International Journal of Physical and Social Sciences
(ISSN: 2249-5894)

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Title

INDIA AND GLOBAL CLIMATE CHANGE REGIME: ISSUES; AGREEMENTS AND DIFFERENCES

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Abstract:

Present paper seeks to analyse a much debated issue of climate change in the context of India's policy perception in both theoretical and practical standpoint. India, as a fastest growing economy on the earth, fiercely competing to fulfil the basic needs of its over one billion people, is at the epicentre of the success and futuristic direction of the global climate change agreements. The research is an attempt to analyse the climate change mitigation measures undertaken by India in both domestic and international milieu. The study also focuses on India's global climate change policy perception in the wider context of agreement and disagreement therein. India is one of the world's leading emitters of Greenhouse Gases (GHGs) contribution 1.61 billion tonnes GHGs and is likely to increase in future. It is thus, imperative to evolve a clear understanding of India's climate change perception, greenhouse gases emission inventory, future projections and implications.

Keywords: climate change; global climate change regime; India; energy efficiency; greenhouse gases; afforestation and multilateral climate change agreements.

Introduction:

There are firm and unequivocal evidences on the fact that, the earth's climate is getting warmer due to anthropogenic activities. The Intergovernmental Panel on Climate Change (IPCC) Climate Change Synthesis Report, 2007 findings revealed that, the past ten years (1995-2005) were experienced as the warmest years since past 1850 (IPCC, 2007). There is no denying to the fact that, the risk of climate change is varied and versatile, as it includes; water scarcity, energy deficit, and baffling food insecurity, loss of rich flora and fauna, human health risk and so on. Owing to the reason, there have been some exhausting efforts to arrive at consensus over the issue of climate change at global level.

India is an important ally in international climate change governance and has been extremely sensitive to the climate change issues. Climate change is of much greater concern to India, as it is going to affect the economic growth, biotic quality and social development of the country. Any adverse impacts on the economic growth rate of the country has far-reaching

ramification to the poverty alleviation campaign of a country where more than 40% of the population still figures as below poverty line. It is even more scaring to relate India's GHGs reduction campaign with social justice. The analysis of Parikh and Parikh (2002), demonstrates that, the annual emission reduction target to reduce 30% of the CO_2 over the period of 30 years would cost 4% slash in the GDP and increase 17.5% more impoverished people by 2030 (Parikh and Parikh, 2002).

India is therefore, going ahead with a multi-dimensional strategy with a synergic relationship between economic development, environmental sustainability and social justice. The foundation of India's climate change policy is essentially poised to accelerate the pace of economic development and penetrate it to the most vulnerable sections of the society as to increase their immunity to fight the risks of climate change and to formulate a national action plan to climate change to fight the impacts of climate change in both macro and micro level.

Internationally, India has a very significant role in the multi-lateral climate change negotiations and agreements. Country's international climate change policy perception is hailed through some of the basic principles most notably: financial and technical assistance flow from developed to developing countries to strengthen adaptation and mitigation immunity in poor countries; a consensus based globally accepted shared vision to address the climate change crisis on the principle of universality and the principle of common but differentiated responsibilities and respective capacities.

India's Energy Efficiency Architecture and Global Climate Change Regime:

Energy occupies a determinant role in a highly materialized world today. India is world's sixth largest consumer of energy accounting about 3.5% of the world's total annual energy consumption. According to the latest United Nations Environment Programme (UNEP) analysis, India's energy growth rate would increase 3.4% from 2008-2035 which would be the fastest on the earth (UNEP, 2011). Though, present per capita consumption of energy in the country is only 631kwh as compared to world consumption of 2873kwh (Government of India (GoI), Ministry of Power (MoP) Annual Report (AR), 2007-2008). More bafflingly, 44% of the total population

of the country is still devoid to the use of electricity (GoI, NAPCC, 2007).

