is 'transparent, non-adversarial and non-punitive.' The agreement does not allow reservations (Art. 27) but allows withdrawal after three years (Art. 28). To enter into force, the Paris Agreement requires 55 Parties to convention accounting for at least '55 percent of total greenhouse gas emissions have deposited their instruments of ratification' (Art. 21).

The Decision calls for enhanced action prior to 2020 in the following categories: Mitigation – Parties are urged to ratify and implement the second commitment period to the Kyoto Protocol up to 2020, to make and implement a mitigation pledge, and improve measuring and reporting processes; Adaptation - Parties have decided to launch a technical examination on adaptation focussed on lesson sharing and identifying opportunities for implementation and cooperative action; Finance - the COP Decision 'strongly urges' developed countries to scale up their levels of financial support with a concrete plan to reach the USD 100 billion target by 2020.

Paris Agreement – Appraisal

Unlike the KP in which there was a differentiation between the developed and developing countries by clubbing them as Annex 1 countries and non – Annex 1 countries, the PA makes no difference among the countries. In KP, the developing country parties were required to join the developed country parties in reducing the GHG emissions, whereas PA is predicated on the concept of a universal commitment. PA follows a 'bottom-up' approach allowing each participating nation to submit its own national plan for reducing GHG emissions rather than repeating the 'top-down' approach of KP, giving each country an emissions reduction target. Also, unlike KP, PA remains vague about the treaty language as well as about how to measure compliance.

The Paris Agreement is ridden with several difficulties and challenges. It is not legally binding and there are no penalties for non-compliance. Environmentalists have raised concerns that the 2°C target of limiting global warming is inadequate to address the current pace of climate change and curtail sea-level rising which will impact the island states most. Critics have opined that the Paris agreement through its rulebook has adopted primarily a mitigation-centric approach and the urgent adaptation needs of the developing countries are not prioritised. Egypt along with the Africa group and the AOSIS allege that the principle of CBDR & RC has been compromised in the Paris rulebook in its global stocktake and thus the burden to climate change has been put inequitably on the developed and developing nations who lack both technology and finance. The countries that have ratified the Paris Agreement are required to set a target for emissions reduction through their INDCs, however, there is no threshold or minimum emissions reduction it must

achieve. Under the Paris Rulebook, countries are allowed to count all sorts of non-grant instruments, including commercial loans, as 'climate finance'. This raises concerns over a poor country repaying debt on commercial loans provided as climate finance. Further, there are no proper rules for accounting when the loans are repaid. According to critics, rulebook does not put adequate emphasis on the adaptation finance needed for developing countries and 'loss and damage' finance which is crucial for poor and island nations. Further, the rulebook does not incorporate any mechanism to examine the utilization of climate finance flowing to developing nations. Critics further allege that PA addresses the pressing need of developing environment-friendly technology and transfer of technology to technology deficient nations rather inadequately. Critics have also pointed out that more than a collaborative environmental initiative, climate change negotiations have become economic negotiations as can be seen from US' withdrawal from PA owing to vested economic interests.

Conclusion

The survey of the major decision points along the climate treaty negotiations in the crucial period between 2009 and 2015 which was characterized by fundamental shifts in the world focus, saw the Indian climate policy and negotiating position change significantly as well. India was both firm and flexible as and when required in that it staunchly defended to the extent possible, the principles of the equity and CBDR & RC which had informed the climate regime under the Convention and KP, thus championing the cause of developing countries. At the same time, India displayed enough constructive will and flexibility to bring Paris agreement to fruition. While the reasons for the changes in India's

positions are analyzed in detail in the following chapter, suffice it to state that India successfully navigated the distance between being blamed as a 'hardliner' and 'naysayer' to being hailed as 'proactive negotiator' and 'part of solution' within a short span of time from Copenhagen 2009 to Paris 2015. It emerged as a tough negotiator even as its understandings of its climate change related vulnerabilities and therefore its need to support ambitious global climate action in concert with the world community made it realize that the latter was in its own best interest. India's NDCs were 'fair and ambitious' even though India's contribution to climate change is 'limited'. India also quickly ratified the Paris Agreement to help bring it into force without insisting on developed countries first fulfilling their pre 2020 commitments under the second phase of the Kyoto Protocol. The collaborative approach of the Paris Agreement and the newly won trust in international action offered hope and a sound basis for long term, international cooperation on climate change.

****

CHAPTER FOUR

This chapter presents an analysis of India's response to international climate change treaties between 2009 and 2015. Evidently, the Indian climate policy trends and discourses display significant shifts in India's negotiating positions along the crucial decision points during this period. India clearly departed from its staunch support for strict differentiation between developed and developing countries in global climate governance regime towards a loosely differentiated regime under the Paris Agreement. The narrative shifted from a frame that "externalized" the climate change problem and solutions towards a "co-benefits paradigm" (Thaker and Leiserowitz, 2014) where policies aim at aligning climate solutions to domestic priorities of poverty eradication and economic development. This was a movement from idealism to pragmatism and from a defensive approach to a more environmentally inspired action-oriented approach.

What motivated the changes in India's negotiating positions; what were the reasons for timing of the shifts; and what forces shaped and sustained the climate policy narratives – the answers to these questions are gleaned through a survey of dominant policy images and narratives dotting the Indian climate debate along the vital decision points, the venues where the issue played out, the role of the principal policy actors – negotiators, and the role of civil society advocacy groups including environmental NGOs, industry and the media, in sustaining the positive feedback processes that characterized the Indian response.

It is important to assess the dynamics of issue framing and its bearing on the nature of political and policy response and key issues and processes that have informed the Indian policy positions at various stages of the international climate negotiations through a

scrutiny of the existing literature and documents and conversations with prominent leaders, journalists and organizations that work in the field. The national framing of the climate threat and the politics of policy formulation furnish an important opportunity to explore the clusters of images and venues associated with it. A variety of sources is used here to gauge the dominant images, intensity and the tone of attention from various policy actors, and track the venues where this issue played out. The attempt is to map the factors that shook the equilibrium – first, by ascertaining the aspects of climate policy narratives that changed; and second, by identifying factors that enabled this change.

Policy Making – Punctuated Equilibrium Model Concepts

At the outset, it is instructive to briefly understand the conceptual tools of policy process especially in regard to development and sustenance of policy narratives. Policy development typically witnesses dominant stages of status quo or marginal changes and infrequent abrupt episodes when previously existing political rationalizations are challenged, new interests surface, issues are reframed, and paradigmatic changes occur. The Punctuated Equilibrium (PE) model of policy espoused by Baumgartner & Jones talks of "policy monopolies" which are "structural arrangements that are supported by powerful ideas" (Baumgartner & Jones, 1993, p. 4.) They can also be understood as decision making systems organized around discrete issues and programs. Every policy entrepreneur and interest group strives to establish a monopoly on political understandings of a particular issue and create an institutional arrangement that buttresses this understanding.

Policy monopolies are intrinsically unstable. A given policy may be associated with several contending images and usually one dominant image prevails at any given point in

time. A complex issue may be defined in a way to include only one or few relevant dimensions of the conflict. As new understandings obtain and images develop, the previously disinterested and indifferent groups may be mobilized into participation. This "mobilization of bias" can destabilize old points of stability and cause the political system to "lurch from one point of apparent equilibrium to another" (p. 12). Drawing upon Downs' "issue attention cycle," the PE model contends that issue changes are facilitated during periods of heightened general attention to a given policy (Downs, 1972.) The dynamics of attention allocation is such that issues may suddenly leap into prominence, briefly remain in the spotlight, and gradually fade away even though they may remain unresolved.

Issue definition—variously termed as "heuristic short hands," "frames" and "dominant causal logic"—or, how an issue comes to be understood, is imperative to policymaking. Issue framing can be defined as "ways in which elements of discourse are assembled that then privilege certain interpretations and understandings over others" (Boykoff & Roberts, 2007/2008, p. 9.) The PE model describes it as creation of "policy image" by the policy entrepreneurs. The process essentially involves "selection and salience" (p. 9). Some aspects of the problem are selected and expressed in a way to promote a specific problem definition. Expatiating on the importance of issue definition, Cobb and Elder (1983) state that "how an issue is defined will have important bearing on the nature and eventual outcome of a conflict" (cited in Kamieniecki, 2006, p. 66.) Multidimensional issues may affect different people in different ways. Hence, creation and maintenance of preferred policy images is integral to the process of creation and maintenance of policy monopolies by different interests and groups. Policy entrepreneurs

have incentives to support competing policy images according to what they stand to gain. Issue definition thus is a "purposive process," a means to an end (Baumgartner & Jones, 1993, p. 23.) The end may be desire for government action or inaction on the particular issue, a certain policy outcome, construction of a policy monopoly or destruction of someone else's policy monopoly and so on.

Policy images are an admixture of empirical information and emotive appeals. The latter, or the evaluative component of the policy image, is the "tone" of a policy image and is indicative of changes in patterns of mobilization to either broaden or limit participation. Schneider and Ingram state that "much of policy debate is really about language, symbols and image" (Kamieniecki, 2006, p. 60.) Policy issues are conveyed in simplified and symbolic terms. Citizens are not usually well informed or cognitively active. Argumentation is used as a formidable political weapon in political debates as the same facts can be presented to the public in different ways. Policy actors thus function as generator of arguments working within cultural, political and institutional constraints. The policy entrepreneurs who are able to manipulate and define the symbols associated with the two sides of a debate will be in the best position to determine the outcome.

Policy images and venues are closely related. Per the PE model, policy venues are "institutional locations where authoritative decisions are made concerning a given issue" (Baumgartner & Jones, 1993, p. 32.) Each institutional venue harbours a different image of the same issue. In this scheme, the public domain is also one of the potential venues for a policy debate. The executive branch, political parties, media commentators and independent experts attempt to sway public opinion on a policy issue through continuous

dialogue, debate, and reciprocal persuasion. Again, some issues have set institutional jurisdictions while for the others, including the ones which are new, complex, and not clearly defined, the ambit of institutional jurisdictions may be vast.

The multiplicity of venues allows several contending images of a policy to thrive at once. Thus institutional assignments of a policy issue remain in flux. Dramatic changes in policy outcomes can be expected as a result of changes in the policy venues or institutional jurisdictions. Strategically minded policy entrepreneurs continuously search for favourable venues to make their case. This may be accomplished in a complex and specific way – issues portrayed in broader terms so as to mobilize larger constituencies; and, pursuit of more receptive political venues.

Baumgartner and Jones (1993) explain that purposive image manipulation is a key tool in seeking favourable venues. They also observe the interaction between issue assignment and political rhetoric in which changes in one directly affects changes in the other. Interaction of images and venues can produce rapid changes, or, reinforce the current assignment of authority. The shifts in institutional venues related to the shifts in policy images prove to be decisive in affecting the policy outcomes.

The 'contents' of public policy are subject to varying interpretations depending on who interprets, where and how. As a fairly recent global environmental problem, climate change did not have fixed traditional policy images or relevant jurisdictional venues. However it was redolent with images of extreme events, vulnerabilities and its mitigation predicated the whole gamut of socio-economic consequences. Ever since its ascent on the international policy agenda, climate change attracted its set of steadfast advocates and

equally resolute opponents. The debate over climate change involved a panoptic range of interests with divergent concerns. The potentially enormous socio-political and economic import of the phenomenon as well as the proposed policy remedies ensured vast participation and emphatic efforts at issue definition from multiple constituencies. Scientists, environmentalists, politicians, business interests and the general public weighed in, examined the threat, and evaluated the potential economic and ecological implications of the policy options to develop response strategies both domestically and internationally.

Decision points are the junctures at which the government was required to articulate its policy position or make a policy relevant decision. Cass states that domestically, a focusing event, new findings or statistical reports, national elections, and executive and legislative initiatives on the climate issue were potential decision points (Cass, 2006, p. 4.) Similarly, international climate conferences, negotiating sessions and state obligations under international treaties also created decision points. Evidently, the ongoing international negotiations and the IPCC assessment reports played an important role in sustaining climate change on the US government's policy agenda. The international negotiating deadlines generated the "windows of opportunity to reinvigorate the political discourse" (Agrawala & Andresen, 1999, p. 476.)

Climate Issue Definition – Indian Perspective

Early understandings and images of the issue in the Indian context provide the essential perspective required to appreciate the dominant understandings of climate change that informed India's response to the international negotiations between 2009 and 2015.

India's has had a long tradition of environmental activism and protection. Two pre-UNFCCC foreign policy episodes provide insights into the bases of India's framing of the climate issue in the early years. First, India has often taken on the role of leader of the Third World and actively promoted the principle of 'universalism of the weak' in its ideological and principle-based approach to multilateralism (Rastogi, 2011.) India's advocacy of Non Aligned Movement was predicated on *Panchsheel* principles, and its positioning at the 2008 World Trade Organisation (WTO) negotiations made it a representative of the voice of the world's poor. Understandably then, India's position in the first two decades of the multilateral climate change negotiations has remained anchored on two principles: equity and common but differentiated responsibility. Second, India was represented by then Prime Minister Indira Gandhi, the only head of state apart from the host nation in the UN Conference on Environment and Development held in Stockholm in 1972, indicating the high priority that India accorded to environmental issues.

The Conference brought global environmental issues into the ambit of international diplomacy and led to gradually enhanced global environmental co-operation. Prime Minister Gandhi astutely dovetailed the issues of people and their development into the discourse on environmental protection while positing: "Are not poverty and need the greatest polluters?... The environment cannot be improved in conditions of poverty nor can poverty be eradicated without the use of science and technology"(Powell, 2015.) The Founex report at the end of the meeting of experts and policymakers clearly differentiated between environmental problems of developed countries and those of developing countries. While the report blamed "development" for the environmental problems of

developed countries, it blamed poverty and the lack of development for the environmental problems of developing countries. The Stockholm conference adopted the views of the Founex report and declared that developing countries should direct their effort towards development as a solution to local environmental degradation. The compelling case made by the Indian Prime Minister at Stockholm remains at the core of India's basic narrative on climate change till date.

The World Commission on Environment and Development, also known as the Brundtland Commission, published its report, "Our Common Future" in 1987 on the theme of balancing human and environmental well-being as well as reconciling economic development with environmental protection. The report promoted and popularized the "sustainable development" paradigm. Sustainable development is defined as the process of development "that meets the needs of the present generation without compromising the ability of the future generations to meet their own needs" (United Nations, 1987). Along with inter-generational equity, this paradigm also stresses on intra-generational equity and points to the failure of market mechanisms and concepts of gross national product in encouraging sustainable use of natural resources.

The other themes echoed in the report were: endemic poverty is prone to ecological catastrophes; equity is important and the poor should get fair share of the resources; the affluent should adopt lifestyles within the ecological means of the planet and so on. Additionally, India has always been vulnerable to climatic changes throughout its history owing to its monsoon dependent agrarian economy, large swaths of poor population and a long coast line. As Mr. R. R Rashmi, former special secretary to Government of India and

also India's lead negotiator in climate negotiations for a long time states, there has always been a high sensitivity to environmental issues and a strong ethic of environmental protection ingrained in our psyche. Climate change concerns are a "fairly recent phenomenon" and the agenda is primarily driven by the Western industrialized nations (Personal interview.)

