Climate Change and Developing Countries

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Edited by

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CONTENTS

PREFACE

Natural processes have over the millenniums driven changes in climate, and these mechanisms continue to cause change. However, "Climate Change" as a term in academic and policy usage is now taken to mean anthropogenically driven change in climate. Climate Change today has assumed geometrically alarming proportions and its impacts are potentially catastrophic. Climate Change knows no boundaries and its cost will be borne by all earthlings. While the technologically advanced and developed countries are better prepared for responding to climate change, particularly by developing and establishing suitable policy, institutional and social, capable for dealing with the consequences of climate change, yet it is the developing countries that are the most vulnerable to climate change impacts because they have fewer resources to adapt: politically, socially, technologically and financially.

The book which was a product of the International Seminar on "Climate Change: Impact on Developing Countries" held from 15th to 17th October 2015 attempts to understand and ascertain the potential impact of Climate Change on the economy and polity of the developing Countries. The book also emphasizes that Climate Change is a matter of moral and cultural ethics. It stresses the fact that the existing Climate Change adaptation methods also need to accommodate traditional environmental knowledge and practices of the different indigenous cultures.

The editors placed on record the financial assistance rendered by the sponsoring bodies of the International Seminar- the United Board for Christian Higher Education in Asia, the Indian Council of Social Science Research (ICSSR)- North-Eastern Region Centre and the Government of Meghalaya without which the publication of this volume would not have been possible. I thank all the contributors for their efforts in submitting their articles for the volume. A special mention must also be made of the inspiration, support, and guidance extended by the Principal of the College, Dr. S. R. Lyndem for the publication of the volume.

Banshaikupar Lyngdoh Mawlong
Union Christian College, Meghalaya, India.

FOREWORD

This volume has its origins high up in the hills of Meghalaya, North-Eastern India, where the 2015 International Seminar on "Climate Change: Impact on Developing Countries" took place. Shillong's Union Christian College provided a tranquil setting for sharing knowledge and insights on what is one of humanity's most troubling challenges. I had the privilege of participating in this conference and in the process I learnt a great deal from a diverse set of scholars. Banshaikupar Lyngdoh Mawlong and his colleagues commendably designed a programme that crossed disciplinary boundaries. The result was a two-day conversation among philosophers and ethicists, political scientists, economists, biologists, climatologists, marine scientists, earth scientists, agricultural scientists, and human and physical geographers. Far too often, our research communities gather in the comfort of our disciplinary enclaves, speaking in terms that we understand but are often incomprehensible to other experts, policy-makers, or the wider public. This volume is testament to the value of venturing beyond our enclaves. Universities and the global research community have a vital role to play in helping our communities understand climate change. Fulfilling this role will require pooling wisdom from diverse disciplines. The 2015 International Seminar in Shillong, and its proceedings published in this volume, should inspire further such interdisciplinary meetings.

This volume showcases some of the excellent and important research that is being done in India and further afield on multiple aspects of climate change. Climate change reflects a cluster of threats and problems, but also opportunities to transition towards more sustainable, resilient, and fair societies. As a global-scale problem, sometimes it can be difficult to grasp the significance of climate change for the local level and for people in their everyday lives. The authors of these chapters do an admirable job of translating the abstract issue of climate change into clear and detailed accounts of its various impacts in developing countries. The volume spans issues of culture and human rights, refugees and forced migration, security and risk, marginalized voices and indigenous knowledge, agricultural adaptation and land management, carbon trading and REDD+, carbon sequestration, urban development and rural livelihoods. I recommend this volume to readers seeking to understand the multiple dimensions of

climate change and its physical, social, and economic impacts on developing countries.

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CHAPTER ONE

INTRODUCTION

BANSHAIKUPAR LYNGDOH MAWLONG[1]

"Poor Countries' economic development will contribute to climate change. But they are already its greatest victims"
—The Economist, 2009.

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC 2007) dispelled many uncertainties about climate change. It is now clear that climate change is mostly due to man-made emissions of greenhouse gases (mostly CO_2). The impact of climate change can (and will) pose a major challenge to the economic and national security of every nation. Climate change affects us all but it does not affect us equally nor do we possess the same capacity to respond to its challenges. As is often the case, the most vulnerable countries - particularly developing countries - remain on the margins of the current debate on climate change and once again find themselves in the worst situation.

