

# Climate Change, Sustainable Development and Global Peace

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**ABSTRACT:** *Climate Change and Sustainable Development has been discussed in this paper. This has several aspects like dealing with climate change, Climate Change and Biodiversity, Climate Change and Island and Coastal Vulnerability, Climate Change and Global Risk, Climate Change and Developing Countries like China and India. Evaluating Climate Change is a science and art together. Thus Global Peace possibility is enhanced.*  
**KEYWORDS:** *Climate Change, Sustainable Development, Global Peace, JCM, MRV, PDD, TPE,, CDM*

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Date of Submission: 04-08-2022

Date of Acceptance: 17-08-2022

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## I. INTRODUCTION

In 2015, the humans achieved several important milestones for safeguarding the Global Commons, like the adoption of the Sustainable Development Goals and the Paris Agreement on Climate Change. Global Commons are land, forests, oceans, and climate vital for our future development prospects. Global Environment Facility (GEF) is very timely to reflect on what we have achieved, what is still to be done, and how we can scale up our efforts in helping countries along the way to implementing these agreements. The GEF was able to invest in grants and mobilize resources for projects in developing countries. Still there is a long way to go; since environmental degradation continues to intensify with rapid urbanization, increased demand for food, fiber and materials. The problems are increasingly being exacerbated by climate change, thereby threatening biodiversity and Earth's life support systems. Key economic systems – how we produce food; our cities; how we live and move around; and our energy system, how we power our vehicles, industries, and homes.

The GEF today deals with the global environment and the Global Commons. If we are to successfully implement the landmark 2015 global agreements to put the world on a low-emission, climate-resilient, and sustainable trajectory it is an imperative to embrace evidence-based learning and monitoring; evaluation is an integral aspect of implementation, so that our approaches and priorities can be refined and optimized even when we are already on the road.

Climate change is arguably one of the most complexes of the global environmental phenomena, with its root causes ingrained across almost all sectors and industries. Against this background, we also have to address the fact we are already locked in a path towards a warmer world irrespective of what we may do today. The Paris Agreement has embraced the utmost priority of promoting greater resilience in the ways we conduct our business and daily lives.

## II. DEALING WITH THE CLIMATE CHANGE

There has to be an accurate scientific assessment of climate change. This involves new findings. We may or may not have a choice between action and inaction. There is overwhelming evidence of dangerous anthropogenic interference. Detailed studies of the current status, may yield feasible future projections. The need for a mass movement on climate is not only welcome, but it is absolutely necessary.

A carbon budget proposal is extremely important. To begin with, there has to be an extensive overview of existing proposals for climate change mitigation with key assumptions and methodologies. Initial allocation, and adjustments involve the arrangement of transfer payments. Total global carbon budget estimation is not an easy task. This involves climate conditions, geographical condition and overall adjustment. There are international elements for implementation and compliance depending on market mechanism and financial mechanism. No additional difficulties be added to the measurable, reportable and verification (MRV) process. Compliance mechanisms must be enhanced. Initial allocation of carbon budget does depend on the population of populous countries like China and India. There are challenges in adapting the climate change. But the adaptation is necessary. First we need to understand the meaning of adaptation to climate change. Cost estimation and meeting the estimation for adaptation and raising of funds is necessary. Adaptation steps are to be implemented properly.

Priorities in research and development for climate change mitigation and adaptation are to be set adequately. Technology transfer is to be done by addressing major issues. Research is necessary to accelerate appropriate technology development and use. Technology innovation cannot be overlooked. Gaps in technology portfolios are to be abridged. System linkages between technology research, technology development and technology deployment must be improved. Improving the receptivity of markets to innovate technologies is important. Energy transitions are to be smoothened.

Climate change, though it has problems, it may also give certain opportunities. Climate change may need different scales of change. International cooperation is necessary to have a global framework built on national approaches. Energy use and infrastructure, land-use change and forestry, and finances are all important issues. Sectorial approach may help handling climate change. Convergence of environmental and financial markets has been observed in the last decade.

Now the time has come perhaps to consolidate or reform fundamentally the global climate change regime. It has the historical and institutional context perspective, political dynamics, core commitments, several institutions and procedures. Climate change has notched up considerable success like generating political momentum, enabling reciprocal deals, facilitating learning and promoting reporting and verification. The Climate regime has sometimes driven us at the crossroads giving challenges for future negotiations; the change necessarily encounters dysfunctional North-South politics. One might even ask 'can climate change and development be successfully linked'? The work involves unwieldy decision-making. Mankind is slowly learning and accepting several suggestions for reform.

