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UN CONVENTION ON CLIMATE CHANGE AND OUR NATIONAL PLAN FOR CLIMATIC CHANGES

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Abstract—**Paper highlights the contemporary issues of climatic change and its serious global environmental concern. It is primarily caused by the building up of Green House Gases (GHG) in the atmosphere. The global increases in carbon dioxide concentration (CO_2) are primarily due to fossil fuel use and due to agriculture land use change yielding the methane and nitrous oxide. Global Warming is a specific example of the broader term "Climate Change". It also discuss the scientific studies about UN framework convention on climate change (UNFCCC), conferences of parties (CoP) on climate change, our national action plan on climatic changes, eight national missions and in last the impacts of climate change on India and implementation of our national missions of NPA.**

Keywords—**Climate change, Conferences of parties, National action plan**

I. INTRODUCTION

Climate Change is a serious global environmental concern. It is primarily caused by the building up of Green House Gases (GHG) in the atmosphere. The global increases in carbon dioxide concentration (CO_2) are primarily due to fossil fuel use and due to agriculture land use change yielding the methane and nitrous oxide. Global Warming is a specific example of the broader term "Climate Change". Itrefers to the observed increase in the average temperature of the air near earth's surface and oceans in recent decades. It is adversely affecting particularly the developing countries because they have neither the capacity nor the resources to deal with this challenge threatening the human existence (1). Scientific studies have proved the global atmospheric concentrations of most important Green House Gases-carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (NO_2), have increased markedly due to human activities since 1750.

Our Country is the world's fourth largest economy. It is also fifth largest greenhouse gas (GHG) emitter accounting for about 5% of global emissions. India's emissions increased 65% between 1990 and 2005 and are projected to grow another 70% by 2020. By other measures, India's emissions are low compared to those of other major economies. India accounts for only 2% of cumulative energy-related emissions since 1850. On a per capita basis, India's emissions are 70% below the world average and 93% below those of the United States.

India remains home to the world's largest number of poor people, with nearly 35% living on less than a dollar a day. Its economy is growing rapidly, however, with GDP rising about 8 percent per year over the past five years. As the economy has grown, emissions intensity (GHGs per unit of GDP) has declined significantly. India's GHG intensity is currently 20% lower than the world average (and 15% and 40% lower than the United States' and China's, respectively). Factors contributing to the decline in energy intensity include improved energy efficiency, increased use of renewable and nuclear power, expanded public transport, and energy pricing reform.

Our country is a party to both the UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol (2005). Though our country has no binding emission limits under the Protocol as being developing country (non-Annex-I). However, India is an active participant in the Clean Development Mechanism (CDM) as per the provisions of the Protocol. We have more than 345 registered CDM projects, more than any other country and about a third of all projects

globally. In terms of the overall volume of CDM reductions, China ranks first with 51% followed by India at 14%. The largest project categories are biomass and wind power. Most projects in India are undertaken on a unilateral basis—developed independently by local stakeholders without the direct involvement of Annex- I countries. Besides there are other major decision have been held in different Conferences of Parties(COP)- Kyoto Protocol (2005), Bali Road Map (2007), Copenhagen Accord (2009), Cancun Agreements (2010), Durban Agreement(2011), Doha Climate Gateway (2012),Warsaw Outcomes (2013) and Lima, Peru (2014). There are twenty COP conference on Climate Change (UNFCCC) have been held in different part of the world and by end of this year COP-21 is to be held in Paris (2015). Let see more about Convention on Climate Changes and subsequent outcomes of the latter conferences.

II. UNFRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

The UNFCCC entered into force on 21 March 1994. Today 195 countries have ratified the Convention and are called as Parties to the Convention. The UNFCCC is a "Rio Convention", one of three adopted at the "Rio Earth Summit" in 1992. Its sister Rio Conventions are the UN Convention on Biological Diversity and the Convention to Combat Desertification. The three are intrinsically linked. It is in this context that the Joint Liaison Group was set up to boost cooperation among the three Conventions, with the ultimate aim of developing synergies in their activities on issues of mutual concern. It now also incorporates the Ramsar Convention on Wetlands. The ultimate aim of UNFCCC is to prevent "dangerous" human interference with the climate system.