In developing countries, rising populations, income levels, need for rapid economic development and energy use are leading to rapid increases in Green House Gases (GHG) emissions. At present growth rates, developing countries' emissions are expected to surpass those of developed countries within a matter of decades (Chandler et al. 2002).

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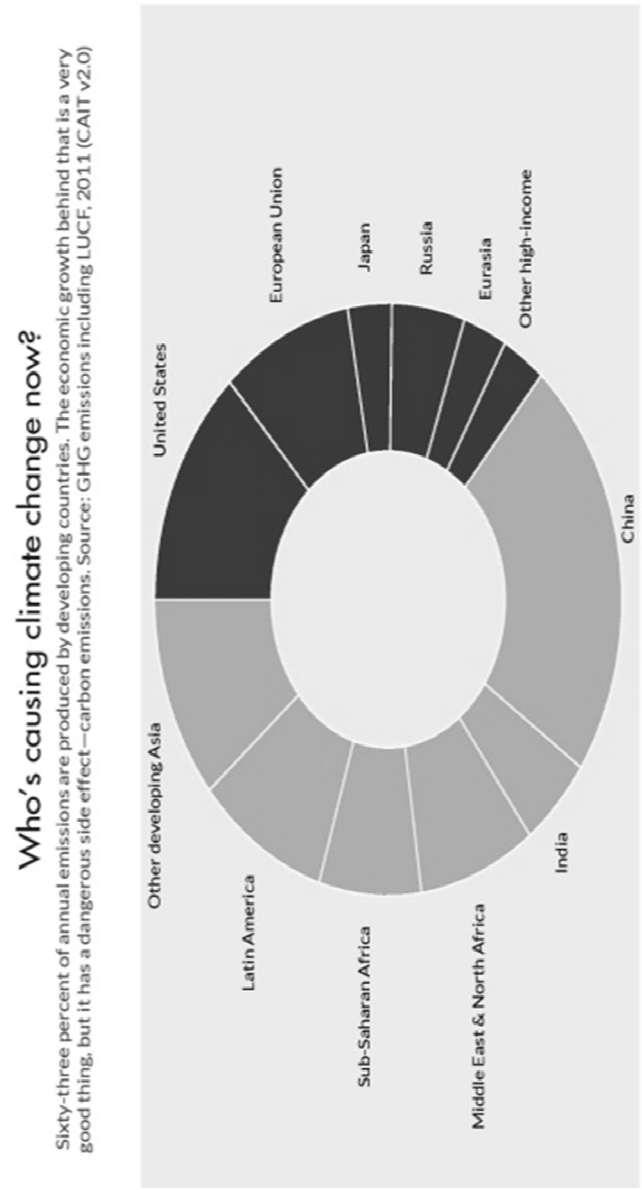


Source: Social cost of carbon by region, 2015 (RICE-2015).

Climate Forced Migration and developing countries

The scientific basis for climate change is increasingly well established. An enormous amount of time and energy have gone into determining the meteorological impacts of climate change in terms of rising sea levels, altered precipitation patterns and more frequent and fierce storms. Much less time, energy and resources, however, have been spent on empirical analysis of the impacts of climate change on human populations in the developing countries.

In 1990, the Intergovernmental Panel on Climate Change (IPCC) noted that the greatest single impact of climate change could be on human migration- with millions of people displaced by shoreline erosion, coastal flooding and agricultural disruption. In the mid-1990s, it was widely reported that up to 25 million people had been forced from their homes and off their land by a range of serious environmental pressures including pollution, land degradation, droughts and natural disasters. At the time it was declared that these "environmental refugees", as they were called, exceeded all documented refugees from war and political persecution put together (Myers 2005). Professor Myers' estimate of 200 million climate migrants by 2050 has become the accepted figure, cited in respected publications from the IPCC to the *Stern Review on the Economics of Climate Change* (Stern 2006). To put the number in perspective, it would mean that by 2050 *one in every 45 people* in the world would have been displaced by climate change.

By 2020, up to 250 million people in Africa could be exposed to greater risk of water stress. Over the course of this century, millions of people living in the catchment areas of the Himalayas and Andes faces increased risk of floods as glaciers retreat followed by drought and water scarcity as the once extensive glaciers on these mountain ranges disappear. Sea level rise will lead to inundation of coasts worldwide, with some small island states possibly facing complete inundation and people living with the constant threat of tropical cyclones now face increased severity and possibly increased frequency of these events with all the associated risks to life and livelihoods (UNFCCC 2007).