Developing countries have specific problems. There are responsibilities for anthropogenic climate change. These issues are development challenges. Several myths have developed over the time. These myths are to be discussed and necessary practical measures have to be adopted. Countries may not necessarily be energy profligate as perceived by some policy makers. Some countries are very much vulnerable to the impacts of climate changes. The countries may or may not be environmentally unsustainable economy. Unconditional GHG emissions increase cannot be accepted. There has to be way forward from the developing as well as developed countries' perspectives with nationally appropriate mitigation access and proper financing, technology adaptation and sustainable production and consumption.

All climate negotiations must necessarily have emission reduction targets. If necessary, Kyoto Protocol has to be revisited again and again. Binding a global emission reduction target must entail the practicality of conforming to the compliance mechanism and economies involved.

### **III. CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT**

Climate Change is essentially a global problem. The preponderance of GHG emissions have been in developed countries previously. However, emissions are increasing rapidly with expected and needed economic growth in developing countries as well. United Nations Framework Convention on Climate Change (UNFCCC) has been constituted in 1992. Even then global cooperation on Climate Change has not developed adequately and the discussion on addressing Climate Change in the longer run has largely remained polarized. The reason is simple. Mightier developed nations are showing their might and articulating their words to escape unscathed. On the other hand, in the developing countries, Climate Change is not an important focus of economic or development policy. Of course, very recently the Climate Change issues are being considered among national environmental policy objectives.

Climate Change policies and sustainable development are now evolving as an emerging international research issue. Research includes a broad range of issues covering development, the social and environmental dimensions of Climate Change and sustainable development. Global Climate Change policy must meet the objectives of sustainable development and, at the same time, the policy is to be based on a broad consensus between stakeholders in industrialized countries, countries with economies in transition and developing countries. Sustainable Development policies are important from future GHG emissions potential point of view and related costs of Climate Change mitigation policies which are likely to have a number of impacts on Sustainable Development policy objectives. Integrated assessment of the economic, environmental and social sustainability dimensions of policies are to be recognized; though this is very complicated and resource-demanding.

Methodological sophistication, availability of analytical skills and data, and important requirement to facilitate a transparent analysis and decision-making process are involved. A relatively simple initial approach is to be recommended. A small number of impact indicators are to be assessed based on a well-established methodological approach. Sustainable climate mitigation must integrate equity into project analysis. Clean Development Mechanism (CDM) in the market is required for Sustainable Development. For this, the data from international study programmes in the individual countries along with those from United Nations Environmental Programme (UNEP), Asian Development Bank (ADB), Global Environment Facility (GEF) and United Nations Development Programme (UNDP) are profoundly useful. Also, Joint Crediting Mechanism (JCM), MRV and

methodology, Project Design Document (PDD), Third Party Entities (TPEs) prescribed by ISO 14065 and CDM Designated Operational Entity (DOE) are very important.

#### **IV. CLIMATE CHANGE AND BIODIVERSITY**

Biodiversity is getting transformed perpetually. But this is now happening very fast due to Climate Change. Biological associations are being rearranged. Human activities are adding to natural variability and there is an increased threat to the biodiversity.

Biotic response and range and abundance changes are worth noticing. Species' distributions are being altered and local species population abundances are being influenced for hundreds or thousands of years. There are evolutionary effects of Climate Change. The characteristics or phenotypes of all individual animals and plants are determined by the interaction between their genes and environment; temperature, precipitation, day length and geological substrate. Biotic environment includes the presence of food, competitors and natural enemies. There is a loss of equilibrium due to Climate Change.

Climate Change is affecting the response of biota to past environmental changes coming from fossil record as well as geophysical, geochemical, geomorphological and other geological records. Microfossil evidence like pollens and spores as well as macrofossil evidence of the taxonomic composition, growth forms and phenology of past vegetation are pointing towards the effects of Climate Change. This is true for both southern temperature regions and northern temperature latitudes. There is change in responses of marine species and ecosystems. There are genetic and evolutionary impacts of Climate Change. Climate Change projections and distributional shifts of individual species and bioms are to be carefully noted. Dynamic ecosystems, earth system models, freshwater ecosystems are also important. Change in the landscape and seascape is to be noted. Protected areas management is becoming more and more critical due to Climate Change. Alternative futures for the biodiversity are to be studied critically.