It is equally true that, the mounting consumption of energy resources has contributed to increased concentration of GHGs in the atmosphere. This variable (energy) of present study is extremely relevant as it contributes around 42% of total CO_2 emission in India (Parikh and Parikh, 2002). The share of energy in CO_2 emission has increased 87.5% from 1990-2004 (IEA, 2007a). India is therefore, effortlessly working towards a low carbon energy efficiency to reduce its per capita carbon emission. In the much ambitious 11th Five Year Plan, the nation has set an indicative target to increase 20% energy efficiency by 2016-17. The country has also decided to reduce its GDP emissions intensity by 20-25% by 2020 comparable to 2005 level (GoI, Ministry of Environment and Forests (MoEF) 2009-2010a).

More importantly, the Union Ministry of Power (MoP) has synchronized much ambitious programme through Bureau of Energy Efficiency (BEE), to reduce the electricity demands and CO_2 emission by introducing high quality and extremely low priced (Rs. 15 per lamp) the Compact Fluorescent lamps (CFLs) to domestic consumers. The programme is likely to reduce around 6,000-10,000 MW of electricity demand, and a reduction of 24 million tonnes of CO_2 emissions every year. The target of the distribution of low rate CFLs would be achieved to strengthen the Clean Development Mechanism (CDM) of the Kyoto Protocol under which the distributors would earn Certified Emissions Reductions (CERs) essentially resulted from the utilization of energy efficient low carbon CFLs (GoI, MoP, AR 2007-2008). Moreover, India occupies nearly 26% CDM in the world (GoI, MoEF, AR 2009-2010).

Similarly, Indian Solar Loan Programme (ISLP), according to which, the UNEP would disburse around 5,000 loans for photovoltaic-based Solar Home Systems aimed to supply benign electricity to 25,000 households by 2006 (UNEP, 2004). The ISLP has remarkably provided clean solar energy to nearly 100,000 people in south India (UNEP, 2007). Recently, National Thermal Power Corporation Limited (NTPC) has envisaged the Vision, "Going Higher on Generation, lowering GHG intensity." The introduction of consolidated baseline and monitoring methodology and low carbon Super Critical Technology (SCT) for new grid connected fossil fuel fired power plants by NTPC has been approved by "United Nations Frame Work Convention on Climate Change (UNFCCC)" under 'Approved Consolidated Methodology 13'

and is considered to be a landmark development in the energy sector (GoI, MoP, AR, 2009-2010).

Moreover, the report of the Expert Committee on India's Integrated Energy Policy, 2006 has tried to estimate the CO_2 generation scenario in energy sector of India. The major finding of the report has estimated 2.1 tonnes of CO_2e (Carbon Dioxide equivalent) and 3.5 tonnes of CO_2e emission by the year 2020 and 2030 respectively which would be below in comparison to the developed countries even the developed countries works in compliance to the IPCC suggested 25-40% emission reduction targets (GoI, MoEF, 2009d). The increased shift in the energy intensity utilization in Indian economy has also contributed to low carbon emission in recent past. India's energy intensity which was 0.30 kg of CO_2 e per $GDP in 1972 has decreased to 0.19 kg of CO_2 e per $ of GDP in 2003 (Kumar, 2008).

India has also introduced various low carbon energy initiatives to express solidarity with the objectives encapsulated in the United Nations World Submit on Sustainable Development held in Johannesburg on 2002. The major focus of the Summit remained to improve access on environmentally reliable, economically affordable, and socially acceptable energy facilities through regional and international cooperation (United Nations, 2002). *India's Minister of Environment and Forests asserted that,*

> *"India has a comprehensive approach to energy supply, accorded high priority to renewable energy and was one of the few countries that had a separate Ministry to deal with renewable energy. A country of India's size and diversity, however, needs to rely on diverse energy sources, and in that context fossil fuel and nuclear energy (United Nations, 2002)."*

Moreover, the study conducted by Rogner et al., (2007), reveals that, the focus on the demand side energy efficiency improvements has contributed to reduce emission by around 366 million tonnes of CO_2 in India. India has also expressed its solidarity with UNFCC to develop GHGs observatory mechanism and has thus, prepared Inventory of Gases for the base year 1994 as specified (GoI, MoWR, 2008).