Put simply, climate change will cause population movements by making certain parts of the world much less viable places to live; and by causing food and water supplies to become more unreliable and increasing the frequency and severity of floods and storms. Recent reports from

Albert et al. suggested that climate change is rendering people homeless leading to massive climate forced migration.

> "…vegetated reef islands (1–5 ha in size) that have recently vanished and a further six islands experiencing severe shoreline recession. Shoreline recession at two sites has destroyed villages that have existed since at least 1935, leading to community relocations." (Albert et al. 2016).

Reconciling Development and Climate Change Adaptation in the developing countries

Thus, climate change is already impacting populations and ecosystems around the globe and threatens to set back development efforts for decades, profoundly affecting us all. Another defining challenge of the 21st century is to combine economic development- a rapid reduction in poverty and inequality with a rapid reduction in global greenhouse gas emissions. Meeting this challenge requires an understanding of how the size, structure and dynamics of human populations influence, and are influenced by, our changing climate.

According to the latest United Nations projection, world population could theoretically reach a high of 10.5 billion, or remain as low as 8.0 billion by 2050 (Guzmán et al. 2009).

Climate change is a global environmental problem and international studies have predominantly addressed climate change from an environmental policy perspective. However, emerging literature recognizes that climate change variability, extreme events, and structural changes have major impacts on economic, social, and human living conditions as well as on natural systems. This implies that key goals related to poverty reduction, water, food, energy, education, and health are critically influenced by climate change and that adaptation measures, therefore, should be tackled in the context of development policies.

The strong relationship between climate change and development is also recognized by IPCC in its Fourth Assessment report by stating that:

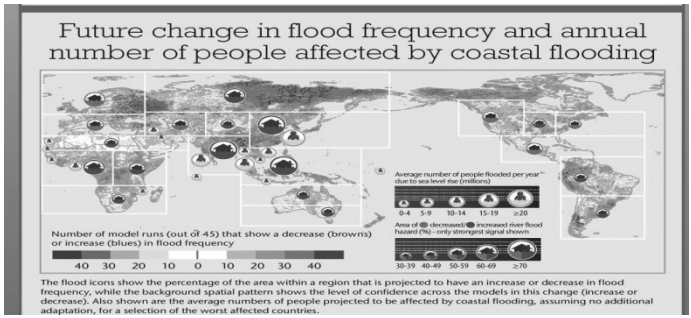
> "The distribution of impacts and vulnerabilities is still considered to be uneven, and low-latitude, less-developed areas are generally at greatest risk due to both higher sensitivity and lower adaptive capacity; but there is new evidence that vulnerability to climate change is also highly variable within countries, including developed countries" (IPCC 2007, 781).

The issues of climate change, growth, and poverty reduction are inextricably intertwined. Failure to manage climate change will undermine development and poverty reduction; failure to promote development and poverty reduction will further exacerbate climate change. A new energy-industrial revolution is needed. Realizing this transformation will require both leadership and collaboration. It now looks as if that leadership will have to come from the emerging-market countries and the developing world. But the rich cannot retreat from their responsibility to help with both resources and technologies and to take strong action to reduce their emissions. It is time to break out of the old "cash for cuts" and zero-sum approaches that have driven earlier discussions and models of international negotiations on climate change (Mattoo & Subramanian 2013). In many cases, climate change adaptation can go hand in hand with other development activities in such a way that the activities jointly support the same goals (Halsnæs & Trærup 2009).

Developing Countries and Extreme Weather Patterns

In developing countries, climate change is already affecting economic growth, health indicators, water availability, food production and the fragile ecosystems. On an annual basis over the past decade, developing countries have absorbed US$ 35 billion a year in damages from natural disasters. On a per capita Gross Domestic Product (GDP) basis, this is 20 times the cost in the developed world (Freeman 2001).