#### **V. CLIMATE CHANGE AND ISLAND AND COASTAL VULNERABILITY**

Coastal zone is increasingly becoming very significant due to growing world population living near coasts. The coastal region is becoming more vulnerable because of the dynamic interaction between the oceans and the land. These are getting degraded by multiple stresses arising from local to global scale changes in water use, influx of sediments and pollutants, affected ecosystem, river flooding, shoreline erosion, storms, tsunamis, relative sea-level rise, etc.. The islands near coastal environs are fragile and highly vulnerable to disasters causing depletion of population, erosion of skill base, impairment of self-sufficient economies and disturbance in the local culture. The socio-economic impacts of Climate Change at these places are very strong. The tourism gets affected. Freshwater availability and quality, aquaculture, agriculture, human settlements, financial services and human lives are terribly affected because of Climate Change. Storm-surges are likely to have a harmful impact on low-lying islands. All aspects of Climate Change impact on coastal and inland area must be critically studied for making these regions more sustainable.

Hydrological regime changes and water woes are very serious. Monsoonal fluctuations do have high impact on maritime productivity. Possibility of rain needs to be predicted reliably. Inter-annual variability of sea surface temperature must be accurately predicted. Paleoclimate of peninsular region is very important. Coral reefs inventory must be known from remote sensing technique. Impact of Climate Change on aquatic ecosystem in UNESCO World Heritage Site like Sundarban area is to be known with some degree of confidence. Holocene Bay Head Delta is worst affected due to Climate Change. Groundwater quality is affected due to sea level rise. Coral bleaching events in Reef region and mangrove response due to Climate Change are to be studied. Livelihood options due to Climate Change are subject to research.

#### **VI. GLOBAL RISKS OF CLIMATE CHANGE**

Climate Change is changing the world and it is creating many serious problems with many intricate issues. Policy decision and action to meet the challenges posed by the Climate Change is to be taken considering the totality of humans of all continents and countries in the world. The material to be considered must be broad-based. It is necessary to draw on basic science documenting the need for policy action as well as on the technologies, economic instruments and political strategies to be employed in response to Climate Change. Here lies the responsibility to look deep into the ethical and cultural issues constraining the societal response to Climate Change.

Climate Change has caused global risks. The scientific evidence and understanding being accumulated bears the testimony of more conscious thought and conviction that the Global climate system is moving beyond the pattern of natural variability within which the human civilization has developed and thrived. Of course, we do have many tools already and not altogether radically new approaches are necessary. These tools are to be honed and the available instruments are to be integrated into the development trajectories of the contemporary societies.

Core biophysical sciences, e.g. geosciences, atmospheric sciences, ocean sciences and ecology/biology as well as economics, political science, international studies, health sciences, institutions and governance, society, ethics, philosophy and all branches of engineering are required to be used to handle the Climate-Change-associated Global Risks effectively. Wide range of researchers and professionals are working in the cutting-edge synthesis of Climate-Change issues since the past, present and future of human-earth relationship is involved.

## **VII. CLIMATE CHANGE AND POPULOUS NATION CHINA vis a vis RUSSIA AND USA: CLASH OF NATIONS AND GLOBAL PEACE**

Climate Change has given the world new kind of post-WWII new cold war between China and USA. USA has started a new Shale era to rebalance the geopolitics. Russia has formidable accoutrements of power. It has scale. It has a huge arsenal of nuclear weapons, missiles and considerable cyber skills. Tensions are being mounted among these nations enjoying the VETO power in the UN arena. Ukraine-Russia war and the sanctions as a sequel must be treated as an eye opener. The human wisdom has prevailed and the immediate threat to the world could be averted, largely because of the wisdom of US, EU and NATO. Again, Taiwan-China clash could be lethal to the very survival of the world since such war cannot remain between the two belligerent nations only. SINO-INDIAN relation, INDO-PAK relation, the maps of the Middle East like Gulf War, etc. are far from being quiet. The Dragon's new treasure ships, belt and road building are simply mounting tensions. Energy transition and Climate Change are taking a heavy toll on the mental peace of the leaderships of important nations. The world just cannot afford another war of the kind of WW. Let us be hopeful that mankind does not face a holocaust. Conflicting interests of mighty nations must be resolved by diplomatic avenues with human dignity. We must act hand in hand for the Global Peace and a Sustainable World.

## **VIII. CONCLUSION**

The climate change with its various aspects, along with energy transition has been discussed in this paper. It is concluded that mankind has to work very consciously to mitigate the Climate Change woes and to achieve a Sustainable World in which Global Peace may prevail. The readers' attention is drawn to the References given in the Reference Section.

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Sujoy Kumar Saha. “Climate Change, Sustainable Development and Global Peace.” *International Journal of Humanities and Social Science Invention (IJHSSI)*, vol. 11(08), 2022, pp 54-64. Journal DOI- 10.35629/7722