It is therefore evident that, India has actively engaged in both domestically and internationally to restrict its per capita GHGs emission by opting to renewable and clean energy options. The efforts to the development, operation and expansion of cooperation in the arena of

clean energy technology under the aegis of Asia-Pacific Partnership on Clean Development and Climate, a public-private join-venture of seven countries comprising: USA, Canada, Australia, Japan, PRC, India, and the South Korea have been significant in this context (IEA, 2009). India's efforts are thus, essential corollary to provision enshrined in the multilateral treaties most notably; UNFCC and Kyoto Protocol. More importantly, the Delhi International Renewable Energy Conference (DIREC), 2010 hosted by India pledged to make concerted efforts to work toward sustainable economic development, environmental sustainability through renewable energy generation ((GoI, MoN&RE, 2010).

India's Afforestation Efforts in the Context of Global Climate Change Agreements:

Deforestation contributes around 17% of the total GHGs emission which is greater than the net carbon dioxide emission from the total transportation on the earth (Aggarwal, et al., 2009). Indian is especially concerned to afforestation as the MoEF, has put forth some of the comprehensive policy guidelines before developmental activities. One of the priority issues of the National Forest Policy (NFP), 1988 seeks to create harmony between development and environmental sustainability. The NFP is determined to protect the rich and diverse floral and faunal legacy of the country and to ensure at least one-third of the total geographic region under forest cover and two-third of the region under forest cover in the mountainous terrain of the country (GoI, MoEF, 2008).

India figures as one of the twelve Megadiverse countries in the world and is perennial source of livelihoods to over 200 million people of the country (GoI, MoEF, 2009). India accounts to around 7-8% of global recorded plants (about 45000) and animal species (about 91000) (GoI, MoEF, 2010a). India, on the auspices of World Summit on Sustainable Development held at Johannesburg South Africa, on 26 August 2002 clearly expressed its commitment to the protection of natural biodiversity (United Nations, 2002).

Similarly, the country has enacted Biological Diversity Act, 2002 (BDA) and established a National Biodiversity Authority in 2003 to ensure the optimum safety to rich and diverse natural eco-system of the country. The National Biotechnology Development Strategy 2007,

National Biodiversity Action Plan, 2008 and National Wildlife Action Plan (NWAP) are some of the pioneering action plans dedicated to the biodiversity protection of the country. More importantly, India is receiving all sorts of technical and strategic assistance for BDA from UNEP under access to genetic resources and benefit sharing (ABS) principle to ensure optimum compliance to the protection and sustainable use of biological resources (UNEP, 2008). Furthermore, NWAP has visualized around 10% of the total geographic areas under Protected Areas (PAs)[i] which is significant to a nation with having 18% share of the total global population and equal percentage of world's livestock population and has only 2.4% of global geographical areas (GoI, MoEF, 2009e). India has also signed the Convention on Biological Diversity in February 1994 and has extended its fullest possible efforts to institutionalize the problem of Invasive Alien Species (IAS) in accordance with Article 8(h) of CBD. In this context the country follows much recognized international quarantine regulations to protect the natural flora and fauna (GoI, MoEF, 2009e). In synchronization to CBD, India has formulated a strategy to protect the rich biodiversity at macro-level and has endorsed the Biological Diversity Act in 2002 and formulated the National Environmental Policy, 2006. India's initiatives are also harmonious to the basic ideals of UNFCCC such as; Article 6 of the Convention seeks compliance from the member states to explore a functional and structural national biodiversity strategy (GoI, MoEF, 2008).