The terms 'global warming' or 'climate change' were coined and gained currency essentially in the global North, especially in US, after issue emerged on their political agenda in the summer of 1988. That year, North America experienced freakish weather extremes in the form of raging forest fires, untimely floods, severely drought stricken farm belt, massive crop failures, and highest temperatures on record. On June 23, 1988, the NASA climatologist, James Hansen, testified to the Senate Energy and Natural Resources Committee that: "Number one, earth is warmer in 1988 than at any time in the history of instrumental measurements. Number two, global warming is now large enough that we can ascribe with a high degree of confidence a cause and effect relationship to the greenhouse effect" (*Greenhouse Effect*, 1988). The climate discourse quickly gathered around three points: first, anthropogenic greenhouse emissions with potentially disastrous consequences were a reality; second, there was a credible scientific consensus; and third, a need for immediate international mitigation action was paramount (Pandeya, 2008, p. 88.)

Hence, for India, the concept of climate change got defined and circumscribed strictly in the sense of international efforts at addressing the issue through negotiation of climate treaty, a process initiated by the developed countries under the UN system. It was felt that any response to global warming was primarily the responsibility of industrialized

countries, and India's climate policy if any, "existed only in the heads of delegation officials" (Powell, 2015.) This is evident in the manner in which India conceptualized and understood the problem and the rhetoric that sustained this understanding. Powell cites a 1997 paper by Ambuj Sagar and Milind Kandhilkar, which observed that "India should not be rushing to save the global commons on anybody's terms but its own" and that "global warming was best seen as an additional problem to be managed in an increasingly unforgiving and predatory international economic realm rather than an environmental problem facing the global community of nations" (Powell, 2015.) There was a pervasive fear that global environmental concerns would become the new means of curbing and controlling the economic growth and development of developing countries.

The initial framing of the climate issue is also embedded in the dominant socio cultural paradigm of the nation. A state's deportment towards environmental issues and negotiation of environmental regimes is affected by its world view or "dominant social paradigm." The latter is described as "set of beliefs, ideas and values from which public policies and entire systems of behaviour follow logically" (Chasek et al., 2006, p. 27.) This paradigm provides useful ways of thinking about certain problems and is transmitted across generations and social sectors through various socialization processes. The broad traits of a country's culture have a substantial influence on its conversation on climate change. India has a strong environmental 'waste not' ethic, deep reverence for nature and all living form that remains unchanged with growing prosperity (Ghosh, 2013, p. 160.) Indians prefer fresh food and fresh produce over processed food and there is comparatively less meat consumption in terms of percentage daily calories intake from meat. India has a tradition

of recycling, repair and reuse. Public transport comprises major share of transport demand and there is a proclivity for fuel efficient vehicles and the ones powered by natural gas and electricity.

In 2017 India ranked first in the Greendex compiled by National Geographic and GlobeScan, surveying the consumer patters across 18 developed and developing countries for environmental sustainability (ONYA 2017.) China ranks second most sustainable while US and Canada were in the bottom two. Ghosh does a comparison of the 'Environmental Kuznets' Curve EKC of India and a few other countries and finds that the turning point in respect of India was at the lowest per capita income level (Ghosh, 2013, p.165.)

Early Framing of the Climate Problem

In the early years of the discourse, climate change emerged as a human induced problem that required concerted international action. After the publication of the IPCC's *FAR*, negotiation of an international climate treaty was a foregone conclusion (Pandeya, 2008, p. 91) During this phase, the India's climate policy was oriented towards international efforts and establishment of norms that should guide state action. International forces and activities provided the fillip for articulation of India's initial negotiating and policy positions to tackle the problem.

Greenhouse or carbon emissions, which were at the root of the problem, could be understood in three different frames – national, per capita and historical – leading to different conclusions about the responsibility for the problem and therefore the accountability for remedial action (Thaker and Leiserowitz 2014; Dubash & Rajmani 2010.) Many scholars have opined that the Indian government's positions on climate

change were circumscribed by its efforts to protect its economic development and sovereignty. The theoretical and ideological underpinnings of the Indian position drew from Centre for Science and Environment's (CSE) Anil Agarwal and Sunita Narain's "globally influential report" – 'Global Warming in an Unequal World' 1990.

This report was commissioned by the MoEF in response to World Resources Institute that blamed India as one of the largest GHG emitters, especially of methane, on account of agriculture and livestock rearing. Agarwal and Narain forcefully argued that such postulations and the climate issue being approached by the North tantamounted to "environmental colonialism". They made the case that climate change was caused due to the historical emissions of the developed countries and not due to contemporary emissions. Therefore, there is a need to distinguish between 'luxury' and 'survival' emissions and any framework to address the issue must be predicated on 'per capita allocation' principle, i.e. by allocating equal access to the atmosphere for all persons of all the nations. The Tata Energy Research Institute (TERI, later renamed The Energy & Resources Institute) also critiqued the said WRI report along similar lines.

Understandably, India chose 'historical' and 'per capita' emissions to formulate its positions of 'equity' and 'common but differentiated responsibility and respective capabilities' in international negotiations. These are defining features of international climate governance regimes and they recognize that the parties vary both in terms of their responsibility for precipitating the problem as well as their capability to tackle it. This also formed the basis of differentiating between the Annex I and non-Annex I parties. Indian government had successfully got these principles inserted in the UNFCCC 1992 and later

the KP 1997. Chandrashekhar Dasgupta, as the head of Indian delegation at the time of Convention negotiations had stated this essence of India's position in a non-paper in 1991: "…developed countries with high per capita emissions levels of greenhouse gases are responsible for incremental global warming. In these negotiations, the principles of equity should be the touchstone for judging any proposal. Those responsible for environmental degradation should also be responsible for taking corrective measures… moreover these are also the countries which have the greatest capacity to bear the burden…" (Dasgupta, 2nd INC, 1991, Geneva cited in Dasgupta 2019, p. 144.)

In this phase informed by post cold war dynamics, balance of payments crisis of the late 1980s and 1990 and consequent liberalization of Indian economy, India's foreign policy also changed from its predominantly ideological stance towards a more pragmatic one (Mohan, 2017.) India moved away from its strict adherence to non-alignment and strategic autonomy towards "an unabashed consideration of Indian national interests" (*cited* in Mohan, 2017) The former Prime Minister I.K. Gujral is supposed to have stated: "It is a mantra that we have to keep repeating, but who are you going to be nonaligned against?" (Ganguly and Pardesi, 2009.) This shift towards a more realistic assessment of self-interest and trade-offs is reflected as a "neoliberal shift towards engaging with global economic arrangements" and "securing material heft"(Thaker and Leiserowitz, 2014.) However, there was a hardened resistance to being arm twisted or dictated by the industrialized nations into compromising on its economic or development priorities. India also engaged with the CDM in a major way 2002 onwards.

While maintaining a strict adherence to its stated positions in the international negotiations, domestically, Indian government passed legislation for energy conservation and increased use of renewable energy by setting up Indian Renewable Energy Development Authority (IREDA) in 2003. It also imposed the "coal cess" at the rate of Rs. 50 per ton on domestic and imported coal to fund renewable energy sources (MoEF, 2010.)

Thus, from the outset India positioned itself as "defender of the global South," "producer of ideas and international norms" on climate change (Gupta, Kohli, and Ahluwalia, 2015) and a strong advocate of the differentiated architecture of the climate regime. This reflected in India's successful coalition diplomacy which became a characteristic feature in the climate negotiations. India was supported in its endeavour by G77 & China comprising the developing parties. India's early position on the two concepts of equity and CBRD & RC have been remarkably consistent throughout the history of negotiations. Importantly, even though provisions of PA are legally binding to all without distinguishing between developed and developing country parties and not specifically mentioning 'CBDR & RC', it does provide flexibility in terms of implementation to the developing countries based on their "national circumstances." (*Paris Agreement to UNFCCC 2015*.) Scholars have argued that the latter is an implicit acceptance of the principles of equity and CBDR & RC, albeit in a different form.

Also, in the early years of negotiations, the climate issue was more of a scientific and diplomatic issue in India, not a common man issue. Atteridge locates two decades of the consistency in India's positions and centrality of the equity frame to domination of official India in the climate dialogue. India's "defensive positioning" in the negotiations

were determined by the diplomats from Ministry of External Affairs (MEA) and bureaucrats from Ministry of Environment and Forests (MoEF) (Atteridge, et. al., 2012.) The latter ensured that India's national interests, embedded in the principles of equity and climate justice were fiercely upheld on the international stage. They successfully protected its space for socio-economic development while pushing for the Annex I countries to take more responsibilities and stronger action. All this earned India the reputation of being a "difficult partner" in climate negotiations (Vihma, 2011.)

Climate Policy Trends: 2009 – 2015

The first impulses of change in India's position became visible in the run up to Copenhagen 2009 when the climate negotiations were focused on the shape and form of the successor to the KP. There were a number of indicative developments.

First, at G8 + 5 meeting at Heiligendamm, Germany, 2007 India voluntarily declared that its per capita emissions would not exceed the per capita emissions of the industrialized nations while continuing to pursue the policies of development and economic growth (Ramchandran, 2009.) Second, the Government of India set up the Prime Minister Council on Climate Change (PMCCC) in 2007 under the chairmanship of the Prime Minister for evolving a coordinated response to issues related to climate change. Third, at COP 13 at Bali, India proposed nationally appropriate mitigation actions by developing countries in the context of sustainable development, supported by technology and enabled by finance and capacity building in a measurable, reportable and verifiable manner. Fourth, India released the NAPCC in 2008, outlining its domestic strategy to meet the challenge of climate change while enhancing the ecological sustainability of India's development path.

Fifth, India unilaterally pledged to reduce the emissions intensity of its GDP by 20–25 per cent by 2020 compared to its 2005 level through domestic mitigation actions, arguing that to do so would be in India's own best interests – a veritable 'per-capita plus' approach whereby specific 'performance targets' could be assigned through domestic legislation, or executive action, to key sectors of the country's economy. Sixth, in July 2009, India signed the 'MEF Leaders' Declaration on Energy and Climate' at L'Aquila, Italy that the rise in global temperature 'ought not to exceed 2°C' and that the MEF countries would work together to identify a 'global goal' to reduce 'global emissions by 2050.' Though a non-binding political declaration, it signalled for the very first time, India's willingness to cap its future emissions.

The second major impulses of change were visible in the run up to COP 21 at Paris and the signing of the Paris Agreement. In its "balanced and comprehensive" INDCs India pledged among others to reduce the emissions intensity of its GDP by 33 to 35% by 2030 from 2005 level. India committed to installing clean energy capacity equivalent to 40% of the total installed capacity through time-bound targets as well as to increase its national tree and forest cover, among other measures. Thus India significantly enhanced its earlier pre-Copenhagen pledge of 2009. Soon after taking charge in 2014, India's new Prime Minister Narendra Modi revamped the Prime Minister's Council on Climate Change to 'revive and streamline the council and set the agenda to deal with climate change.' The Ministry of Environment and Forest was renamed the Ministry of Environment, Forest and Climate Change through a Cabinet notification in 2014 signifying the importance allocated to the issue. Under the Prime Minister's leadership, India launched the 'International Solar

Alliance' aimed at significantly expanding the adoption of solar energy especially around the tropics together with France. India also welcomed the PA with its 1.5°C' goal literally closing gates on carbon emissions of a late industrializing country such as itself (Dubash 2016), 'bottom-up', and 'loosely differentiated' architecture and promptly ratified it in 2016. India continued to support the PA after the June 2017 decision by the US president Donald Trump to withdraw the US from the treaty. Prime Minister Modi issued a joint press statement with the French President Emmanuel Macron declaring "protection of the environment and the mother planet is an article of faith."

The actions and declarations, marking notable changes in India's engagement with global climate politics were no less than "seismic shifts" (Mohan, 2017.) The issue grew significantly in political salience during this phase. The framing of the climate narratives in this phase saw changes in venue as well as the principal actors setting in motion the positive feedback processes that sustained the impulses of change. There was a clear change in the political rhetoric on climate change and the policy actors used the same to generate arguments in order to create new understandings of issues within existing institutional, political or cultural constraints and turn these constraints in their favour.

Venue Shifts

Domestically, the shift in the climate narrative coincided with reconfiguration of the institutional arrangements that had monopolized the treatment of the issue. The Department of Environment and Forests set up in 1981 and converted into Ministry of Environment and Forests (MoEF) in 1985 was primarily responsible for coordinating policy formulation and forming strategy for climate negotiations. In 2007, the government

established the PMCCC which became the highest body dealing with climate policy, reporting directly to the Prime Minister. This was followed by appointment of Prime Minister's Special Envoy on Climate Change to represent India in the international negotiations. In 2014, the MoEF was redesignated as Ministry of Environment, Forest and Climate Change indicating the high priority accorded to the issue. The presence of Prime Minister's Office in the climate negotiating team led to the reframing of India's narrative.

During the phase of build-up to Copenhagen 2007 – 2009, the "locus of influence" over the Indian climate narrative shifted from bureaucracy to the political sphere (Atteridge et.al. 2012.) Indian government articulated its policy position from time to time in response to the international "decision points" incurring institutional changes and programmatic innovations. The announcement of the 'Singh Convergence Principle', voluntary targets to reduce the emissions intensity of the GDP, release of the progressive NAPCC 2008, submission of ambitious INDCs in 2015, and a willingness to accept a more proactive role in global climate mitigation efforts are symptomatic of the larger political mainstreaming of the climate issue. The change in India's global messaging on climate change was driven to a large extent first by the "personality politics" (Dubash, 2013) of then incumbent Environment Minister Jairam Ramesh (discussed in the section below.)

Ironically in India while environmental protection has always been a huge concern, Climate change per se has been a "political non-issue in organized politics," for as an issue it was not a "constituency mover" (Prabhu, 2013, p. 232.) In the Indian political system, signing international treaties is the preserve of the executive as the treaties do not require ratification by the legislature. There are no party positions as such on the climate issue and

the law makers would present their individual positions on the issue. However, with regard to the international climate debate, there is complete unanimity across party lines on the issue of equity and how India should not commit to binding commitments. Suresh Prabhu states that the Indian MPs "swear by the UNFCCC process" and how the debates on climate change in the parliament were a "new and interesting phenomenon" (Prabhu, 2013 p. 230.) The issue received high visibility during the Copenhagen phase primarily due to actions and announcements on the part of Indian government seen as deviating from the tradition framing of the issue. The parliamentary questions as well as some of the debates in the pre and post Copenhagen phase are highly instructive in this regard. Pre Copenhagen, the Environment Minister Ramesh who had sent mixed signals with his pronouncements, had to commit at the floor of the Parliament that India would have three non-negotiable: no legally binding emissions commitment, no peaking year and no international review of mitigation actions unsupported by international finance and technology. Post Copenhagen, the same Minister faced questions on whether India adhered to its "red lines" and whether its acquiescence to the accord would have ramifications on its growth and development. Dubash states that there was not a single speaker who attempted to explore or comment on whether the Copenhagen accord addressed the climate mitigations needs sufficiently (Dubash, 2013.)