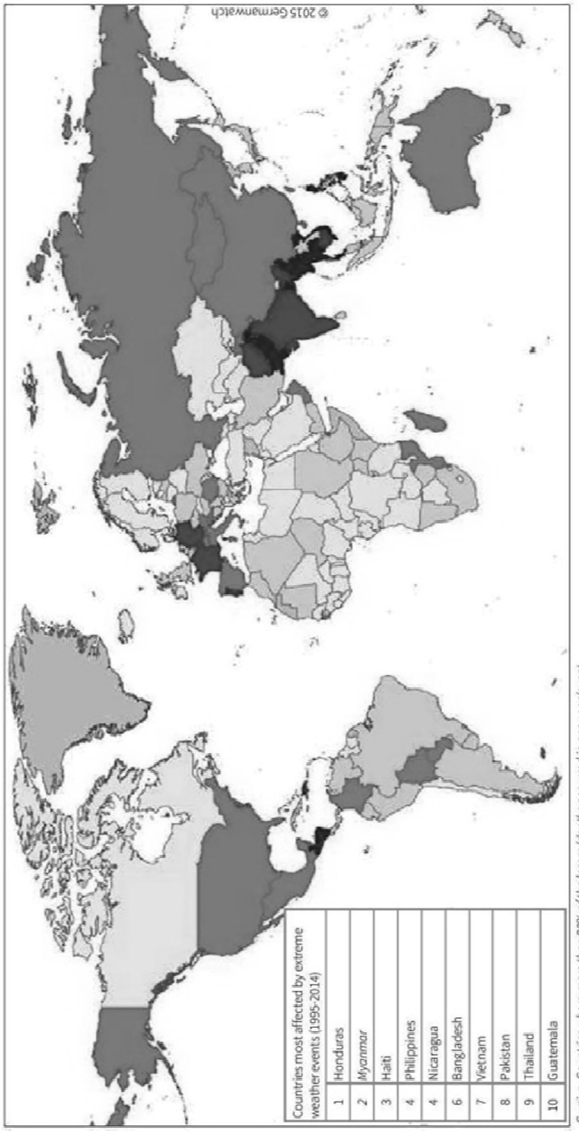
The Intergovernmental Panel on Climate Change (IPCC) concluded in 2007 that a sea-level rise resulting from a global temperature increase of 4 degrees Celsius would completely submerge low-lying island states like Tuvalu, Kiribati, and the Maldives (see figure below). For the developing countries in Africa and Asia, climate change will result in flooding of low-lying coastal areas, increased water scarcity, the decline in agricultural yields and fisheries resources, and loss of biological resources. The IPCC has predicted that yields from rain-fed agriculture in Africa could be reduced by as much as 50% by 2020. Water shortages and the shrinking of land suitable for agriculture would cause other social and political disruptions, including forced migration and conflict.



Sources: Met Office, Govt. of U.K, 2014.

The German Watch Climate Risk Index, which ranks the countries according to their extreme weather risks, shows that all countries in the top ten of this index are developing countries, led by Honduras, Myanmar and Haiti (see figure below). 95% of fatalities from natural disasters in the last 25 years occurred in developing countries. Furthermore, indices characterizing the expected range of future changes of climate like the Climate Change Index (Baettig et al. 2007) clearly show that in many developing countries these changes will be most pronounced. Taking into consideration that already today the climate conditions in many of these countries are on the edge of allowing a sustainable livelihood to the people, only small changes can put this at risk. Developing countries do not have a history of large emissions of greenhouse gases and thus have not contributed significantly to the causes of climate change. So it is the responsibility of the industrialized countries, which have caused the problem, to support the people in the developing countries.

Developing countries are thus vulnerable to extremes of climatic variability and climate change is likely to increase the frequency and magnitude of extreme weather events and disasters. Extreme climatic events create a spiral of debt burden on developing countries. Increased capacity to manage extreme weather events can reduce the magnitude of economic, social and human damage and eventually, investments, in terms of borrowing money from the lending agencies. Vulnerability to extreme weather events, disaster management, and adaptation must be part of long-term sustainable development planning in developing countries.

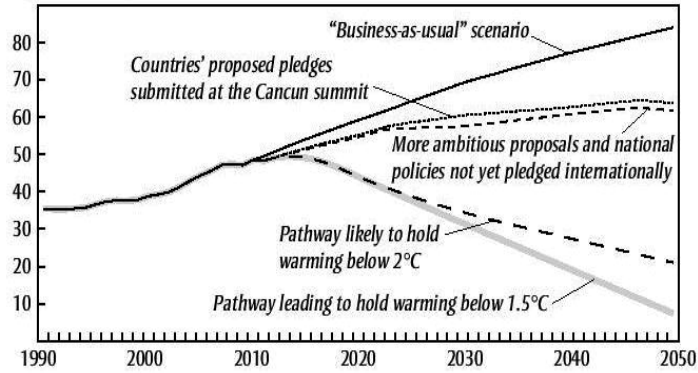


Sources: Germanwatch, 2015.