The central aim of this Convention is to stabilize Green House Gas concentrations "at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system." It states that "such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to Climate Change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner." The Convention puts the onus on developed countries to lead the way. The idea is that, as they are the source of most past and current Green House Gas emissions, industrialized countries are expected to do the most to cut emissions on home ground. They are called Annex I countries and belong to the Organization for Economic Cooperation and Development (OECD). They include 12 countries with "economies intransition" from Central and Eastern Europe. Industrialized nations agree under the Convention to support Climate Change activities in developing countries by providing financial support for action on Climate Change. The Convention takes this into consideration by accepting that the share of Green House Gas emissions produced by developing nations will grow in the coming years. Nonetheless, in the interests of fulfilling its ultimate goal, it seeks to help such countries limit emissions in ways that will not hinder their economic progress (3).

III. CONFERENCES OF PARTIES (COP) ON CLIMATE CHANGE(UNFCCC)

Besides above there are other major decisions have been held in different Conferences of Parties(COP)- Kyoto Protocol (2005), Bali Road Map (2007), Copenhagen Accord (2009), Cancun Agreements (2010), Durban Agreement (2011), Doha Climate Gateway (2012), Warsaw Outcomes (2013), Lima, Peru (2014) and by end of this year COP-21 is to be held in Paris (2015). Let see main concern of these conference for effectively implementing the provisions of related to Convention. The Kyoto Protocol (2005) is an international agreement linked to the United Nations Framework Convention on Climate Change, which commits its Parties by setting internationally binding emission reduction targets. The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February 2005. The detailed rules for the implementation of the Protocol were adopted at COP 7 in Marrakesh, Morocco, in 2001, and are referred to as the "Marrakesh Accord". Its first commitment period started in 2008 and ended in 2012. Under the Protocol, countries must meet their targets primarily through national measures. However, the Protocol also offers them an additional means to meet their targets by way of three market-based mechanisms: (i) International Emissions Trading (IET); (ii) Clean Development Mechanism (CDM); and (iii) Joint implementation (JI).

The Bali Road Map (2007) was adopted in Bali during December 2007. It is a set of a forward-looking decision that represents the work that needs to be done under various negotiating "tracks" that is essential to reaching a secure climate future. Further it includes the Bali Action Plan, which is a comprehensive process to enable the full, effective and sustained implementation of the Convention through long-term cooperative action, now, up to and beyond 2012. The Bali Action Plan is divided into five main categories: shared vision, mitigation, adaptation, technology and financing (3).

The Copenhagen Accord (2009) emerged during the 15th session of the Conference of the Parties (COP) to the UNFCCC and the 5th session of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol took place in Copenhagen, Denmark in 2009. This Accord contained several key elements on which there was strong convergence of views of the parties Governments. This included the long-term goal of limiting the maximum global average temperature increase to no more than 2 degrees Celsius above pre-industrial levels, subject to a review in 2015.

The Cancun Agreements (2010) represented key steps forward in capturing plans to reduce Green House Gas emissions, and to help developing nations protect themselves from climate impacts and build their own sustainable futures. The main objectives include: (i) Mitigation; (ii) Transparency of actions;

(iii) Technology; (iv) Adaptation; (v) Forests; (vii) Capacity building; and (viii) Finance. The objectives also include setting up the Green Climate Fund to disburse $100billion per year by 2020 to developing countries to assist them in mitigating Climate Change and adapting to its impacts.

The Durban Agreement (2011) came out during the UN Climate Change Conference held at Durban in 2011. All Governments committed to a comprehensive plan that would come closer over time to delivering the ultimate objective of the Climate Change Convention: to stabilize Green House Gas concentrations in the atmosphere at a level that will prevent our dangerous interference with the climate system and at the same time will preserve the right to sustainable development in Durban. The developing countries, especially the poorest and most vulnerable, will need much more support to adapt to the change that is already embedded in the global climate system. The Durban outcomes looked to address four main areas of coordinated and complementary action and implementation, designed also to build and preserve trust among countries, were agreed viz. (i) Second commitment period of the Kyoto Protocol; (ii) The launch of a new platform of negotiations under the Convention to deliver a new and universal Green House Gas reduction protocol, legal instrument or other outcome with legal force by 2015 for the period beyond 2020; (iii) Conclusion in 2012 of existing broad-based stream of negotiations; and (iv) To scope out and then conduct a fresh global Review of the emerging climate challenge, based on the best available science and data(4).