Internationally, the ambition for raising its status in the community of nations, concerns for regional security, and protection of its national economic interests motivated India to look for geo political alignment with US and China (Atteridge et al., 2012.) This introduced a greater flexibility in climate negotiations in order to suit India's pursuits in

other areas. The fact that the senior diplomat Shyam Saran, then special envoy for India's nuclear deal with the US was also appointed the special envoy for climate negotiations in 2008 is telling. Global leadership aspirations such as permanent membership of the UN Security Council made the initial Indian position of "do nothing" untenable and it became imperative for India to shift to a "bargaining position" (Raghunandan, 2011.) This, coupled with years of sustained high economic growth, led to India's categorization as an 'emerging economy.' As a result, India could no longer keep pursuing carbon intensive development path and simultaneously plead climate inaction on account of its development imperative.

The changed geo political context of the world compared to the start of the international climate negotiations in the 1990s, also meant that India was no longer in a position to lead the group of G77 nations. The strong economic growth in the early years of the new millennium for developing countries such as China, Brazil, South Africa and India has led to an increasing expectation on these countries to take the lead in influencing the outcomes of the global governance. In 2009, India formed the BASIC group the members of which cooperated and coordinated amongst themselves to present consistent position in climate negotiations. Having emerged as a new actor and situated somewhat in the middle of the development spectrum, the BASIC group was subjected to the demands and expectations of both the developed and the developing parties (Hochstetler & Milkoreit, 2013.) However, BASIC have formally remained a part of G77 and offered different combinations of rationalist and normative arguments that are sometimes mutually inconsistent. For instance, while G77 and China have insisted on no differentiation among the non-Annex I countries, in Copenhagen, BASIC group agreed to take on the mitigation

burden as long as those were nationally determined and not economically harmful. Further, Brazil and South Africa, in order to project the global image of responsible actors, took the position that being developing country does not mean that it does not have any responsibilities. India and China did not subscribe to this shift although the US – China climate action agreement of 2014 showed that China was also shifting its stance. With the emergence of another coalition, the LMDC, it is likely that the BASIC countries may further realign. However, the emergence of the BASIC coalition in a way replaced the solid bipolar North-South divide with at least three categories of negotiating blocks – the developed, the developing and the emerging – thus inducing more flexibility in climate regime. Climate change also became a staple in the agenda of developed country led groupings an coalitions such as G8+5 Dialogue on Climate and Energy and the US led Major Economies Forum.

Policy Actors & Personalities

In the initial phase of India's engagement with climate negotiations, policy positions were largely determined by the "closed, tight knit and relatively small group" that comprised the policy apparatus (Sengupta, 2012.) The relatively small negotiating team would comprise personnel from Ministries of Environment, Power, Commerce and External Affairs. India's positions were finalised through briefs for climate meetings coordinated by MoEFCC through Cabinet Notes approved by the Prime Minister's Office. Anirudh Mohan points towards how the Indian contingent at the negotiations would be much smaller in numbers – 77 delegates at Copenhagen as compared to China's 300 delegates (Mohan, 2017, p. 23.) Mohan also hints that the "limited capacity being deployed

for climate negotiations has meant that MEA, India's foreign ministry has played a critical role in India's climate negotiating team." This may have led to the "continuum of intellectual mores" across different arenas of global diplomatic negotiations and a remarkable consistency in India's narrative on various issues including climate change (p. 24.) It was with the coming of new policy actors around the pre Copenhagen phase that there were veritable shifts in India's negotiating stance.

The first person to make a subtle yet substantial statement marking a fundamental departure in India's climate position was Prime Minister (PM) Manmohan Singh at G8 + 5 meeting at Heiligendamm, Germany, 2007. Came to be known as the 'Singh Convergence Principle' the statement read as "India's per capita GHG emissions are not going to exceed those of developed countries even while pursuing policies of development and economic growth" (Singh, 2007.) Even though consistent with India's long standing position on 'per capita convergence' and did not lead to a substantial change in our negotiating strategy, it was for the first time in the history of climate talks that India had made a voluntary offer of limiting its future potential emissions. Also, in the aftermath of the world economic crisis of 2008 – 2009, India's role in stabilizing the global economy was seen as critical. In this vain, PM Singh alluded to the importance of India taking on additional responsibilities prior to Copenhagen. He stated that India "should play a role in the international arena in a manner that makes a positive contribution in finding solutions to major global challenges, whether in the field of trade or climate change" (Singh, 2007.) This indicated that India was veering towards flexibility in its approach towards climate negotiations.

A major part of the responsibility for softening of India's defensive posture and signalling a shift in India's approach is attributed to the influence of the strong personality and the world view of Jairam Ramesh, India's maverick Environment Minister in 2009. Ramesh stated that he had assumed the post with the brief from the Prime Minister to change the "substance and style of India's climate diplomacy" by not being obstructionist but making India, "a constructive part of the solution" (Ramesh, 2018.) He made a series of pronouncements that were both bold and controversial in the pre Copenhagen phase. In a letter addressed to then Prime Minister, Ramesh had suggested that India should have a domestic mitigation law, delink itself from G77, and soften its rhetoric on emission targets under a new deal "without any counter guarantee of finance and technology." (Gupta et. al. 2015) He clarified that he wished to stress that 'business as usual' will "simply not do" and advocated a "per capita plus" approach. He also stated that India be "less argumentative and more pragmatic, less defensive and more proactive, less obstructionist and more constructive, less polemical and more substantive" in the discussions and negotiations. During the Copenhagen negotiations, Ramesh signalled India's seeming willingness for voluntary emissions reduction targets without securing India's objectives of developed countries' support for mitigation and adaptation efforts. Many observers have commented on how this led to disagreements between the Minister and the Indian delegation comprising veteran negotiators like Chandrashekhar Dasgupta, Prodipto Ghosh and Shyam Saran. Dasgupta had later stated that "we have been offering unilateral concessions without obtaining any reciprocity" while Saran felt that India "played its hand too early" and there

was “nothing left to negotiate” (Gupta et. al., 2015.) The Minister also had to defend his statements regarding India’s stand at length in the Parliament.

At COP 16 in Cancun, Minister Ramesh made a sharp departure from India’s time honoured negotiating strategy by announcing that “all countries ought to take on legally binding commitments under appropriate legal form” (Goswami, 2010.) While this hinted at differentiation in the commitments, it created further furore in the Indian negotiating team. Ramesh explained that his statement did not indicate a shift in the position, “only nuancing” pointing out how India were “expanding our options”, and “trying to find room for manoeuvre” due to increasing pressure from developed countries.

Jairam Ramesh recounts the Copenhagen and Cancun negotiations as being fruitful in following ways: India and its BASIC partners ensured for the first time that developed country mitigations will be subject to “international assessment and review;” India played a major role in inclusion of the phrase “equitable access to sustainable development” which was better than “equitable access to carbon space” connoting a right to pollute; India’s formulation on “international consultation and analysis” was a key intervention that broke an acrimonious deadlock and took the negotiations forward; and, India’s formulations formed the basis of the consensus reached on technology development and sharing in both mitigations and adaptation (Ramesh, 2018.) On the other hand Saran reminisces of the Copenhagen Accord as “process of attrition and systematic hollowing of UNFCCC” (Saran, 2019, p. 168.)

The next phase of substantial changes in India’s position in the climate talks happened in 2014 with Prime Minister Narendra Modi demonstrating a deep interest in the

climate issue from the beginning of his term. His commitment to renewable energy and image as a strong leader gave India an edge in the international climate negotiations. Under his leadership, India's Environment Minister Prakash Javadekar submitted India's INDCs at COP 20 in Lima with the stipulation of their being nationally determined, asserting India's readiness to playing its part in the global fight against climate change. Saryal states that for COP 21 at Paris, India contemplated two sets of INDC options, one on what could be achieved with India's domestic resources while the other about what could be achieved with appropriate technology and financial support from the developed countries (Saryal, 2018.) At the African Ministerial Conference on Environment in Cairo, Egypt in March 2015, Environment Minister Javadekar commented: "The developed world, which has occupied large carbon space today, must vacate the space to accommodate developing and emerging economies. We need to understand that ultimately the per capita emission of both developed and developing countries need to move towards a convergent path"(Mohan, 2015.) The Environment Minister Javadekar is also said to have popularized the refrain that "India is not a part of the problem but would like to be a part of the solution" (Lavasa, 2019, p. 175.)

Prime Minister Modi played a seminal role in ensuring the success of Paris negotiations in 2015. After the near fiasco at Copenhagen where the accord was allegedly hammered by the US and primarily the BASIC group so much so that the Convention merely took note of it, all parties especially the host France were particular about making Paris talks a success. As Ashok Lavasa recounts, Indian government took active measures to shake off its image as a 'road blocker' or a 'naysayer' in pre COP 20 phase by projecting

a more positive image and garnering support of the key countries and major negotiating groups. Lavasa states that the PM was present from the very first day of the Paris talks conducting bilateral meetings with the Japanese and the US presidents sharing India's vision and position on key issues related with climate negotiations. The PM had already announced his renewable energy program in advance and on the first day of the COP 21, he launched the International Solar Alliance with the French president Hollande. Additionally, India joined the US in launching 'Mission Innovation' during the inauguration of the COP. These initiatives right at the outset of the talks clearly expressed India's "positive intent" (Lavasa, 2019, p. 179.)

While addressing a plenary at the United Nations Educational, Scientific and Cultural Organization in 2015, Modi stated: "Too often, our discussion is reduced to an argument about emissions cut. But we are more likely to succeed if we offer affordable solutions, not simply impose choices" (*cited in* Saryal, 2015.) The PM has on several occasions questioned the moral conscience of the developed world to hold developing countries accountable for climate change and also invoked India's historical legacy of respect for Nature. Saryal points to this leading to India's "refigured moralizing leadership" in climate negotiations and also the desire to make the world understand the value of behavioural regulations and lifestyle changes in the wider context of climate mitigations actions.

The PM welcomed the PA and continued to support it after US withdrawal from it in 2017. At a joint press conference Prime Minister Modi along with the French President

Emmanuel Macron asserted that "protection of the environment and the mother planet is an article of faith" (Sengutpa, 2019, p. 129.)

As a result of Modi's strategic vision for India on the global stage, and a powerful articulation of the same, by the time of the Paris talks in 2015, India transitioned from the role of "global opposition to that of global agenda setter" (Mohan, 2017, p. 23.) This paradigmatic shift in India's narrative and willingness to take on leadership and responsibility in the management of global commons that began around the global economic crisis of 2007-2008, crystallized under the present dispensation.

Thus the main policy actors were germane to defining and projecting India's changed global messaging and narratives in the climate negotiations during the period under study. They were clearly instrumental in setting off the forces of positive feedback that led to changes in India's position and language in the climate negotiations. It is important to explore the role played by other forces and factors in sustaining this change.

The Co-Benefits Paradigm

Shifts in India's negotiating strategy in the period under study has also been understood through the 'co benefits' paradigm predicated on aligning of climate mitigation and adaptation goals with the development trajectories in a way that actions deliver both climate as well as development gains. Navroz Dubash (2013) states that this thinking formed the basis of India's domestic climate policies and actions even though its link with India's negotiating position has been somewhat tenuous. He notes that the climate debate in India both deepened and widened with involvement of wider range of constituencies and activities stimulated by Copenhagen COP. He also notes that while the equity frame

remained the fulcrum of India's efforts, it was "complemented by calls for domestic mitigation measures" (Dubash 2013, p. 196.) The shift in the climate narrative to co-benefits discourse is exemplified in NAPCC 2008 the driving motive behind which was to "promote our development objectives while also yielding co-benefits for addressing climate change effectively" (NAPCC, Sec.2.)

Salience of the co-benefits paradigm is highlighted through three predominant strands of domestic issues related with climate change. First is the 'hiding behind the poor' argument based on the disparities in emissions levels between the elite and the poor in India as brought out in the 2007 Greenpeace-India report. The crux of the argument made therein is that due to high levels of income and consumption in the middle classes, the legitimacy of India's insistence on per capita emissions internationally is attenuated. However, when compared to the emissions levels of the equivalent income classes in developed countries, these emissions were still much lower thus making the case that the developed world was trying to hide behind India's rich who were in turn trying to hide behind the poor. Dubash opines that 'hiding behind the poor' argument has nuanced the domestic climate narrative by highlighting the "domestic distributive challenges" and turning the "climate spotlight inward" (Dubash 2013, p. 196.)

Second is the growing awareness of climate damages and consequent attention to climate adaptation measures. There has also been an attempt on the part of the government to systematize data gathering on climate impacts. Even though India's mitigation efforts alone will yield little by themselves, they could be used to leverage more aggressive

mitigation action by developed countries. To that extent, concern with climate impacts and adaptation reinforces the concerns with equitable sharing of the mitigation criteria.

Third, energy security has been a strong objective driving climate mitigation in India. Increasing energy access has been an important quest of the government even before the climate issue came on the domestic policy agenda. With climate change, what changed was the choices of energy mix and the demand and supply of sources increasingly enmeshed in the global climate diplomacy (Thaker and Leiserowitz, 2014.) Dubash states that the pervading sense of energy insecurity has been created by the twin effects of growing energy demands due to increased economic growth rate and the increase in the global energy prices in coal and gas, downward revision in estimates of coal reserves and shortfalls due to mis-governance and conflicts over access and resources (Dubash 2013, p. 196.) As compared to climate mitigation, energy security enjoys considerable political and popular support. Measures towards climate mitigation such as promoting end use energy efficiency, and pursuing renewable energy supply, are consistent with reduced GHG emissions. The NAPCC 2008 clearly draws the linkages between climate change and energy security. Increased thrust towards renewable energy resources has become the nation's central theme in its quest for equitable access to energy. To that extent the climate crisis has provided a great opportunity for India to innovate and lead in the cutting edge technologies of the future.

The explicit linkages between development objectives and climate objectives facilitated by India's strategy of climate action based on the co-benefits approach may not be seen just a terminology or a classification but a very important policy idea. Prior to the

articulation of this approach, there were misgivings about India's low carbon growth strategy as being harmful as it would indicate its capacity to undertake climate mitigation using its own resources. This would preclude India from partaking in the developing countries' argument that their mitigation actions need to be supported financially by the developed country parties. Dubash rightly believes that India's push towards energy security based on renewable sources and its alignment with climate mitigation, yielding potential co-benefits have created the impetus for progressive policies in the area. The government's framing of co-benefits sought both to align domestic priorities of securing energy to sustain economic growth and also provide India leverage in international negotiations. While it may not be possible say to what extent did this thinking affect the changes in India's approach to climate negotiations, it may not be discarded as an unimportant influence setting off forces of positive feedback sustaining the changes.