The Way Forward

International negotiations on climate change have been dogged by mutual recriminations between rich and poor countries, constricted by the zero-sum arithmetic of a shrinking global carbon budget, and overtaken by shifts in economic and hence bargaining power between industrialized and developing countries (Mattoo & Subramanian 2013). The four most recent summits held under the UN Framework Convention on Climate Change (UNFCCC) - Copenhagen in 2009, Cancun in 2010, Durban in 2011 and Paris in 2015 - have come and gone. They have offered only a thin reed of hope based on nothing more than promises to make more meaningful promises later, rather than on concrete commitments to act now.

The big problem with the pledges made by the major countries to cut emissions is that they are inadequate compared to what the scientific community says is necessary to keep climate change to manageable levels (see figure below).



Pledges to Reduce Emissions Are Woefully Inadequate: Projected GHG Emissions under Different Scenarios

However, to delay acting on climate change is to run great risks of fundamentally rewriting the relationship between human beings and the planet. The risks of inaction, in the lifetime of children born today, include the potential movement of hundreds of millions of people - possibly billions - with devastating effects on livelihoods and living standards across the world. The only path that is sustainable is the medium-term path of growth and poverty reduction (Mattoo & Subramanian 2013).That

realization has begun in Cancun and Durban, with the ideas of "equitable access to sustainable development" and the increasing commitment of China, India, and others to new technologies. It is the emerging and developing nations that are undergoing economic growth and thus high carbon emission, and these countries are also the ones hit earliest and hardest by climate change- although we are all at great risk. It is time to accelerate action and to do that we must look to the developing world to chart a path and to the rich world to both act strongly in support and share leadership through its own actions and examples (Mattoo & Subramanian 2013).

Addressing climate change in developing countries poses a fundamentally different challenge. This is best expressed by Coulier (2007) who argues:

> *"The countries at the bottom coexist with the twenty-first century, but their reality is the fourteenth century: civil war, plague, ignorance".*

For most, emission reduction is not a viable option in the near term. With income levels far below those of developed countries - and per capita emissions on an average, just one-sixth those of the industrialized world - developing countries will continue to increase their emissions as they strive for economic growth and a better quality of life. Development is essential to reduce poverty and inequality but, under the present models, development will exacerbate global climate change (GCC). Countries currently considered 'developed' account for the bulk of greenhouse gas emissions to date, and, as countries 'develop', their per capita contributions increase. As a result, development itself has become a threat. This consequence of current development models must be addressed urgently and effectively in a way that will benefit the poor and not block their path to social and economic advancement or to environmental justice. Indeed, combining a rapid reduction in poverty and inequality alongside a rapid reduction in the global emissions of greenhouse gases will be the defining challenge for the 21st century (Guzmán et al. 2009).

One of the most contentious issues in the debate over global climate change is the perceived divide between the interests and obligations of developed and developing countries. Equity demands that developed countries- the source of most past and current emissions of greenhouse gases- act first to reduce emissions. This principle is embedded in the *1992 United Nations Framework Convention on Climate Change* and in the *1997 Kyoto Protocol*, which sets binding emission targets for developed countries only.

Just as equity demands that developed countries act first, the physical workings of our planet demand that in time developing countries limit and, ultimately, reduce their emissions as well. The search for consensus on an equitable sharing of responsibility must begin with a fair accounting of how nations are contributing to this common effort. The cost of climate change will be borne by all. We live under the same sky and share the same earth. Climate change is a responsibility of all earthlings.

The Book, a product of the proceedings of the International Seminar on "Climate Change: Impact on Developing Countries" held from 15th-17th October 2015, attempts to understand and ascertain the potential impact of climate change on the economy and polity of the developing countries. The chapter by Leon Monroe Miller "An Eye of the Storm Perspective on Climate Change" argues that culture has always been a means by which humanity has been able to organize human relations. It stresses that Khasi Culture is a model of how to resolve the techno-economic and self-determination dichotomy because of its ability to integrate three key concepts (Eco leadership, the greening of democratic principle and critical Approach to Peace Research). Fazil Khan in his article "Climate Refugees and Institutional Responses to their Protection" evaluates the alarming number of displacements caused by environment and how they are tackled by the international community. He also rues that the lack of a proper mechanism to deal with mass movements caused by climate change is leading to an uncertain future for their survival. The fourth chapter on "Climate Change as a Non-Traditional Security Threat: A Case Study of Pakistan" by Anjali Devi analyses the impact of climate change in Pakistan from a non-traditional security perspective on the society and economy of the state.