The Doha Climate Gateway (2012) evolved during UN Climate Change Conference in Doha, Qatar in 2012. Governments consolidated the gains of the last three years of international Climate Change negotiations and opened a gateway to necessary greater ambition and action on all levels. Some of the decisions taken during this conference that Governments should:

- Strengthened their resolve and set out a timetable to adopt a universal climate agreement by 2015, which will come into effect in 2020.
- Streamlined the negotiations, completing the work under the Bali Action Plan to concentrate on the new work towards a 2015 agreement under a single negotiating stream in the Ad hoc Working Group on the Durban Platform for Enhanced Action (ADP).
- Emphasized the need to increase their ambition to cut Green House Gases(GHGs) and to help vulnerable countries to adapt.
- Launched a new commitment period under the Kyoto Protocol, thereby ensuring that this treaty's important legal and accounting models remain in place and underlining the principle that developed countries lead mandated action to cut Green House Gas emissions.
- Made further progress towards establishing the financial and technology support and new institutions to enable clean energy investments and sustainable growth in developing countries.

Warsaw Outcomes (2013) also provided a showcase for climate action by business, cities, regions and civil society. The solutions to climate change are already clear and the world has the money and technology, the knowledge and models to succeed. The results of effective climate action are also clear: immediate, shared benefits to all economies and citizens and a sustainable future for all.

Similarly Lima, Peru (2014) Adaptation including the Lima Adaptation Knowledge Initiative- National Adaptation Plans (NAPs) offers an important way of delivering resilience. NAPs will now be made more visible via the UNFCCC website which should improve the opportunity for receiving backing. The green light was given for discussions with the Green Climate Fund (GCF) on how countries can be supported with their NAPs which should increase the number of these plans coming forward for support. Adaptation Knowledge Initiative (AKI)-a pilot project in the Andes under the Nairobi Work Programme- has underlined that establishing the adaptive needs of communities can be successfully captured. Some of the main decisions were made during the Lima Conference as follows.

Financing the response to climate change: Governments made progress on coordinating the delivery of climate finance and of the various existing funds. It was pledged to the Green Climate Fund close to USD 10.2 billion. In a further boost to the adaptation ambitions of developing countries, Germany made a pledge of 55 million Euros to the Adaptation Fund. China also announced $10 million for South-South cooperation and mentioned they would double it next year. Providing technology to developing countries**:** It was decided to transfer of climate technologies with the assistance of the UN and other international agencies are picking up speed for the Convention. The Climate Technology Centre and Network reported that it had received around 30 requests for assistance this year, and expects the figure to grow to more than 100 next year. The UNFCCC's Technology Mechanism was further strengthened through the consideration of a link to the Green Climate Fund and the UNFCCC Finance mechanism.

Work Programme on Gender: The role of women is key to the response to climate change, and needs to be strengthened. It was agreed for Lima Work Programme on Gender to advance gender balance and to promote gender sensitivity in developing and implementing climate policy. Education and Awareness: A Declaration on Education and Awareness-raising was announced. It is aimed at developing education strategies that incorporate the issue of climate change in curricula, while also raising awareness on climate change in the design and implementation of national development and climate change strategies.

Next COP conference, Paris (2015) UN climate conference, is going to held in December 2015. It will deliver a new

universal climate change agreement. The new agreement is aimed at putting the world firmly on track to a low-carbon, sustainable future that keeps a global temperature rise under 2 degrees C. It has two main objectives, first, to bind nations together into an effective global effort to reduce emissions rapidly enough to chart humanity's longer-term path out of the danger zone of climate change, while building adaptation capacity and second, to stimulate faster and broader action now.

Hence the world has a chance to stay below an agreed maximum 2 degrees Celsius temperature rise, beyond which even more serious Climate Change impacts will occur, the Governments agreed to find ways to scale up efforts before 2020 beyond the existing pledges to curb emissions(5).

IV. OUR NATIONAL ACTION PLAN ON CLIMATIC CHANGES

Our first National Action Plan on Climate Change (NAPCC) came in 2008. It outlines the existing and future policies and programs addressing climate mitigation and adaptation. Further it emphasis overriding priority of maintaining high economic growth rates to raise living standards. This plan identifies measures that promote our development objectives while also yielding co-benefits for addressing climate change effectively. 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". Further it shall direct ministries to submit detailed implementation plans to the Council on Climate Change by the end of 2008. It has identifies eight core "national missions" ,which will continues till 2017 are summarized as follows.