Role of Civil Society Groups

The significance of the role played by non-state actors like the Civil Society (CS) groups and environmental nongovernmental organizations (ENGOs) in drafting climate policy has received vivid attention by scholars and watchers of the international climate negotiations. Atiq Rahman and Annie Roncerel (1994) call the ENGOs the "conscience of the overall process" (p. 241). ENGOs exercise their influence in articulation of climate policy preferences in the national policy arenas as well at international fora. Some of the prominent international ENGOs involved in climate negotiations have been Climate Action Network (CAN), World Resources Institute (WRI), Greenpeace, Sierra Club, Environmental Defense Fund (EDF) and Natural Resources Defense Council (NRDC).

Created in 1989 by 63 NGOs from 22 countries, CAN has focused on highlighting the contribution of the industrialized nations to the problem of global warming. Greenpeace and others have sought to emphasize the aspect of anthropogenic impact on climate systems (Newell, 2000.)

CS groups and ENGOs have affected the climate policy development and negotiations in several ways. They serve as an important platform for dialogue and communication by drawing attention to new scientific reports and information on the subject. Rahman and Roncerel (1994) note that the NGOs' knowledge of science and politics of climate change provided the expertise required by the governments to initiate policy action. By publicizing the issue, they can spur governmental action, or minimize the time lag between recognition of a problem and its entry into the state's policy agenda. ENGOs can set the pace of political activity by disseminating policy relevant knowledge, asserting their preferred interpretations of issues, and suggesting appropriate levels of action. These activities help in setting conditions under which states act or react to vital issues of common concern. This way the ENGOs create a sense of public expectation about the "sorts of policy responses that are desirable" (Newell, 2000, p. 130.) The ENGOs also provided legal and policy counsel to the negotiators and issued the "Fossil of the Day" award to the country which was being most obstructive in the negotiations (Carpenter, 2001.) They also enriched the political context of the talks by putting the latest scientific pronouncements on climate change to the fore (Pandeya 2008, p.158.) However, internationally, the primarily Northern environmental NGOs have often not been on the same plane with the primarily Southern developmental NGOs.

Swarnakar categorizes Indian CS groups' and NGO's engagement with the climate issue in two distinct frameworks: the 'climate sustainability frame,' and the 'climate justice frame'(Swarnakar, 2019, p. 255.) In the former, the CS groups focus on betterment of environment, breakthroughs in climate science, innovations in climate friendly technology and issues that avoid confrontation with the government or corporations. CS groups such as TERI, Integrated Research and Action for Development, Council on Energy Environment and Water, Centre for Study of Science, Technology and Policy and Shakti Sustainable Energy Foundation fall in this category. The CS groups subscribing to the climate justice framework focus on human rights and vulnerabilities of marginalized communities, advocate inclusive solutions to climate change. In the case of Indian CS groups, there is a unanimity in accepting climate change to be a scientific reality and the two frames are not entirely exclusive. For instance, the Centre for Science and Environment (CSE) has deftly engaged with both climate science and climate justice issues.

CSE played a seminal role in setting the tone for India's most durable narrative in climate negotiations through its 1991 paper titled 'Global warming in an unequal world.' By differentiating between the 'survival emissions' of the poor and the 'luxury emissions' of the rich they laid the groundwork for the concepts of equity and CBDR & RC. Swarnakar writes that in the Indian climate policy domain, this long standing position is held "sacrosanct and to a great extent, above critical assessment" (Swarnakar, 2019, p. 262.) Attempt at reformulation of this narrative by Jairam Ramesh at Copenhagen had him pilloried from all quarters domestically, though he admittedly received appreciation from leaders and negotiators from other, especially developed countries.

The formation of the PMCCC in 2007 widened the scope of participation and led to the 'crowding in' of the CS groups in policy making on climate change. Their avowed position however has been that domestic climate policy should be minimally linked to international process and that climate justice for India was the same as receiving finance from the developed countries. As a result, the CS groups that support India's international climate positions remain critical of its domestic policies particularly in local environmental struggles. CS groups such as CAN South Asia (CANSA) and Climate Justice Now (CJN!) have participated in all the COPs and involved their efforts in network building initiatives and also worked closely with the government in policy formulation and information dissemination. Sanjay Vashisht of CANSA stated how the CS advocacy groups held a mirror to the negotiating parties and constantly reminded them to "mind the gap" by pointing out what was at stake if an agreement was not reached to maintain the continuity in efforts to address climate change (in conversation.)

Commenting on the CS groups' engagement in India's climate debate, scholars have observed that it has not been possible to integrate their actions into a single narrative since they hold both the Indian government and the global North accountable. However, their role in cementing the efforts at the national and international levels by highlighting and galvanising the issues and quest for solutions is undeniable.

Role of Industry

Environmental problems like climate change are caused in part by the "legitimate activities of large corporations" (Skjaerseth & Skodvin, 2003.) Industry accounts for more than a third of worldwide energy consumption, a level higher than that of any end user in

developed and developing economies. In doing so, industry produces more than 50% of all greenhouse gases; oil alone is responsible for a quarter of the greenhouse effect (Stokke, Hovi, & Ulfstein, 2005.) As such, industry controls the behaviour that would have to be changed in order to meaningfully redress the climate issue.

Industry possesses structural and instrumental capabilities that can powerfully influence the outcomes of international environmental agreements. Industry's structural influence is related to its contribution to economic growth, employment, and technological innovations especially in the energy sector. This "structural dependency" allows industry privileged access in decision making. Industry's instrumental influence is based on its in-house financial, human and technological resources and expertise on complex environmental issues areas. It can easily deploy its resources to fund election campaigns of political functionaries and build political connections to support or block climate policy. Industry can also have a critical impact on international environmental policymaking. By making economic and technological choices that affect environmental sustainability, industry sets parameters for international environmental action. Falkner (2001) says that in this sense, corporate powers can constrain state's autonomy and limit the influence of environmental interest groups. Industry may oppose international climate regulations because they prefer to continue business as usual; delay transitioning to environmentally friendly behaviour; or avoid the costs of fulfilling regulatory requirements. Success of the governments in dealing with climate change will to a large extent depend upon the cooperation of the industry. Newell (2000) quotes Levy who writes: "If an agreement

cannot be crafted that gains the consent of major affected industries, there will likely be no agreement at all" (p. 96).

The Indian business community has not played a very major role in India's climate negotiations in the initial years of our engagement. Dubash states that according to an observer in 1998, the Indian industry was "unmobilized and uninvited" (Dubash 2013.) and woke up the business potential of KP's CDM potential 2003 onwards. In the run up to Copenhagen, the Confederation of Indian Industry (CII) supported India's voluntary emissions intensity target and also indulged in voluntary emissions disclosure initiatives. However, at the same time, the Federation of Indian Chambers of Commerce and Industry (FICCI), denounced India's voluntary targets and argued that any mitigation action by India and the Indian industry should be linked with provision of finance.

By 2015, an increasing number of Indian businesses had begun taking action towards increasing sustainability, environmental reporting, and adoption of internal actions, including setting emission targets and an internal carbon price. Ahead of the Paris talks, 8 Indian CEOs signed the WEF statement supporting political leaders to come to an agreement at Paris (WEF 2015); 61 companies reported their carbon emissions to the Carbon Disclosure Project (CDP); 7 joined the World Bank led Carbon Pricing Leadership Coalition; and, companies like Mahindra, Hindustan Construction Company, and Infosys have made public announcements about their internal carbon pricing, while some Tata companies are doing this as an internal exercise (Venkateswaran & Rajan, 2019, p. 273.)

The initiatives taken by the Tata Group of companies in response to the climate mitigation efforts is noteworthy. The Tatas have always been known to be socially and

environmentally responsible company. In 2009, the Tata Group articulated its climate change policy due to which several group companies started calculating their carbon and water footprints and began investing in reducing them. In 2014, the group established the Tata Global Sustainability Council (TGSC), and adopted a comprehensive sustainability policy and a set of group key performance indicators to track performance and started using the Global Reporting Initiative Framework. In 2015, the group set up a task force consisting of major carbon-emitting companies to assess how internal carbon pricing can mainstream climate change mitigation thinking. Tata Steel used this for its capital expenditure while Tata Power committed to generating 30–40 per cent of its power production from renewables by 2025 (Venkateswaran & Rajan, 2019, p. 277.)

However, it is observed that when it comes to taking public positions and advocating the climate agenda in favour of mitigation and adaptation, the Indian industry has not played a very proactive role. There have hardly been any industry wide consensus and few investors have factored sustainability into their targets and decisions. Being price conscious, markets in India have still not responded favourably to sustainable business practices. Despite this an increasing number of Indian businesses have begun promoting the green growth narrative and participating in international carbon trading schemes. The businesses saw a great potential in the CDM and played a significant role in the government decision to adopt the CDM mechanism. There is hope that they may play similar role in shaping "climate change mitigation as an economic opportunity discourse" (Thaker and Leiserowitz, 2014.)

Role of Media

Media plays an integral role in policy process by directing public attention to a problem and creating demand for policy action. Media reporting can forcefully reflect the policy arguments around important public problems (Pandeya, 2008, p. 158.) Studies of media coverage of complex events reveal many ways in which media shapes the public debate on important issues. Media's reporting of issues can be symptomatic of "bottleneck of attention" in that issues are usually considered piecemeal. In order to simplify complex issues, reporting may focus attention on a single aspect of a multifaceted issue or consider different aspects in discrete "beats" without "overarching synthesis ever considered" (Baumgartner and Jones, 1993, p.103.) The period of time when both merits and demerits of an issue are considered simultaneously may be very short. According to one school of thought, news is the result of "practical, purposive, and creative activities" on the part of the "news promoters, news assemblers and news consumers" (p. 106.) Thus policy entrepreneurs have strategic incentives to take advantage of events and issues to push their favoured proposals on the policy agenda. The set of policy images reflected by the media is therefore determined by mix of factual circumstances and the way the policy entrepreneurs and news presenters interpret them.

Being a privileged means of communication, media plays an important role in linking the venues together and aids policy actors in sensing the "public mood." Media coverage of issues of risk may be highly selective and temporary. Spectacular and sensational events and conflictual subjects, especially the ones on which there is a conflict among specialists, attract considerable media attention. Policy entrepreneurs who might

stand to gain from increased media attention frequently attempt to portray an issue to be controversial. Rational argumentation becomes less important in a controversy allowing for subjective categorizations and descriptions. Again, during some periods, one side of the debate may be highlighted while at other times, the other side might get overwhelming coverage. Baumgartner and Jones (1994) reckon that media attention may rise and fall even without any substantive changes in the issue at hand. In their words: "media attention is fitful, never sustained" (p. 125.) Media coverage plays a cardinal role in shaping public perceptions about new scientific discoveries, technological innovations and environmental risks. Media framing of issues limits the discourse and allows for meanings to be constructed and reinforced.

The role of mass media in moulding the public understanding of environmental issues has been well documented and analysed. Billet writes that information and knowledge about the physical world are a part of the "social chamber" in which they are interpreted within the context of specific socio-cultural norms, and the media act as "gatekeepers of information on climate change." He further posits that the communication of climate change from scientists and policy makers to the public via the mass media has implications for "creating national variation in public understanding of a global environmental issue" (Billet, 2009.)

Media coverage of the climate change and the climate debate in our period is an important window into understanding India's climate policy dynamics. India is a multilingual country but most of the analysis of media reporting of climate change has been done for the English language print media. Even though vernacular print media has greater

circulation, the English language print media garners more advertising revenue and has a substantial sway in shaping policy and opinion (Jogesh, 2019.) These newspapers are read and acknowledged by people in agenda setting and policy making positions and in a way the media reflects the elite perceptions. The 2007 Global Nielsen Survey found that 74% of the people polled used newspapers as the primary source of information on climate change in India (Jogesh, 2019.) Climate news is usually generated by the government, scientific agencies, international, intergovernmental and bilateral agencies, Civil Society and advocacy groups.

The print media reportage in India covers the science and the politics of climate change. Interestingly, Billet finds that 100% of the Indian press endorses that climate change is a scientific fact in sharp contrast with the Western media where scepticism still prevails. 98% of the articles also attributed climate change to anthropogenic causes. The initial reportage about the science of climate change and impact on human ecosystems can be analysed along the 'risk – responsibility' axes where the risk is understood in terms of the deleterious impacts of climate change and responsibility in terms of where the responsibility for the problem is situated. Climate coverage mirrored the government position on per capita and historical emissions paradigm and development imperatives that lay the blame and onus of mitigation action on the North. The attempts of the developed world to force the developing nations to accept mitigation responsibilities in any manner met with a reactionary narratives and overwhelming negative slant against the US and the North. Billet rightly points out that the 'unified' and overtly nationalistic 'us versus them' frame of reference obscured nuanced understanding of an essentially multifaceted problem.

It also led to the perception that climate mitigation was merely a nefarious means to suppressing India's growth being foisted on it by neo-colonial forces.

Around the COP 15 at Copenhagen in 2009, there was a dramatic spike in media visibility of the issue the world over. Jogesh finds that coverage in India was unprecedented about capturing the events and interventions and also opinions from the "traditionally non climate commentators" (Jogesh, Dubash 2019, p.305.) A similar peak occurred during the Paris talks in 2015. Jogesh writes that the COP in 2009 was unprecedented in terms of the interest generated. Barring these peaks, there has been substantial coverage of climate negotiations around the COPs or climate treaty related issues such as India led launching of ISA or the US's announcement of withdrawal from the PA in 2017. India's domestic politics on climate change forms a relatively small proportion of media coverage around the themes of India's negotiating strategy and submissions. Jogesh finds that between 2010 and 2017, there was an overall increase in the number of articles on politics and climate policy, especially energy efficiency and renewable energy policies. Significantly, around Warsaw COP in 2013, the narratives focussed on equity and CBDR started changing and coalescing around India's INDCs and the technology and financial support due on part of developed countries. A miniscule proportion of articles and very few journalists, notably D. Raghunandan and Praful Bidwai remained critical of India's defensive 'no emissions cut obligation' stance. The narratives advocating mitigation action by developing countries in line with development imperatives and priorities as well as in recognition of the risks posed by climate change have begun occupying the print space of late.

Survey of the narratives sustained by the print media corresponds with the images dotting India's and policy positions in both the domestic and the international contexts. To that extent the print media has been an important source of tracking India's climate debate over the years and especially during the period of our study when the reportage was intense. Incidentally, climate change reportage has become a staple feature in the print media in recent times.