More importantly, in a high level meeting on the occasion of 65th Session of the General Assembly on Biodiversity held on 22 September 2010, the honourable Minister of Environment & Forests, Mr. Jairam Ramesh reiterated India's concern and cooperation for the protection of biodiversity as discussed in the CBD. The honourable Minister expressed solidarity with three basic objectives of the CBD namely; conservation of biodiversity, sustainable use of its components and more emphasizly, distribution of the benefits arising out of the use of genetic resources. The third objective of the Access and Benefit Sharing (ABS) remained as the major highlights of Mr. Ramesh's statement (GoI, MoEF, 2010).

More importantly, the Indian Council of Forestry Research and Education (ICFRE) have achieved an international acclamation on February 2010 at the 59th meeting of the Executive Board of the Clean Development Mechanism (CDM) when the Council was accredited as the first Designated Operational Entity (DOE) in the country (GoI, MoEF, 2011b). The DOE status

to ICFRE would narrow down the financial challenges in the arena of afforestation and reforestation. In the light of above discussions and findings it is imperative to say that, India's commitment to climate change mitigation efforts through afforestation is very much in synergy to the global climate change control parameters.

India's Climate Change Response: A Synthesis to Global Climate Change Regime:

As mentioned earlier, India supports all those efforts which are poised to bring harmony between economic development, natural resource sustainability and social justice. The country has extended its active support to many regional, sub-regional and multilateral agreements which are committed to reduce the catastrophic consequences of climate change. India's climate change mitigation efforts reflect a synergic relationship with global climate change regime manifested in the UNFCCC 1992, Kyoto Protocol 1997 and Copenhagen Accord, 2009.

According to the International Sustainable Energy Initiatives (ISEI), India is a signatory of around 38 Bilateral and multilateral treaty agreement (Patel, 2008). India has ratified one of the most influential international treaties, the Montreal Protocol on Substances, 1989 in the year 1992. The treaty is one of the most successful global agreements aimed to abstention of the production and consumption of Hydro chlorofluorocarbons (HCFCs) considered as a major cause of ozone layer depletion. India has been actively working toward the complete phasing-out production and consumption of the HCFCs. More importantly, India has, in compliance with Article-4B of the Montreal Protocol, established a comprehensive futuristic regulatory mechanism to control, the production, import, export, trade and use of all hazardous substances, which includes recovery, recycling, reclamation, and also mandatory registration and reporting requirements (GoI, MoEF, 2009a).

India, as a signatory to the UNFCCC, 1992 and Kyoto Protocol, 26 August 2002 is fully committed to take all that initiatives which are in harmony with "common but differentiated responsibilities and respective responsibilities (GoI, MoEF, AR 2009-2010)." India respects all those efforts which seek to harmonize all the collective efforts to control the risks of climate change at global, regional and national level. In October-November 2002, India hosted the 8th

Conference of Parties (COP) in New Delhi which further cemented India's firm commitment to work in harmony with global climate change regime for sustainable and pollution free world (GoI, MoEF, 2004).

One of the guiding principles generally accepted in national and international climate change mitigation compliance is the notion of 'polluter pays.' One of the initial attempts to define the principle of polluter pays was made by The Organization of Economic Cooperation and Development (OECD), as it defines the principle in terms of "polluter's responsibility decided by concerned public authority to maintain a health state of environment in and around the developmental vicinity (Chudal, 1996)." The polluter pays principle resembles some comparable characteristics with the UNFCCC's fundamental principle of "Common but Differentiated Responsibilities and Respective Capacities." The principle primarily attributes to the greater responsibility by the developed nations in climate change mitigation thrust as these nations are responsible for over 50 per cent of GHG emission globally. Domestically, the term "polluter pays" was formally, coined by the Supreme Court (SC) of India on August 2003 (Shrivastava, 2006). The SC's decision was essentially a directive to all the developmental authorities to take the responsibilities to maintain a balance between development and environmental protection. All industries are now charged for environmental impact managements (accepts the small industries as they pay a flat rate), and the industry who is unable to meet the pollution control norms are penalized or pay the monthly treatment cost (Menon, 2006).