Eight National Missions

i. **Solar Mission:** It aims to promote the development and use of solar energy for power generation and other uses with the ultimate objective of making solar competitive with fossil-based energy options. The plan includes: Specific goals for increasing use of solar thermal technologies in urban areas, industry, and commercial establishments; a goal to increasing production of photo voltaics to 1000 MW/year; and a goal of deploying at least 1000 MW of solar thermal power generation. Other objectives include the establishment of a solar research center, increased international collaboration on technology development, strengthening of domestic manufacturing capacity, and increased government funding and international support.

ii. **Mission for Enhanced Energy Efficiency**: The initiatives have been made to yield savings of 10,000 MW by 2012 which were based on the Energy Conservation Act 2001. As Plan recommends: mandating specific energy consumption decreases in large energy-consuming industries, with a system for companies to trade energy-savings certificates; energy incentives, including reduced taxes on energy-efficient appliances; and financing for public-private partnerships to reduce energy consumption through demand-side management programs in the municipal, buildings and agricultural sectors.

iii. **Mission on Sustainable Habitat:** It is to promote energy efficiency as a core component of urban planning. This plan calls for extending the existing Energy Conservation Building Code; greater emphasis on urban waste management and recycling, including power production from waste; strengthening the enforcement of automotive fuel economy standards and using pricing measures to encourage the purchase of efficient vehicles and incentives for the use of public transportation.

iv. Other Missions: There are five other missions on water, sustaining the himalayan ecosystem, green India, sustainable agriculture, and strategic knowledge for climate change. In Water Mission, there is water scarcity projected to worsen as a result of climate change, the plan sets a goal of a 20% improvement in water use efficiency through pricing and other measures. Mission for Sustaining the Himalayan Ecosystem which aims to conserve biodiversity, forest cover, and other ecological values in the Himalayan region, where glaciers that are a major source of India's water supply are projected to recede as a result of global warming. Mission for a "Green India" means to expand forest cover from 23% to 33% of India's territory and the afforestation of 6 million hectares of degraded forest lands. Similarly the Mission for Sustainable Agriculture aims to support climate adaptation in agriculture through the development of climate-resilient crops, expansion of weather insurance mechanisms, and agricultural practices.

In addition the Mission on Strategic Knowledge for Climate Change to gain a better understanding of climate science, impacts and challenges, the plan envisions a new Climate Science Research Fund, improved climate modeling, and increased international collaboration. It also encourages private sector initiatives to develop adaptation and mitigation technologies through venture capital funds.

Further National Plan of Action also has described other ongoing initiatives on power generation, renewable energy, other renewable, energy efficiency, biofuels and forestry.

Power Generation: The government is mandating the retirement of inefficient coal-fired power plants and supporting the research and development of IGCC and supercritical technologies.

Renewable Energy: Currently, modern renewable energy constitutes 4% of the total installed capacity of the power generating sector. Between 2002 and 2007, 6800 mega watts (MW) of renewable power capacity was added, about 3000 MW more than the 10th Five Year Plan target. The 11th Five Year Plan sets a target of increasing the installed capacity to 23,500 MW by 2012. or more than 10% of total installed capacity, with wind comprising 72% and biomass and hydro

power about 14% each. The Electricity Act (2003) encourages the development of renewable energy by mandating that State Electricity Regulatory Commissions (SERCs) allow connectivity and sale of electricity to any interested person and permit off-grid systems for rural areas. The National Tariff Policy (2006) stipulates that SERCs must purchase a minimum percentage of power from renewable sources, with the specific shares to be determined by each SERC individually. The states of Himachal Pradesh and Tamil Nadu have the highest quotas—20% by 2010 and 10% by 2009, respectively. Under the Rural Electrification Policy (2006) electrification of all villages must be completed by 2012. Of the 80,000 villages that have no access to electricity, 18,000 villages are in remote areas that must be electrified through use of renewable energy. Currently, about 3000 villages have been electrified, primarily through solar systems.

Wind power comprises over 65% of renewable capacity, ranking India fourth in terms of wind power generation worldwide. The Ministry of New and Renewable Energy estimates the overall potential for wind power at 45,000 MW, with only about 6270 MW currently developed. In recent years, the policy framework has been strengthened to reduce upfront costs to investors. Long-term low-interest loans are being provided by the Indian Renewable Energy Development Agency.

Other Renewable - Biomass projects for power generation receive fiscal incentives including subsidies, income tax holidays, excise duty and sales tax exemptions, and accelerated depreciation. Currently, the CDM also attracts developers to build biomass projects. Hydropower contributes 33,642 MW (or 26%) of electricity generated in India. The 11th Five Year Plan calls for an additional capacity of 15,585 MW by 2012 and the Accelerated Hydro Development Plan targets 50,000 MW of new capacity by 2025-26. Small hydropower projects (up to 25 MW) are eligible for incentives such as concessional customs duties and income tax exemptions for 10 years.