Conclusions and Way Forward

The period of the Indian engagement with international climate negotiations between 2009 and 2015 is characterized by broad elements of change rather than continuity that informed the first decade and a half of climate policy trends. Policy punctuation occurred in the face of the changing underlying fundamentals. The changing domestic and international contexts stirred the status quo and reconfigured the Indian climate politics and policy narratives and consequent actions. Through the conceptual tools of the PE model, the narrative emphasized the role of policy images and venues, and factors fostering and sustaining the positive feedback mechanism that stoked the impulses of change. Shifts in India's approach to climate negotiations, accentuated around Copenhagen COP and Paris talks, saw the issue assume greater political salience and visibility. The policy entrepreneurs in this phase of India's engagement were largely political and the issue played out more and more in the political arena domestically as well as internationally. Domestically, India's development aspirations, critical need for energy access and security to sustain its economic growth and formulation of comprehensive climate mitigation and adaptation strategies formed the basis for its tilt towards the 'co-benefits' paradigm and

concomitant flexibility in its negotiating stance. Internationally, India's vantage point changed as it readjusted its position on several international issues including climate change. As a result it found itself aligning proactively with new coalitions and negotiating blocks and project itself as a deal maker. The role of the stakeholders such as the Civil society advocacy groups, the industry and the media have been assessed to ascertain their influence in sustaining the shifts in India's climate strategy. One thing was increasingly clear, there was a greater level of conversation on climate change and India's climate policy equilibrium had been altered for all times to come.

Some other important observations and inferences are made here by way of conclusion. First, India has always had a strong ethic of environmental veneration and protection, this world view encapsulated in the phrase – *Vasudhaiv Kutumbkam* (all life forms inhabiting the earth belong in one family) – as well as a long tradition of adaptation to climatic changes throughout history. It is noteworthy however, that 'climate change' as a matter of international concern and action got defined in India apart from this tradition, within the narrow context of international negotiations.

Second, even though climate science has been evolutionary as manifested in the successive IPCC reports which have stated their findings on anthropogenic forcing of the natural global climate system with higher degrees of confidence, there has been a near unanimity in Indian understanding of the phenomenon from the outset. Doubts were never raised about the quality or veracity of scientific evidence underpinning climate change. Neither was the anthropogenic contribution to global warming ever suspect.

Third, India as a country has always been deeply vulnerable to climate impacts owing its large impoverished population lacking in capacity or capability to fend off or adapt; primarily rainfed agrarian economy and a long coast line. Climate change can devastate its agricultural practices, food supply, water availability, forest cover, and animal and human ecosystems, displacing people and disrupting livelihoods. Therefore, the success or failure of international efforts to tackle climate change is highly consequential to India. However, from the very start, India chose the aspects per capita entitlements to global environmental resources, 'equity,' CBDR & RC, 'historical responsibility' of precipitating the climate crisis and the principle of 'polluter pays' to craft its arguments and positions in the international negotiations. In the ensuing dichotomy between the objectives of environmental protection through strong mitigation action and economic development fuelled by traditional sources of energy, India preferred the latter. The realization that development focused actions and interventions were not antagonistic with climate change related objectives happened later. The aligning of the climate mitigation/ adaptation objectives with low carbon developmental path based on clean and renewable energy under the co-benefits paradigm obtained during the period under study. The NAPCC 2008 is a strong case in point.

Fourth, due to its multi-pronged ramifications for the systems of production, consumption and energy use and access, climate change cuts across a spectrum of multilateral interests in the geo-political landscape, including issues of trade, economy, technology, finance and security. India's energy economy is strongly affected by this global context. To that extent, climate change is significant to India's engagement with the

global community, having major implications for its foreign policy. Vihma points to the tradition in India's environmental diplomacy that frames environmental protection and socioeconomic development as contrasting priorities (Vihma, 2011.) However, sustained levels of high economic growth coupled with India's aspiration to play a strategically important role in the new global order saw a coalescing of its interests and narratives on several issues in its international and foreign policy agenda. By displaying a flexible, proactive and a constructive stance in climate negotiations in this phase, India may have been able to advance most of its objectives at the same time.

Fifth, it has been rightly commented that India's climate politics has been one long story of remarkable consistency. For the first two decades of India's engagement with climate negotiations, there was a clear separation between development policy and climate policy with latter being formulated as a matter strategy along the decision points in international negotiations. However, the period under study saw both widening and deepening of India's climate narratives. Dubash attributes this to the dominance of the 'sustainable development realists' pursuing the 'co-benefits' approach to sustainable development (Dubash 2013) as compared to the 'growth first realists' who dominated the initial framing of the issue as well as the 'sustainable development internationalists' who with their emphasis on greater urgency for an internationally effective climate regime, could not gain much prominence or say.

Sixth, the domestic constituencies including the Civil Society groups predicating their advocacy on climate justice; industry groups seeking opportunities in the mechanisms like CDM and low emissions technologies and clean energy growth strategies; and media

giving widespread coverage to international negotiations and domestic policy initiatives – did not really engender a strong public opinion which could compel or constrain policy action or foster a unified climate change movement during our period. They broadened and enriched the base of participation in the climate policy. Their role in sustaining the shifts in India's climate policy is undeniable, however their potential to influence India's position in more fundamental ways is yet to be fully evolved and explored.

In balance, how does one appraise the inflection in India's climate politics between Copenhagen and Paris? It depends on who answers the question. India's steadfastness earned it the reputation of being a difficult negotiating partner and a "Southern hardliner" (Vihma, 2011.) Official India sees the PA as a validation of India's cherished positions on equity, differentiation and CBDR & RC which they find reflected in spirit in PA's NDCs in line with national circumstances and capabilities with provision of financial and technical support to the developing countries. The response of other stakeholders and commentators ranges from appreciation to repudiation. "India's stand was reactive and confused"… "India posturing was not proper… it was the bull's eye – if the talks failed then due to India and it the talks succeeded then it was because India were dominated"…"Copenhagen accord was consecrated to footnotes of the UNFCCC"…"we could have leveraged our strong domestic climate actions and achievements better"… "there is a separateness in India's domestic actions and international positions" (in conversation with Sanjay Vashisht, CANSA and Urmi Goswami.) However, there seems to be a unanimous appreciation for the role played by the Indian political leadership in highlighting India's changing climate narrative and defending its interests.

Incidentally, 2015 was a determinant year for three separate global sustainable development processes aimed at long term cooperation and agreements within the world community – Sendai Framework for Disaster Risk Reduction 2015 replacing the Hyogo Framework for Action 2005 – 2015; Sustainable Development Goals 2015 – 2030, replacing the Millennium Development Goals 2000 – 2015; and, Paris Agreement to the UNFCCC replacing the Kyoto Protocol of 1997. Even though these were conceived within separate intergovernmental processes, synergies among the three have been widely acknowledged since the success of their outcomes would depend on each other's achievements. Climate mitigation and adaptation are fundamental to all three agreements and to that extent, they have common goals and pathways.

As conversations on climate change have gathered momentum in recent times, it has become the 'poster child' for global and domestic environmental problems. India's stance in international climate negotiations is likely to have far reaching implications for the efficacy of global climate cooperation. While India may have had little historical responsibility in causing climate crisis, with its status as the third largest aggregate GHG emitter and vulnerability of its vast majority, it certainly has a current responsibility of engaging with climate change constructively and meaningfully. This would require a better appreciation of the fact that climate objectives and development objectives may complement and reinforce each other and yield co-benefits. This also provides an opportunity for leading in research, development and innovations in the field of green energy technology and adoption of low carbon growth strategy. For a better realization of India's economic and diplomatic aspirations, it is imperative that India be seen as a part of

the solution to this global problem par excellence. Therefore, devoting more attention to climate negotiations alongside its other pressing domestic concerns may be a promising way going forward.

****

REFERENCES

Agrawala, S. (1998). Context and early origins of the Intergovernmental Panel on Climate Change. *Climate Change, 39*, 605-620.

Agrawala, S., & Andresen, S. (1999). Indispensability and indefensibility? The United States in climate treaty negotiations. *Global Governance, 5*(4), 457-482.

Agarwal, Anil. and Narain, Sunita., (1990). Global warming in an unequal world: a case for environmental colonialism, *Centre of Science and the Environment*, New Delhi, India

Antonelli, A., & Schaefer, B. D. (1988). *Why the Kyoto signing signals disregard for Congress.* Retrieved October 24, 2008, from http://www.heritage.org/Research/ Energy/EnergyandEnvironment/em559.cfm

Anwar, Sadat., (2014). India's Treaty Practice in Climate Change, Journal of the Indian Law Institute, Vol. 56, No. I, pp. 95 – 105

AchutaRao, Krishna. and Otto, Friederike., (2019). *Changing Climate and Weather, evidence from attrition science*, In Navroz Dubash ed., India in a warming world, integrating climate change and development., Retrieved February 18, 2020 from DOI:10.1093/oso/9780199498734.003.0002, 46-63.

Adve, Nagraj., (2019). *Impacts of Global Warming in India, narratives from below*., In In Navroz Dubash ed., India in a warming world, integrating climate change and development., Retrieved February 18, 2020 from DOI:10.1093/oso/9780199498734.003.0002, 64-78

Atteridge, A., M.K. Srivastava, N. Pahuja, and H. Upadhyay. 2012. 'Climate Policy in India: What Shapes International, National and State Policy?', *Ambio*, 41(Suppl. 1): 68–77. Available at https://doi.org/10.1007/s13280-011-0242-5.

BASIC Statement at COP 18. (26 November, 2012). *Statement by China on Behalf of Brazil, India, South Africa and China at COP 18*. Retrieved on March 19, 2020 from https://unfccc.int/resource/docs/cop18_cmp8_ hl_statements/ BASIC%20STATEMENT%20AT%20COP18.pdf

Baumert, K. A., & Kete, N. (2002). An architecture for climate protection. In K. A. Baumert (Ed.), *Building on the Kyoto Protocol: Options for protecting the climate* (pp. 1-30). Washington, DC: World Resources Institute.

Baumgartner, F. R. (2006). Punctuated equilibrium theory and environmental policy. In R. Repetto (Ed.), *Punctuated equilibrium and the dynamics of U.S. environmental policy* (pp. 24-46). New Haven: Yale University Press.

Baumgartner, F. R., & Jones, B. D. (1991). Agenda dynamics and policy subsystems. *The Journal of Politics, 53*(4), 1044-1074.

Baumgartner, F. R., & Jones, B. D. (1993). *Agendas and instability in American politics.* Chicago: The University of Chicago Press.

Baumgartner, F. R., & Jones, B. D. (2002). Positive and negative feedback in politics. In F. R. Baumgartner & B. D. Jones (Eds.), *Policy dynamics* (pp. 3-28). Chicago: The University of Chicago Press.

BBC News – *Why did Copenhagen fail to deliver a climate deal?* News.bbc.co.uk (2009). Retrieved on March 18, 2020, from: http://news.bbc.co.uk/2/hi/8426835.stm.

Berlin Mandate. (1995). Retrieved October 17, 2008, from http://unfccc.int/resource/docs/cop1/07a01.pdf

Billett, Simon. (2009). Dividing Climate Change: Global Warming in the Indian Mass Media. *Climatic Change*. 99. 1-16. 10.1007/s10584-009-9605-3.

Birkland, T. A. (2001). *An introduction to policy process: Theories, concepts, and models of public policymaking.* New York: M. E. Sharpe.

Bodansky, D. (1994). Prologue to the Climate Change Convention. In I. M. Mintzer & J. A. Leonard (Eds.), *Negotiating climate change: The inside story of the Rio Convention* (pp. 45-74). Cambridge: Cambridge University Press.

Boykoff, M. T., & Boykoff, J. M. (2004). Balance as a bias: Global warming and the U.S. prestige press. *Global Environmental Change, 14,* 125-136.

Boykoff, M. T. & Roberts, T. J. (2007/2008). *Media coverage of climate change: Current trends, strengths and weaknesses* (UNOP Background Paper). Washington, DC: Human Development Report Office.

Brock, W. A. (2006). Tipping points, abrupt opinion changes and punctuated policy change. In R. Repetto (Ed.), *Punctuated equilibrium and the dynamics of U.S. environmental policy* (pp. 47-77). New Haven: Yale University Press.

Broecker, W.S., (1997). Thermohaline circulation, the Achilles heel of our climate system: will man-made CO2 upset the current balance? *Science*, 278, 1582–1588.

Brown, D. A. (2002). *American heat: Ethical problems with the United States' response to global warming.* Oxford: Rowman & Littlefield.

Bryner, G. C. (2007). Business and the environment: Influencing agency policymaking. In M. E. Kraft & S. Kamieniecki (Eds.), *Business and environmental policy: Corporate interests in the American political system* (pp. 127-151). Cambridge: MIT Press.

Brundtland Commission Report (World Commission on Environment and Development). (1977). Retrieved from: doi.org/10.1007/978-94-007-0753-5_441 on March 18, 2020

Campbell, J. L. (2002). Ideas, politics and public policy. *Annual Review of Sociology, 28,* 21-38.

Carbon Brief. 2020. *Home | Carbon Brief*. [online] Available at: www.carbonbrief.org Accessed on March 18, 2020.

Carcasson, M. (2004). Global gridlock: The American presidency and the framing of international environmentalism. In T. R. Peterson (Ed.), *Green talk in the White House: The rhetorical presidency encounters ecology* (pp. 258-287). College Station: Texas A&M University Press.

Carlson, D. K. (2001). *Scientists deliver serious warning about effects of global warming.* Retrieved October 24, 2008, from http://www.gallup.com/poll/2086/Scientists-Deliver-Serious-Warning-About-Effects-Global-Warming.aspx

Carpenter, C. (2001). Business, green groups and the media: The role of non governmental organizations in the climate change debate. *International Affairs, 77*(2), 313-328.

Cashore, B., & Howlett, M. (2006). Behavioral thresholds and institutional rigidities as explanations of punctuated equilibrium processed in Pacific Northwest forest policy dynamics. In R. Repetto (Ed.), *Punctuated equilibrium and the dynamics of U.S. environmental policy* (pp. 137-161). New Haven: Yale University Press.

Cass, L. R. (2006). *The failures of American and European climate policy: International norms, domestic politics and unachievable commitments.* Albany: State University of New York Press.

Chasek, P. S., Downie, D. L., & Brown, J. W. (2006). *Global environmental politics* (4th ed.). Boulder: Westview Press.

Climatelinks. 2020. Global Climate Change. [online] Available at: www. climatelinks.org Accessed Feb 20, 2020.

Cobb, R. W., & Elder, C. D. (1983). *The political uses of symbols.* New York: Longman

Cohen, M. D., March, J. G., & Olsen, J. P. (1972). A garbage can model of organizational choice. *Administrative Science Quarterly, 17*(1), 1-25.

Copenhagen Accord, 2009. Report of the Conference of the Parties on its fifteenth session, held in Copenhagen from 7 to 19 December 2009. Part One: Proceedings. Retrieved from https://unfccc.int/sites/ default/files/resource/docs /2009/cop15/eng/11a01.pdf; Accessed on March 18, 2020.