More recently, the government of India has initiated a renewed strategy to give further impetus to the climate change mitigation efforts. The country has pledged its desire to reduce the emission intensity of its GDP by 20 to 25% between the periods 2005-2020 (GoI, MoEF, 2009-2010a). Moreover, the country has set the target to reduce 25 million tonnes CO_2 emissions annually by 2014-15 under Perform, Achieve & Trade (PAT), energy efficiency programme (Bali and Chandran, 2010). Furthermore, there is no doubt to the fact that, India's CO_2 emission is increasing over the past two decade. The CO_2 emission of the country which was 156 million metric tons in 1990 reached 251 million metric tons in 2001 (Shrivastava, 2006). India's CO_2 emission is around 1 tonne per annum as compared to world average of 4.2 tonnes per annum, and the emission average for developed nation's ranges between 10-20 tonnes per capita (GoI,

MoEF, AR 2009-2010). The world's net GHG emission was 29.32 billion tonnes by the year 2007. The accumulated contribution of United States of America (5.82 billion tonnes), European Union (3.98 billion tonnes), Russia (1.54 billion tonnes) people Republic of China (6.54 billion tonnes), India (1.61 billion tonnes) emits over 65 per cent of total global GHGs (Menon, 2010). India's response to the commitment expressed in the Bali Action Plan is well defined in its policy perception submitted to the UNFCCC by the Ministry of Environment and Forests Government of India. The MoEF asserted that:

> "as far as India is concerned we have stated publicly that our per-capita emissions will not exceed those of developed countries. We believe that a paradigm of convergence of per-capita emissions of developing and developed countries, also accounting for the historical responsibility of developed countries, provides an equitable approach to fair burden sharing (GoI, MoEF, 2009c)."

India upholds the UNFCCC's assertion that, the developed nations has to take initiatives as of their historical responsibility for GHGs emission and capacity to mitigate (Bulkeley, 2001). More importantly, India has played extremely powerful role in the context of technology transfer which could considerably reduce the present level of GHG especially in the developing nations. India has tried to create a sense of responsibility and vigilance by using scientific methodology to clearly define the role of developed nations in this context. India has clearly held that, the obligations of the developed countries should be "measurable, reportable and verifiable (Bali Action Plan COP 13)." The statement is clearly in conformity with the mitigation efforts encapsulated in the paragraph 1 (b) of the Bali Action Plan as, "measurable, reportable and verifiable nationally appropriate commitments or actions, including quantified emission limitation and reduction objectives, by all developed country Parties, while ensuring the comparability of efforts among them (GoI, MoEF, 2009c)." The issue was further reinstated by India in the sixth BASIC[ii] countries ministerial level meeting held on 26-27 February 2011 at New Delhi which discussed a variety of issues related to global climate change policy. One of the important issues discussed in the meeting was concerned to the principle language introduced in Bali Action Plan, "measurable, reportable and verifiable" greenhouse gas (GHG) mitigation actions and commitments from developed countries. The important issue discussed in the New Delhi meeting was concerned to the differentiated responsibilities of developed and developing

countries over the issue of MRV as the MRV guidelines for the developing countries should be less onerous than the rules for enhanced MRV for developed country parties (GoI, MoEF, 2011b).

Moreover, India has a different approach to the UNFCCC mandate on mitigation, as the country does not demonstrate any mitigation commitment explicitly, as Mexico and China in their national communication, describes mitigation activities by sector (Fransen, 2009). India, however has demonstrated a set of policy programmes accelerating toward sustainable development (Fransen, 2009). One of the major policy paradigms that India has been strongly insisting with other developing countries is the issue of Equity and equitable access to carbon space. The issue was clearly raised by the honourable Minister for Environment and Forests, while addressing the UN Climate Change Conference at Cancun as he said,

> "equity is key to the climate change negotiations. In the context of the 2 degree Celsius global goal, the issue of equitable access becomes even more important. The phrase equitable access is not the right to pollute, but the right to sustainable development. We need to bring the excellent academic work on the subject into the mainstream of our negotiations[iii]."