Energy Efficiency: Under the Energy Conservation Act 2001, large energy-consuming industries are required to undertake energy audits and an energy labeling program for appliances has been introduced. The Energy Conservation Act (2001) established a national Bureau of Energy Efficiency (BEE) with the objective of improving energy efficiency in various sectors. BEE has developed energy efficiency labels for refrigerators and other appliances, conducted mandatory energy audits of large energy-consuming industries, developed demand-side management programs, and established benchmarks for industrial energy use. BEE is in the process of developing a CDM project called the "Bachat Lamp Yojana," which will replace all incandescent bulbs in the residential sector with compact fluorescent lamps. The price differential will be recovered by the sale of carbon credits. It is estimated that this will reduce 24 million tons of CO_2 annually. In 2007, the Energy Conservation Building Code was introduced, initially on a voluntary basis, to establish energy performance requirements for commercial buildings with loads of 500 kW and above. The National Tariff Policy (2006) implemented a higher tariff base for consumers with a large demand (for example, in excess of 1 MW). States like Assam and Orissa have also come up with state-level tariff policies to complement the central government efforts.

Bio-fuels and Forestry: The Ministry of Petroleum and Natural Gas is implementing a mandatory program for the introduction of ethanol-blended gasoline (5% gasohol) nationwide by April 2008. However, due to fluctuations in the supply of ethanol, the program is currently running behind schedule. The Biodiesel Price Policy (2005) fixed the initial purchase price of biodiesel at Rs.25/liter (~60c/liter). The government is formulating a national policy on biofuels to introduce financial incentives, develop R&D for production and commercialization of ethanol and jatropha, and establish a national biofuel development board(NBDB). In 2005, the forest and tree cover in India was 24%. The 11th Five Year Plan proposes an increase in the forest and tree cover of 1% a year through 2012. In 2007, the Prime Minister announced the Green India Program to reforest 6 million hectares of degraded forest lands.

Transportation: The National Auto Fuel Policy (2003) mandated that all new four-wheeled vehicles in eleven cities meet Bharat Stage III emission norms for conventional air pollutants, (similar to Euro III emission norms), and comply with Euro IV standards by 2010. The largest urban fleet of compressed natural gas (CNG) vehicles was introduced in New Delhi and Mumbai to reduce pollution and increase energy security. In New Delhi alone, 106,000 vehicles, including all buses, taxis and three-wheelers, were converted from gasoline or diesel to CNG. Vehicles in cities like Vadodara, Surat, Ankleshwar and the state of Maharashtra also have been converted. This combined effort resulted in the conversion of 375,000 vehicles by March 2007, with three-wheelers forming the largest share (64%).

The Delhi Metro subway system began construction in 1998 and will cover the entire metropolitan region by 2021. Currently, only Phase I has been completed, with daily ridership projected to reach 2.6 million by 2011. The Bangalore Metro Phase I is expected to be operational by 2011 and projected to provide transportation for one million passengers per day.

V. CONCLUSION- IMPACTS OF CLIMATE CHANGE ON INDIA AND IMPLEMENTATIONOF NATIONAL MISSIONS OF NPA

Climate change is impacting our natural ecosystems. Soon it shall exhibits the substantial adverse effects on agriculture in our country. As we all know well that 58 per cent of the population still depends on it for livelihood. Water storage in the Himalayan glaciers is the main source of major rivers and important to agriculture. The groundwater recharge, sea-level rise, and threats to a long coastline and habitations are other major challenges of climate changes. Climate change will also

cause increased frequency of extreme events such as floods and droughts. These all together will impact India's food security problems and water security (2).The World Bank Report "Turn Down the Heat: Climate Extremes, Regional Impacts, and the Case for Resilience" published in June 2013, projects that a scenario of 4 degree C rise in global temperature, would result in increased climate extreme events such as heat waves, sea level rise, more storm surges, droughts and flooding in the South Asian region including India. The coastal and deltaic regions of India are reported to be particularly vulnerable to the risks of flooding including two Indian cities of Mumbai and Kolkata. The Ganges, Indus, and Brahmaputra—are also vulnerable to the effects of climate change due to the melting of glaciers and loss of snow cover resulting in significant risk of flooding(9).

Our Ministries are trying hard to implement the different components of the NPA with lead responsibility for each of the core missions are directed to develop objectives, implementation strategies, timelines, and monitoring and evaluation criteria, to be submitted to the Prime Minister's Council on Climate Change (Ibid). The Council will also be responsible for periodically reviewing and reporting on each mission's progress. To be able to quantify progress, appropriate indicators and methodologies will be developed to assess both avoided emissions and adaptation benefits.

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