Corporate Europe Observatory. (n.d.). *Greenhouse market mania: UN climate talks corrupted by corporate pseudo solutions.* Retrieved October 12, 2008, from http://www.corporateeurope.org/greenhouse/usa.html

Davenport, D. S. (2006). *Global environmental negotiations and U.S. interests.* New York: Palgrave Macmillan.

Dasgupta, Chandrashekhar., (2019). *Present at the creation: the making of the Framework Convention on Climate Change*. In Navroz Dubash ed., India in a warming world, integrating climate change and development., Retrieved February 18, 2020 from DOI:10.1093/oso/9780199498734.003.0002, 142-156.

Dowdeswell, E., & Kinley, R. J. (1994). Constructive damage to the status quo. In I. M. Mintzer & J. A. Leonard (Eds.), *Negotiating climate change: The inside story of the Rio Convention* (pp. 114-128). Cambridge: Cambridge University Press.

Downs, A. (1972). Up and down with ecology—The "Issue Attention" cycle. *The Public Interest, 28*, 38-52.

Doyle, J. (2000). *Taken for a ride: Detroit's Big Three and the politics of pollution.* New York: Four Walls Eight Windows.

Dubash, Navroz. K., (2013). The politics of climate change in India: narratives of equity and cobenefits. *WIRES Climate Change*, Vol.4, Issue 3, 191-201

Dubash, Navroz. K. (ed.) (2013). Handbook of climate change and India – development, politics and governance, New Delhi: Oxford University Press.

Dubash, Navroz K. and Lavanya Rajamani. (2015). 'Multilateral Diplomacy on Climate Change', in David M. Malone, C. Raja Mohan and Srinath Raghavan (eds.), *Oxford Handbook on Indian Foreign Policy*, Oxford: Oxford University Press, 663–77.

Dunn, W. N. (1981). *Public policy analysis: An introduction.* Englewood Cliffs, NJ: Prentice-Hall.

Dye, T. R. (2002). *Understanding public policy.* Englewood Cliffs, NJ: Prentice-Hall.

Earth Negotiations Bulletin. (2017). From Bali To Marrakech: *A Decade of International Climate Negotiations.* International Institute of Sustainable Development. Retrieved on March 19, 2020 from https://www.iisd.org/sites/default/files/publications/bali-marrakech-decade-international-climate-negotiations.pdf

Economic impacts of the Kyoto Protocol: Hearing on the Economic Impacts of the Kyoto Protocol before the Senate Committee on Energy and Natural Resources, 107th Cong. iii-92 (1999) (statements of Cecile E. Roberts).

Elliot, L. (1998). *The global politics of the environment.* New York: New York University Press.

Examining the Kyoto Treaty on climate change and its effect on the agricultural economy: Hearing on the Economics of the Kyoto Protocol before the Senate Committee on Agriculture, Nutrition and Forestry, 105th Cong. iv-162 (1998a) (remarks by Senators).

Examining the Kyoto Treaty on climate change and its effect on the agricultural economy: Hearing on the Economics of the Kyoto Protocol before the Senate Committee on Agriculture, Nutrition and Forestry, 105th Cong. iv-162 (1998b) (testimony of Janet Yellen).

Expressing sense of Senate regarding the UN Convention on Climate Change. (1997, July 25). Byrd-Hagel resolution debate. Retrieved October 22, 2008, from http://thomas.loc.gov/cgi-bin/query/z?r105:S25JY7-15

Etheridge, D.M., et al., (1996). Natural and anthropogenic changes in atmospheric CO2 over the last 1000 years from air in Antarctic ice and firn. *J. Geophys. Res*., 101, 4115-4128.

Falkner, R. (2001). Business conflict and U.S. international environmental policy: Ozone, climate and biodiversity. In P. G. Harris (Ed.), *The environment, international relations, and U.S. foreign policy* (pp. 157-177). Washington, DC: Georgetown University Press.

Forest protection: Cleaning up the CDM. (n.d.). *Political analysis.* Retrieved October 12, 2008, from http://www.jdesign.com/members/rachels/cdm/political_analysis.html

Gallup, A., & Saad, L. (1997). *Public concerned, not alarmed about global warming.* Retrieved October 24, 2008, from www.gallup.com/poll/4300/Public-Concerned-Alarmed-About-Global-Warming.asp

Ganguly, Sumit. & Pardesi, Manjeet S., (2009.) Explaining Sixty Years of India's Foreign Policy, *India Review*, 8:1, 4-19, DOI: 10.1080/14736480802665162

Geerts, B., (1999). Trends in atmospheric science journals. *Bull. Am. Meteorol*. Soc., 80, 639–652.

Gelbspan, R. (1998). *The heat is ON: The climate crisis, the cover-up, the prescription*. Cambridge, MA: Perseus Press.

Gelbspan, R. (2004). *Boiling point.* New York: Basic Books.

Gelbspan, R. (2005). *Snowed.* Retrieved October 24, 2008, from www.motherjones.com/cgi-bin/print

Ghosh, Prodipto., (2013). *Climate change debate: the rationale of India's position*. In Dubash, Navroz K. (ed.) Handbook of climate change and India – development, politics and governance, New Delhi: Oxford University Press, 157-169.

Goldemberg, J. (1994). The road to Rio. In I. M. Mintzer & J. A. Leonard (Eds.), *Negotiating climate change: The inside story of the Rio Convention* (pp. 175-187). Cambridge: Cambridge University Press.

Gore, Albert, Jr. (1992). *Earth in the balance.* Boston: Houghton Mifflin.

Greenberg, G. D., Miller, J. A., Mohr, L. B., & Vladeck, B. C. (1977). Developing public policy theory: Perspectives from empirical research. *The American Political Science Review, 71*(4), 1532-1543.

Greendex Ranks 18 Countries Based on Sustainability. ONYA. Retrieved March 19, 2020 from https://www.onyalife.com/greendex-ranks-18-countries-based-on-sustainability/#comments

Goswami, Urmi., (2010). Legal agreement is the bone of contention at Cancun. Economic Times, Retrieved from: https://economictimes.indiatimes.com/news/politics-and-nation/legal-agreement-is-bone-of-contention-at-cancun/articleshow/7074786.cms, Accessed on Feb 10, 2020.

Goswami, U. (2011). Very few have done justice to environment: Jairam Ramesh, Environment Minister. *Economic Times*. Retrieved on March 18, 2020, from https://economictimes.indiatimes.com/opinion/interviews/very-few-have-done-

justice-to-environment-jairam-ramesh-environment-minister/articleshow/8742094.cms

Government of India., (2015). *India's Intended Nationally Determined Contribution*, MoEFCC, Retrieved from https://pib.gov.in/newsite/PrintRelease.aspx?relid=128403 Accessed on March 19, 2020.

Gupta, Himangana & Kohli, Ravinder & Ahluwalia, Amrik. (2015). Mapping 'consistency' in India's climate change position: Dynamics and dilemmas of science diplomacy. *Ambio*, 44. 10.1007/s13280-014-0609-5.

Gupta, J. (1997). *Our simmering planet: What to do about global warming?* London: Zed Books.

Harris, P. G. (2001). International environmental affairs and US foreign policy. In P. G. Harris (Ed.), *The environment, international relations, and U.S. foreign policy* (pp. 3-42). Washington, DC: Georgetown University Press.

Helvarg, D. (1996). Energy companies try the "tobacco approach" to evidence of global warming: The greenhouse spin, *The Nation*. Retrieved October12, 2008, from http://www.globalpolicy.org/socecon/envronmt/helvarg.htm

Hempel, L. C. (2006). Climate policy on the installment plan. In N. J. Vig & M. E. Kraft (Eds.), *Environmental policy: New directions for the twenty-first century* (pp. 288-310). Washington, DC: CQ Press.

Hochstetler, Kathryn., Milkoreit, Manjana.(2013). Emerging Powers in the climate negotiations: shifting identity conceptions. *Political Research Quarterly*, Volume: 67 issue: 1, page(s): 224-235, doi.org/10.1177/1065912913510609

Houghton, J. T. (1997). *Global warming: The complete briefing.* Cambridge: Cambridge University Press.

Houghton, J. T., Jenkins, G. J., & Ephraums, J. J. (Eds.). (1990). *Climate change: The IPCC scientific assessment.* Cambridge: Cambridge University Press.

Howlett, M. (1997). Issue attention and punctuated models reconsidered: An empirical examination of the dynamics of agenda setting in Canada. *Canadian Journal of Political Science, 30*(1), 3-29.

IANS (2011), India gets its way as climate summit in Durban closes, *Hindustan Times*. Retrieved March 19, 2020, from https://www.hindustantimes.com/world/india-gets-its-way-as-climate-summit-in-durban-closes/story-K4NZKLfojcmn0szIz2FlHK.html

Information Council on the Environment. (2008, October 10). In *Wikipedia, The free encyclopedia*. Retrieved October 23, 2008, from http://en.wikipedia.org/index.php?title=Information_Council_on_the_Environment&oldid244308141

Indermühle, A., et al., (1999). Holocene carbon-cycle dynamics based on CO2 trapped in ice at Taylor Dome, Antarctica. *Nature*, 398, 121–126

Ingram, H., & Fraser, L. (2006). Faith dependency and adroit innovation: The case of California water. In R. Repetto (Ed.), *Punctuated equilibrium and the dynamics of U.S. environmental policy* (pp. 78-109). New Haven: Yale University Press.

IPCC, 1990: Climate Change: *The IPCC Scientific Assessment* [Houghton, J.T., G.J. Jenkins, and J.J. Ephraums (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 365 pp.

IPCC, 1992: Climate Change 1992: *The Supplementary Report to the IPCC Scientific Assessment* [Houghton, J.T., B.A. Callander, and S.K. Varney (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 200 pp.

IPCC, 1995: *Climate Change 1994: Radiative Forcing of Climate Change and an Evaluation of the IPCC IS92 Emission Scenarios* [Houghton, J.T., et al. (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 339 pp. IPCC, 1996: Climate Change 1995: *The Science of Climate Change* [Houghton, J.T., et al. (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 572 pp.

IPCC, 1999: *Special Report on Aviation and the Global Atmosphere* [Penner, J.E., et al. (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 373 pp.

IPCC, 2001a: *Climate Change 2001: The Scientific Basis*. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change [Houghton, J.T., et al. (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 881 pp.

IPCC, 2001b: *Climate Change 2001: Synthesis Report.* A contribution of Working Groups I, II, and III to the Third Assessment Report of the Intergovernmental Panel on Climate Change [Watson, R.T., et al. (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 398 pp.

Jogesh, Annu., (2019). *Looking Out, Looking In: The shifting discourse of climate change in India*.In Navroz Dubash ed., India in a warming world, integrating climate change and development., Retrieved February 18, 2020 from DOI:10.1093/oso/9780199498734.003.0002, 301-328.

Justus, J. R., & Fletcher, S. R. (2001). *IB89005: Global change.* CRS Issue Brief for Congress. Retrieved October 10, 2008, from http:ncseonline.org/NLE/ CRSreports?climate/clim-2.cfm

Kamieniecki, S. (2006). *Corporate America and environmental policy: How often does business get its way?* Stanford: Stanford University Press.

Kapur, Devesh. and Khosla, Radhika. and Mehta, Pratap Bhanu. (2009). Climate Change: India's Options. *Economic and Political Weekly*, Vol. 44, No. 31, 2009. Available at SSRN: https://ssrn.com/abstract=1462560

Kingdon, J. W. (1995). *Agendas, alternatives and public policies.* New York: HarperCollins College Publishers.

Kiser, L. L., & Ostrom, E. (1982). The three worlds of action. In E. Ostrom (Ed.), *Strategies of political enquiry* (pp. 179-222). Beverly Hills: Sage Publications.

Kjellen, B. (1994). A personal assessment. In I. M. Mintzer & J. A. Leonard (Eds.), *Negotiating climate change: The inside story of the Rio Convention* (pp. 149-175). Cambridge: Cambridge University Press.

Kunzig, R.K. (2013). Climate Milestone: Earth's CO2 Level Passes 400 ppm. *National Geographic.* Retrieved on March 18, 2020, from https://www.nationalgeographic.com/news/energy/2013/05/130510-earth-co2-milestone-400-ppm/.

Kyoto Earth Summit Information Center. (n.d.). *Media matters misleads on CEI's Horner, Kyoto & global warming.* Retrieved October 24, 2008, from http://www. nationalcenter.org/2006/06/media-matters-misleads-on-ceis-horner.html

Kyoto Protocol to the United Nations Framework Convention on Climate Change. (1997, December 10). Retrieved October 17, 2008, from http://unfccc.int/essential_ background/kyoto_protocol/items/1678.php

Lane, L. (2006). The political economy of US greenhouse gas. In R. Repetto (Ed.), *Punctuated equilibrium and the dynamics of U.S. environmental policy* (pp. 162-198). New Haven: Yale University Press.

Langenfelds, R.L., et al., (1996). *The Cape Grim Air Archive: The first seventeen years*. In: Baseline Atmospheric Program Australia, 1994-95 [Francey, R.J., A.L. Dick, and N. Derek (eds.)]. Bureau of Meteorology and CSIRO Division of Atmospheric Research, Melbourne, Australia, pp. 53–70.

Lavasa, Ashok., (2019). *Reaching agreement in Paris: a negotiator's perspective.* In Navroz Dubash ed., India in a warming world, integrating climate change and development., Retrieved February 18, 2020 from DOI:10.1093/oso/9780199498734.003.0002, 169-186.

Layzer, J. (2007). Deep freeze: How business has shaped the global warming debate. In M. E. Kraft & S. Kamieniecki (Eds.), *Business and environmental policy: Corporate interests in the American political system* (pp. 93-126). Cambridge: MIT Press.

Lee, H. (1995). Introduction. In H. Lee (Ed.), *Shaping national responses to climate change: A post Rio guide* (pp. 1-39). Washington, DC: Island Press.

Leiserowitz, A. (2006). Climate change risk perception and policy preferences: The role of affect, imagery and values. *Climatic Change, 77,* 45-72.

Le Treut, H., R. Somerville, U. Cubasch, Y. Ding, C. Mauritzen, A. Mokssit, T. Peterson and M. Prather, (2007)., *Historical Overview of Climate Change*. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 95-121.

Levine, C. H., Peters, B. G., & Thompson, F. J. (1991). *Public administration: Challenges, choices and consequences.* Glenview, IL: Scott Foresman, Little Brown.

Lindblom, C. E. (2004). The science of "muddling through." In J. M. Shafritc, A. C. Hyde, & S. J. Parkes (Eds.), *Classics of Public Administration* (pp. 263-275). Belmont, CA: Wadsworth.

Lok Sabha. 2009. 'Transcript of the Minister's Response in the Lok Sabha', Parliament of India, New Delhi, 3 December. Available at www.moef.nic.in/downloads/public-information/LokSabha_trnscript.pdf; Accessed on Feb 28, 2020.