India's post-2012 climate change commitment is primarily entrenched in the principle of equity and fairness and the country's only assurance to international climate change regime is that, its per capita emissions will never exceed the level of industrialized countries (Ghosh and Watkins, 2009). Similarly, the issue of the green technology transfer has been at the apex of India's multilateral climate change policy. The practice of highly pollutant technology is a vital reason responsible for GHGs emission in the developing nations. India has been repeatedly raising the issue before global climate change regime. It was the joint efforts of India-EU which led to the establishment of a bilateral agreement in September 2005, aimed to promote and development of cleaner technologies in India (Council of the European Union 2005).

More importantly, the issue of technology transfer to the developing countries was discussed in the Ministerial and Representatives of 35 Nations' Regional Grouping on 9-10 November 2010 at New Delhi. India along with the participants emphasized the need to generate finance for the technology transfer as the participants proposed to create a fund of $100 billion per annum by 2012 (GoI, MoEF, 2010b). India and G-77 countries collectively appreciated the

provisions discussed in the article 4.3 of UNFCC which imposes a binding financial obligation on the Annex II countries to assist the efforts of the developing countries towards climate change mitigation campaign (Verheyen, 2005). Currently, as a member, India has contributed US$ 100,000.0 to United Nations Environment Programme (UNEP) sponsored environment fund (UNEP, 2007). Thus, India is very much conscious, proactive, and vociferous in its pledge to climate change control in both national and international level.

Conclusion:

There is no denying to the fact that, India has tried to reconcile the needs of development with social justice and environmental sustainability. In the theoretical standpoint, India seeks to follow a pathway of economic development which harmoniously blends with developmentalism, affirmative action and environmental sustainability. The synthesis of positivist and post-positivist theoretical binary was better applauded by the President of World Bank Mr. Robert B. Zoellick said:

> "India is working to integrate its growth objectives and need to overcome poverty with the sustainability of natural resources and the well-being of future generations. The Government is striving to avoid actions that will add to costs – today and tomorrow- for health, clean water, clean air and preservation of valuable biodiversity. The world Bank Group is pleased to share its experience to support India's inclusive and sustainable development (GoI, MoEF, 2011a)."

The current direction of economic development: the growing shift from manufacturing to service sector; focus on integrated energy policy with special focus on renewable energy sources; increased public-private cooperation and increased utilization of low carbon technology would all contribute to the reduction of GHGs emission intensity in the country. India is therefore, very much aware to the need of concerted action against climate change impacts on human health and natural eco-system. The need was clearly highlighted by the honourable Prime Minister Mr. Manmohan Singh as he stated, "There should be no doubt in anybody's mind," "that we fully recognize not just how important this issue is to India but also our obligation to address it (Manoj, 2009)."

To sum up, it is imperative to say that, India, due to its geographic and demographic distinctiveness, economic vibrancy and growing political vitality in international settings, could be a major determinant towards the implementation of an all embraced global climate change agreement. India holds a key role in the success and conceptualization of multilateral climate change negotiations as experienced in the recent round of COP meeting at Copenhagen and Cancun. India could work as an effective interlocutor to end the ongoing deadlock between both developed and developing countries and ensure an effective alternative of Kyoto Protocol which is going to sink by 2012. The future of mankind depends largely on how the community of nations as a whole, works together for a world free from the catastrophic impacts of climate change.

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Endnotes:

i The PA is a specific geographic region legally recognized and protected for its unique and distinctive ecological quality and vulnerability.

ii The BASIC which was established on 28 November 2009 is a plurilateral organization of the world's most influential developing countries namely; China, India, Brazil and South Africa.

iii For details please see, *moef.nic.in/.../2010-12-06%20Press%20Release%20-%20**Equity**%20Side%20**Even**t.pdf, Accessed on 7 March 2011.*