Major Economic Forum on Energy and Climate Change (2010). *Sixth Meeting of the*

Leaders' Representatives of the Major Economies Forum on Energy and Climate [Press Release]. *Bureau of Public Affairs.* Retrieved 19 March 2020, from http://moef.gov.in/wp-content/uploads/2018/04/MEF-Chairs-Summary.pdf

Madhavan, Rajeevan., and Nayak, Shailesh. (eds). (2017). *Observed Climate Variability and Change Over the Indian Region.* Singapore: Springer. Available at springer.com/in/book/9789811025303; accessed on January 25, 2020.

McCright, A. M., & Dunlap, R. E. (2003). Defeating Kyoto: The conservative movement's impact on U.S. climate change policy. *Social Problems, 50*(30), 348-374.

Mercier, J. (2006). American hesitations to reduce greenhouse gas emissions: An institutional interpretation. *International Review of Administrative Science, 72*(1), 101-121.

Mintzer, I. M., & Leonard, J. A. (Eds.). (1994). *Negotiating climate change: The inside story of the Rio Convention.* Cambridge: Cambridge University Press.

Ministry of External Affairs. (19 December, 2019). *Transcript of Press Statements at India US 2+2 Ministerial Dialogue , Washington DC on 18 December 2019*. Retrieved March 19, 2020, from https://www.mea.gov.in/bilateral-documents.htm?dtl/32224/Transcript+of+Press+Statements+at+India++US+2432+Ministerial+Dialogue++Washington+DC+on+18+December+2019

Mittal, Radhika. (2012). Climate Change Coverage in Indian Print Media. *The International Journal of Climate Change: Impacts and Responses*. 3. 219-232. 10.18848/1835-7156/CGP/v03i02/37105.

Mohan, Aniruddh., (2017). *From Rio to Paris: India in global climate politics*, Retrieved February 18, 2020., DOI: orfonline.org/research/rio-to-paris-india-global-climate-politics

Mohan, Vishwa., (2015). India appeals rich nations to vacate carbon space for emerging economies, *Times of India*, Retrieved from: https://timesofindia.indiatimes.com/home/environment/global-warming/India-appeals-rich-nations-to-vacate-carbon-space-for-emerging-economies/articleshow/46460528.cms Accessed on March 18, 2020.

MOEF (2010) *India: taking on climate change post-Copenhagen domestic actions*. http://moef.nic.in/downloads/publicinformation/India%20Taking%20on%20Climate%20Change.pdf. Accessed March 18, 2020.

Mülleri, Benito., (2008). Bali 2007: On the road again! Impressions from the Thirteenth UN Climate Change Conference, Oxford Energy and Environment Comment, Retrieved March 18, 2020 from www.oxfordclimatepolicy.org/publications/documents/comment_0208-2.pdf

Myers, Norman. (1979). *The Sinking Ark: a New Look at the Problem of Disappearing Species*. New York: Pergamon Press.

NAPCC (2008) *National action plan on climate change*. Govt. of India, New Delhi. http://pmindia.nic.in/ climate_change.htm. Accessed March 18, 2020.

Neftel, A., E. Moor, H. Oeschger, and B. Stauffer, (1985). Evidence from polar ice cores for the increase in atmospheric CO2 in the past 2 centuries. *Nature*, 315, 45–47.

Newell, P. (2000). *Climate for change: Non state actors and the global politics of the greenhouse.* Cambridge: Cambridge University Press.

Nitze, W. A. (1994). A failure of presidential leadership. In I. M. Mintzer & J. A. Leonard (Eds.), *Negotiating climate change: The inside story of the Rio Convention* (pp. 187-201). Cambridge: Cambridge University Press.

Online Forum. (1997, December 12). *Environmental diplomacy: Analysis of the Kyoto Global Climate Conference.* Retrieved October 23, 2008, from http://www.Pbs.org/ newshour/forum/december97/Kyoto_12-12.html

Ostrom, E. (1982). Beyond positivism. In E. Ostrom (Ed.), *Strategies of political enquiry* (pp. 11-28). Beverly Hills: Sage Publications.

Pandeya, Lily. (2008). *"The United States Government's Response to International Climate Change Treaties: 1988-2001."* San Diego State University. 2008, Montezuma Press.

Panjabi, R. K. L. (1997). *The Earth Summit at Rio: Politics, economics and the environment.* Boston: Northeastern University Press.

Paris Agreement to the United Nations Framework Convention on Climate Change. (2015, December 12). Retrieved January 12, 2020, from unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf

Peters, G. B. (2004). *American public policy: Promise and performance.* Washington, DC: CQ Press.

Petersberg Climate Dialogue VI. (19 May, 2015). *Co-chairs' conclusions*. Retrieved 19 March 2020, from https://www.bmu.de/fileadmin/Daten_ BMU/Download_PDF/Klimaschutz/petersberg6_conclusions_bf.pdf

Petersberg Climate Dialogue V. (15 July, 2014). *Co-chairs' conclusions*. Retrieved 19 March 2020, from https://www.bmu.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/petersberg5_conclusions_bf.pdf

Petersberg Climate Dialogue III. (2012). *Matching Ambition with Action.* Retrieved on March 19, 2020, from https://www.bmu.de/en/topics/climate-energy/climate/international-climate-policy/petersberg-climate-dialogue/petersberg-climate-dialogue-iii/

Petersberg Climate Dialogue II. (2011). *Rising to the Climate Challenge.* Retrieved on March 19, 2020, from https://www.bmu.de/en/topics/climate-energy/climate/international-climate-policy/petersberg-climate-dialogue/petersberg-climate-dialogue-ii/

Pillai, G. M. and Ghotge, S. (2010). Low-Carbon Committee Charts High-Carbon Growth. *Green Energy,* vol. 6 (No. 6), 12-13.

Porter, G., & Brown, J. W. (1996). *Global environmental politics.* Cambridge: Cambridge University Press.

Powell, Lydia. (2015). *India's Approach to Climate Negotiations from the South to the North?*, Retrieved from: https://www.ifri.org/sites/default/files/atoms/files/av79_indias_approach_to_climate_negotiations_l._powell_0.pdf. Accessed on Feb 7, 2020.

Prabhu, Suresh. (2013). Climate change debates in the Indian Parliament. In Dubash, Navroz K. (ed.) Handbook of climate change and India – development, politics and governance, New Delhi: Oxford University Press, 230-245.

Raghunandan, D., (2011). Durban Platform: Kyoto Negotiations Redux. *Economic & Political Weekly*, Vol. 46, Issue No. 53, 13-15, Retrieved from: https://www.jstor.org/stable/23065627

Rahman, A., & Roncerel, A. (1994). A view from the ground up. In I. M. Mintzer & J. A. Leonard (Eds.), *Negotiating climate change: The inside story of the Rio Convention* (pp. 240-275). Cambridge: Cambridge University Press.

Ramachandran, R. 2009. 'Climate Change and the Indian Stand', *The Hindu*, 28 July. Available at: www. thehindu.com/todays-paper/tp-opinion/Climate-change-and-the-Indian-stand/article16564157.ece; Accessed on March 18, 2020.

Ramesh, Jairam., (2018). Climate negotiations and India: a slice of history. *The Third Pole*. Available at https://www.thethirdpole.net/en/2018/06/08/climate-negotiations-and-india-a-slice-of-history/ Accessed on Feb 7, 2020.

Rastogi, Namrata Patodia., (2011). Winds of Change: India's emerging climate strategy, doi.org/10.1080/03932729.2011.576179, Retrieved on March 18, 2020.

Repetto, R. (2006). Introduction. In R. Repetto (Ed.), *Punctuated equilibrium and the dynamics of U.S. environmental policy* (pp. 1-41). New Haven: Yale University Press.

Rosenbaum, W. A. (2008). *Environmental politics and policy.* Washington, DC: CQ Press.

Saad, L., & Dunlap, R. E. (2000). *Americans are environmentally friendly but the issue is not seen as urgent problem.* Retrieved October 24, 2008, from http://www.gallup.com/ poll/2992/Americans-Environmentally-Friendly-Issue-Seen-Urgent-Problem.aspx

Sabatier, P. A. (1991). Toward better theories of the policy process. *Political Science and Politics, 24*(2), 147-156.

Saran, Shyam., (2019). One long day in Copenhagen. In Navroz Dubash ed., India in a warming world, integrating climate change and development., Retrieved February 18, 2020 from DOI:10.1093/oso/9780199498734.003.0002, 157-168

Saryal, R. (2018). Climate Change Policy of India: Modifying the Environment. *South Asia Research*, *38*(1), 1–19. https://doi.org/10.1177/0262728017745385

Schlager, E., & Blomquist, W. (1996). A comparison of three emerging theories of the policy process. *Political Research Quarterly, 49*(3), 651-672.

Schoon, N. (1992, May). Earth pact watered down to win accord. *The Independent* (London) [Online]. Retrieved October 20, 2007, from *Lexis-Nexis Universe: General News Topics.*

Sengupta, Sandeep. (2012). 'Lessons from the Durban Conference', *The Hindu*, 14 February. Available at https://www.thehindu.com/opinion/lead/lessons-from-the-durban-conference/article2890130.ece; Accessed on March 18, 2020.

Sengupta, Sandeep., (2019). *India's engagement in global climate negotiations from Rio to Paris*. In Navroz Dubash ed., India in a warming world, integrating climate change and development., 114-141, Retrieved February 18, 2020 from DOI:10.1093/oso/9780199498734.003.0002, 64-78

Sethi, Nitin. 2009. 'India Ready for Global Scrutiny on Emissions', *The Times of India*, 28 September. Available at https://timesofindia.indiatimes.com/india/India-ready-for-

global-scrutiny-on-emissions/articleshow/5063514.cms; Accessed on March 18, 2020.

Simon, H. A. (1976). *Administrative behavior: A study of decision making process in administrative organization.* New York: Free Press.

Singh, Manmohan. 2007. 'PM's Intervention on Climate Change at the Heiligendamm Meeting of G8 Plus 5', Berlin, 8 June. Available at https://mea.gov.in/in-focus-article.htm?18822/PMs+intervention+on+Climate+Change+at+the+Heiligendamm+meeting, accessed on March 18, 2020.

Skjaerseth, J. B., & Skodvin, T. (2003). *Climate change and the oil industry: Common problem, varying strategies.* Manchester: Manchester University Press.

Skolnikoff, E. B. (1990). The policy gridlock on global warming. *Foreign Policy, 79,* 77-93.

Soroos, Marvin S. 1976. "Adding an Intergenerational Dimension to Conceptions of Peace." *Journal of Peace Research*, Vol. 12, No. 3, 173-183.

Soroos, Marvin S. (2004). *International Journal of Peace Studies.* Vol. 9, No. 2, Putting the Peace Tools to Work: Essays in Honor of Chadwick F. Alger (Autumn/Winter 2004), pp. 87-107

Srinivasan, J. (2019). *Impacts of Climate Change on India*, In Navroz Dubash ed., India in a warming world, integrating climate change and development., Retrieved February 18, 2020 from DOI:10.1093/oso/9780199498734.003.0002

Stanhill, G., (2001). The growth of climate change science: A scientometric study. *Clim. Change*, 48, 515–524.

Stiles, K. W. (2006). *Case studies in international politics.* New York: Pearson Longman.

Stokke, O. S., Hovi, J., & Ulfstein, G. (Eds.). (2005). *Implementing the climate regime: International compliance.* London: Earthscan Publishers.

Susskind, L. E., Jain, R. K., & Matryniuk, A. O. (2001). *Better environmental policy studies: How to design and conduct more effective analysis.* Washington, DC: Island Press.

Sussman, G. (2004). The USA and global environmental policy: Domestic constraints on effective leadership. *International Political Science Review, 25*(4), 349-369.

Swarnakar, Pradip., (2019). *Climate Change, civil society and social movement in India*. In Navroz Dubash ed., India in a warming world, integrating climate change and development., Retrieved February 18, 2020 from DOI:10.1093/oso/9780199498734.003.0002, 253-272.

Thaker, Jagadish., & Leiserowitz, Anthony. (2014). Shifting discourses of climate change in India, *Climatic Change,* DOI 10.1007/s10584-014-1059-6

Third World Network (2010). BASIC countries set out expectations for Cancun conference. *Tianjin News Update.* Retrieved on March 19, 2020 from https://www.twn.my/title2/climate/news/tianjin01/tianjin_news_up13.pdf

Townsend, Mark. and Harris, Paul. (2004). "Now the Pentagon Tells Bush: Climate Change Will Destroy US." Observer/UK, February 22, p. 3.

Trinidad, A. A. Cançado. (1992). "The Contribution of International Human Rights Law to Environmental Protection." In Edith Brown Weiss, ed., *Environmental Change and International Law*. Tokyo: United Nations University Press.

Ulph, A. (Ed.). (2001). *Environmental policy, international agreements and international trade.* New York: Oxford University Press.

Ungar, S. (1992). The rise and (relative) decline of global warming as a social problem. *The Sociological Quarterly, 33*(4), 483-501.

United Nations. (1987). *Report of the World Commission on Environment and Development.* A/Res/42/187. Retrieved October 24, 2008, from http://www.un.org/documents/ ga/res/42/ares42-187.htm

United Nations. (1992). *United Nations Framework Convention on Climate Change.* 1171 U.N.T.S. 107. Retrieved October 17, 2008, from http://unfccc.int/resource/docs/ convkp/converg.pdf

United Nations Intergovernmental Panel on Climate Change. (1991). *Climate change: The IPCC response strategies.* Covelo, CA: Island Press.

United Nations Intergovernmental Panel on Climate Change. (1995). *IPCC second assessment report.* Retrieved October 17, 2008, from http://www.ipcc.ch/pdf/climate-changes-1995/2nd-assessment-synthesis.pdf

United Nations Intergovernmental Panel on Climate Change. (2001). *IPCC third assessment report.* Retrieved October 17, 2008, from

http://www.ipcc.ch/pdf/climate-changes-2001/synthesis-spm/synthesis-spm-en.pdf

UNFCCC. Secretariat (2013).,Statement by China on behalf of Brazil, India, South Africa and China at the Opening Plenary of the Durban Platform, UNFCCC. Retrieved from https://unfccc.int/files/documentation/submissions_ from_parties/adp/application/pdf/adp2.3_ basic_20131112.pdf

UNFCC Secretariat. (2015). *Geneva Climate Change Conference*. Retrieved on March 19, 2020, from https://unfccc.int/process-and-meetings/conferences/past-conferences/geneva-climate-change-conference-february-2015/geneva-climate-change-conference-february-2015

Vaughan, A., & Adam, D. (2020). *Copenhagen climate deal: Spectacular failure - or a few important steps?*. the Guardian. from https://www.theguardian.com/ environment/2009/dec/22/copenhagen-climate-deal-expert-view. Retrieved March 18, 2020.

Vernon, R. (1995). *The triad as policymakers.* In H. Lee (Ed.), *Shaping international responses to climate change* (pp. 147-176). Covelo, CA: Island Press.

Venkateswaran, Shankar. and Rajan, Mukund., (2019). *Business action on climate change: a perspective from the private sector*. In Navroz Dubash ed., India in a warming world, integrating climate change and development., Retrieved February 18, 2020 from DOI:10.1093/oso/9780199498734.003.0002, 273-283.

Vihma, Antto. (2011). India and the Global Climate Governance: Between Principles and Pragmatism. *The Journal of Environment & Development*. 20. 69-94. 10.1177/1070496510394325.

Vig, N. J. (2006). Presidential leadership and the environment. In N. J. Vig & M. E. Kraft (Eds.), *Environmental policy: New directions for the twenty-first century* (pp. 100-123). Washington, DC: CQ Press.

Walker, J. (1998). Memo: Global climate science communications action plan. Retrieved October 24, 2008, from http://euronet.nl/users/e_wesker/ew@shell/API-prop.html

Williams, J. L. (2001). *The rise and decline of public interest in global warming.* Huntington, NY: Nova Science Publishers.

Wilson, C. A. (2000). Policy regimes and policy change. *Journal of Public Policy, 20*(3), 247-274.

Yamin, F., & Depledge, J. (2004). *The International Climate Change regime: A guide to rules, institutions and procedures.* Cambridge: Cambridge University Press.

1992 Rio Declaration on Environment and Development, UN Doc. A/CONF.151/26 (vol. I), 31 ILM 874 (1992)

2009-2017.state.gov. 2020. *Major Economies Forum on Energy and Climate*. [online] Available at: https://2009-2017.state.gov/e/oes/climate/mem/index.htm Accessed March 18, 2020.

APPENDIX 1

Date	Event	Venue	Highlights	India specific Highlights
1972	UN Conference on Environment and Development	Stockholm, Sweden	The very first international meeting devoted to environmental problems. The Conference brought global environmental issues into the ambit of international diplomacy.	India was represented by then Prime Minister Indira Gandhi, the only head of state apart from the host nation
1979	First World Climate Conference	Geneva, Switzerland	The first major international conference on the environment. It is highly probable that increasing concentrations of greenhouse gases will produce significant climatic change	
1987	The Montreal Protocol	Montreal, Canada	Required nations to eliminate chemicals/substances that harm/deplete stratospheric ozone.	
1988	IPCC formed		Intergovernmental Panel on Climate Change (IPCC) formed. Created by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) to provide governments at all levels with scientific information that they can use to develop climate policies.	
1990	First IPCC Assessment Report		Notes pattern of past warming while signaling that future warming is likely.	
1992	UNFCC adopted	Rio de Janeiro	United Nations Framework Convention on Climate Change (UNFCC) adopted at the UN conference. Created as a result	India signs UNFCCC and ratifies

			of Earth Summit 1992 and adopted as a general climate treaty without specific targets.	UNFCCC in 1993.
1994	UNFCCC enters into force		Treaty signed to prevent and reverse land degradation.	
1995	COP 1	Berlin	Calls for emission targets for developed countries.	
1995	Second IPCC Assessment Report		Assessment of the then available scientific and socio-economic information on climate change	
1996	COP 2	Geneva, Switzerland	Observing impacts, assessing risks and vulnerabilities.	
1997	COP 3	Kyoto, Japan	Kyoto Protocol on Climate Change. The world's first greenhouse gas emissions reduction treaty adopted by the third Conference of the Parties. US, the largest GHG emitter at that time, did not sign	
1998	COP 4	Buenos Aires, Argentina	The parties adopted a 2-year "Plan of Action" to advance efforts and to devise mechanisms for implementing the Kyoto Protocol, to be completed by 2000. Argentina and Kazakhstan expressed their commitment to take on the greenhouse gas emissions reduction obligation, the first two non-Annex countries to do so.	
1999	COP 5	Bonn, Germany	It was primarily a technical meeting, and did not reach major conclusions.	
2000	Keeling Curve		CO2Concentration in 2000 at 367 ppm	
2000	COP 6	The Hague, Netherlands	The discussions evolved rapidly into a high-level negotiation over the major political issues. These included major controversy over the	

			United States' proposal to allow credit for carbon "sinks" in forests and agricultural lands that would satisfy a major proportion of the U.S. emissions reductions in this way; disagreements over consequences for non-compliance by countries that did not meet their emission reduction targets; and difficulties in resolving how developing countries could obtain financial assistance to deal with adverse effects of climate change [8] and meet their obligations to plan for measuring and possibly reducing greenhouse gas emissions.	
2001	Third IPCC Assessment Report		Report notes that warming is resulting from GHG emissions has become very likely. US rejects Kyoto Protocol.	
2001	COP 7	Marrakech, Morocco	Moving to planning and pilot implementation, LDC support through NAPAs, LEG, LDCF, SCCF and AF.	
2002	COP 8	New Delhi, India	Called for transfer of technology on the part of developed countries and minimizing the impacts of climate change on developing countries.	India ratifies KP. India hosts COP 8 in Delhi.
2003	COP 9	Milan, Italy	Parties agreed to use the Adaptation Fund established at COP 7 in supporting developing countries to better adapt to climate change and capacity building through technology transfer.	India establishes National CDM Authority.

2004	COP 10	Buenos Aires, Argentina	Laid special emphasis on climate change mitigation and adaptation. Russia ratifies Kyoto Protocol, meeting threshold for entry into force.	
2005	COP 11	Montreal Canada	Kyoto Protocol goes into effect. All major industrialized countries sign except US which declines to ratify it. Sharing knowledge and lessons learned, Nairobi Work Programme. REDD introduced . EU Emissions Trading Scheme comes online.	
2006	COP 12	Nairobi, Kenya,	Adopted a five-year plan to support climate change adaptation by developing countries, and agreed on procedures and modalities for Adaptation Fund. China becomes the world's largest GHG emitter	
2007	Fourth IPCC Assessment Report		Report notes that effects of global warming are occurring.	PMCCC established. Prime minister's pledge at Heiligendamm at G8+ 5 summit
2007	COP 13	Bali, Indonesia	Bali Action Plan launches parallel negotiations under Framework Convention Scaling up implementation.	
2008	UNCCD (2008-2018)		United Nations Convention to Combat Desertification UNCCD (2008-2018 strategy KP 1st commitment period begins	National Action Plan on Climate Change (NAPCC).
2008	COP 14	Poznan, Poland	Delegates agreed on principles for the financing of a fund to help the poorest nations cope	

			with the effects of climate change and they approved a mechanism to incorporate forest protection into the efforts of the international community to combat climate change.	
2009	COP 15	Copenhagen, Denmark	World leaders negotiate the Accord. China, India and other major developing countries agree to limit their GHG emissions. Nations agree on 11 indicators to measure progress towards goal of reducing land degradation.	India signs MEF declaration which recognizes '2 degree C' limit. India announces voluntary 'emissions intensity' cut of 20–5% by 2020.
2010	COP 16	Cancun, Mexico	Building coordinated and coherent action Cancun Adaptation Framework (CAF): Adaptation committees, National Adaptation Plans, Work Programmes on Loss and Damage, Green Climate Fund	Planning Commission establishes Expert Group on 'low carbon economy'.
2011	COP 17	Durban, South Africa,	Durban Platform adopted , agree to negotiate a new climate treaty by 2015. Canada withdraws from Kyoto Protocol one day after negotiators from nearly 200 countries meeting in Durban, South Africa at the 2011 United Nations Climate Change Conference (November 28 – December 11),	
2012	COP 18	Doha Conference, Qatar	The Conference produced a package of documents collectively titled The Doha Climate Gateway. The conference made little progress towards the funding of the	

			Green Climate Fund. Russia, Belarus and Ukraine objected at the end of the session,[clarification needed] as they had a right to under the session's rules. In closing the conference, the President said that he would note these objections in his final report.	
2012	UN Advisory Group on Climate Change and Human Mobility		KP 1st commitment period ends	
2012	Nansen Initiative		Launched in 2012 by Switzerland and Norway, the Nansen Initiative is a state-led consultative process to build consensus on a Protection Agenda addressing the needs of people displaced across borders in the context of disasters and climate change.	
2013	COP 19	Warsaw, Poland	Scaling up NWP, Warsaw mechanism for Loss and Damage. Enhancing knowledge products and improving engagement.	
2013	Keeling Curve		CO2 concentration in 2013 at 400 ppm	
2013	Fifth IPCC Assessment Report		The Fifth Assessment Report (AR5) consists of three Working Group (WG) Reports and a Synthesis Report. The first Working Group Report was published in 2013 and the rest were completed in 2014. WG I: The Physical Science Basis – 30 September 2013, Summary for Policymakers published 27 September 2013.	
2015	SFDRR	Sendai Japan	Sendai Framework for Disaster Risk Reduction (SFDRR)	India expands solar power

			signed An international document which was adopted by UN member states in March 2015 at the World Conference on Disaster Risk Reduction held in Sendai, Japan and endorsed by the UN General Assembly in June 2015.	goal fivefold. India communicates INDC pledging 'emissions intensity' cut of 33–5% by 2030. India launches 'International Solar Alliance' with France
2015	Addis Ababa Action Agenda (AAAA)	Addis, Ababa, Ethiopia	Was the outcome of the 2015 Third International Conference on Financing for Development, held in Addis Ababa, Ethiopia. It was adopted by heads of state and government on 15 July 2015. Provides a foundation for implementing the global sustainable development agenda	
2015	Agenda for the Protection of Cross-Border Displaced Persons		Agenda for the Protection of Cross-Border Displaced Persons in the context of Disasters and Climate Change 109 states endorsed the Agenda , providing a toolbox of concrete policy options and proposing a series of recommendations for future work.	
2015	COP 21		Paris Agreement replaces Kyoto Protocol, adopted by nearly 200 countries including US. COP 21, Paving roadway to a universal agreement. To continually assess the nations' progress in dealing with climate change and, every so often, negotiate agreements	

			and set goals for reducing greenhouse gas emissions. Mandated the Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (the Executive Committee) to establish a Task Force on Displacement (TFD) to develop recommendations for integrated approaches to avert, minimize and address displacement related to changing climate and disasters	

APPENDIX 2

Year	COP	Venue	Highlights
1995	COP 1	Berlin, Germany	The first UNFCCC Conference of the Parties took place in Berlin, Germany
1996	COP 2	Geneva, Switzerland	It accepted the scientific findings on climate change proffered by IPCC in its second assessment (1995); rejected uniform "harmonized policies" in favour of flexibility; called for "legally binding mid-term targets".
1997	COP 3	Kyoto, Japan	It adopted the Kyoto Protocol which outlined the greenhouse gas emissions reduction obligation for Annex I countries, along with Kyoto mechanisms such as emissions trading, clean development mechanism and joint implementation. Industrialized countries and some central European economies in transition (Annex B countries) agreed to legally binding reductions in greenhouse gas emissions.
1998	COP 4	Buenos Aires, Argentina	The parties adopted a 2-year "Plan of Action" to advance efforts and to devise mechanisms for implementing the Kyoto Protocol
1999	COP 5	Bonn, Germany	It was primarily a technical meeting and did not reach major conclusions.
2000	COP 6	The Hague, Netherlands	High-level negotiation over the major political issues and United Kingdom, the EU countries as a whole, led by Denmark and Germany, rejected the compromise positions, and the talks in The Hague collapsed.
2001	COP 6	Bonn, Germany	The agreements included flexible mechanisms, carbon sinks, compliance, financing (establishment of three new funds to provide assistance for needs associated with climate change)
2001	COP 7	Marrakech, Morocco	The main decisions included: operational rules for international emissions trading among parties to the Protocol and for the CDM and joint implementation; a compliance regime that outlined consequences for failure to meet emissions targets; accounting procedures for the flexibility mechanisms etc.
2002	COP 8	New Delhi, India	It adopted the Delhi Ministerial Declaration that called for efforts by developed countries to transfer technology and

			minimize the impact of climate change on developing countries. It was marked by Russia's hesitation, stating that it needed more time to think it over.
2003	COP 9	Milan, Italy	The parties agreed to use the Adaptation Fund established at COP7 in 2001 primarily in supporting developing countries better adapt to climate change and for capacity-building through technology transfer.
2004	COP 10	Buenos Aires, Argentina	It discussed the progress made since the first Conference of the Parties 10 years ago and its future challenges, with special emphasis on climate change mitigation and adaptation and began discussing the post-Kyoto mechanism.
2005	COP 11	Montreal, Canada	It was one of the largest intergovernmental conferences on climate change ever which marked the entry into force of the Kyoto Protocol.
2006	COP 12	Nairobi, Kenya	It adopted a five-year plan of work to support climate change adaptation by developing countries and agreed on the procedures and modalities for the Adaptation Fund and agreed to improve the projects for clean development mechanism.
2007	COP 13	Bali, Indonesia	Agreement on a timeline and structured negotiation on the post-2012 framework was achieved with the adoption of the Bali Action Plan.
2008	COP 14	Poznan, Poland	Successor to the Kyoto Protocol was the primary focus of the conference. Agreement achieved on principles for the financing of a fund to help the poorest nations cope with the effects of climate change and on a mechanism to incorporate forest protection into the efforts to combat climate change.
2009	COP 15	Copenhagen, Denmark	The overall goal was to establish an ambitious global climate agreement for the period from 2012 when the first commitment period under the Kyoto Protocol expires. The accord referred to a collective commitment by developed countries for new and additional resources, including forestry and investments through international institutions, that will approach US$30 billion for the period 2010–2012.
2010	COP 16	Cancun , Mexico	Agreement adopted by the states' parties that called for the US$100 billion per annum "Green Climate Fund", and a "Climate Technology Centre" and network. It recognized

			goal of a maximum 2 °C global warming and that all parties should take urgent action to meet this goal.
2011	COP 17	Durban, South Africa	It agreed to a start negotiations on a legally binding deal to be adopted in 2015 comprising all countries governing the period post 2020.
2012	COP 18	Doha, Qatar	The Conference produced Doha Climate Gateway: The Doha Amendment to the Kyoto Protocol (to be accepted before entering into force) featuring a second commitment period (2012 until 2020) limited in scope to 15% of the global carbon dioxide emissions due to lack of commitments of Japan, Russia, Belarus, Ukraine, New Zealand and since developing countries like China India and Brazil are not subject to emissions reductions under the Kyoto Protocol.
2013	COP 19	Warsaw, Poland	It was the 19th yearly session of the Conference of the Parties to the 1992 UNFCCC and the 9th session of the Meeting of the Parties (CMP) to the 1997 Kyoto Protocol.
2014	COP 20	Lima, Peru	It was the 20th yearly session of the Conference of the Parties (COP) to the 1992 UNFCCC and the 10th session of the Meeting of the Parties (CMP) to the 1997 Kyoto Protocol.
2015	COP 21	Paris, France	It adopted the Paris Agreement governing climate change reduction measures from 2020 ending the work of the Durban platform, established during COP17.