Narottam Gaan in his article "Security, Risk and Securitisation of Climate Change" addresses the question of Climate Change Security by identifying the distinct logic of speech act that turns issues into questions of risk politics. The sixth chapter examines the various casual factors of climate change and its adverse impact on human lives. An attempt is also made to analyze how these adverse effects can be addressed. The seventh chapter by Saurabh Thakur addresses the security concerns emanating from climate change. Smriti Sabbarwal in her article "Climate Change and Role of Non-State Actors: The Case of the Indigenous People" explains how the non-state actors, through their advocacy and lobbying activities have been able to make indigenous people important stakeholders in climate change negotiations. The paper establishes that non-state actors have indeed become an important part of the climate change discourse. By

giving voice to the hitherto unheard indigenous people at the international climate change negotiations, non-state actors have added vigor and legitimacy to their work.

The next chapter by Pavan Kumar identifies the threats to national security from climate change. The paper also tries to evaluate the policies and preparedness that India has to tackle such situation at domestic and international level. Alemu Abota Adare, in his article "Climate Change Impacts on African Agriculture" examines the major impacts of climate change in Africa. He argues that the lack of extensive adaptation to the effects of climate change on agriculture is exacerbating Africa's deepening food crisis, narrowing channels of food access and slowing efforts to expand food production.

The eleventh chapter by S.M. Feroze et al (2015) judiciously examine the extreme weather pattern in Meghalaya in recent years. The paper revealed that the productivity of rice, ginger, potato and pineapple in Meghalaya was greatly affected during a period of low rainfall or droughts in the State. Mohammad Sharif in his article "Climate Change Impact on Stream flows at Bhakra" envisages that changes in the climate would create an attention in the stream flow patterns in the Setluj River basin, which in turn is likely to affect future water availability at Bhakra. The thirteenth chapter on "Impact of Climate Change on Rural livelihood in Meghalaya" argues that the impact of climate change will increase the challenge of ongoing poverty alleviation efforts in Meghalaya and in the country as a whole. The author also demonstrates the immediate need for an acknowledgment and improved understanding of vulnerabilities so that appropriate adaptation measures can be implemented.

Charles Reuben Lyngdoh in his article "Man and Environment: The Khasi Narrative" explores the complex relationship between culture and environment particularly among the Khasi traditional knowledge system. Saphimosha W. Blah in her work "Ethical Response to Climate Change with reference to the Khasis: Then and Now" seeks to understand the impact of climate change on the human and non-human world from a traditional perspective. She also stresses the need to inculcate a sense of urgency to remind the present generation to have an ethical duty to protect Mother Nature. The chapter on "The Contribution of Indigenous Knowledge of the Khasis in Ecosystem Management" highlights the indigenous knowledge practiced by the Khasis in maintaining ecosystem services and the potential of such knowledge to be incorporated into

modern environmental management practices and in combating climate change.

David Vanlalfakawma and his peers in their article titled "Bamboo Ecosystem: An untapped carbon trading resource" considers the socio-economic and cultural aspects of bamboo along with its environmental services, particularly the role played by bamboo in mitigating climate change through the inclusion of bamboo ecosystems. The chapter "Can REDD + and Ecotourism Co-exist? Integrating REDD+ and Ecotourism in Meghalaya: Potential and Implications" by Bennathaniel H. Diengdoh, Lasara M. Lyngdoh, and Tamanna Kalam, evaluates the potential for integrating REDD+ (Reducing Emission from Deforestation) and Eco-tourism in Meghalaya and elucidate possible ways in which the two could be merged, along with the possible benefits, disadvantages, and caveats. Dayohimi Rymbai, S.M. Feroze and Koijam Johny Singh in their article "Climate Change and Government initiatives in India: The status of Agricultural R&D investment" addresses three inter-related issues - the increase in the annual temperature, how to counteract the negative impact of climate change and how the farming community resorted to adaptation strategies coupled with Government intervention. The chapter "Conceptualizing "Green Cities": Making Indian cities environmentally sustainable" by Oindrila Datta Gupta primarily stressed on the relationship between cities and climate change in an urban century, the role of the Indian Government and local bodies to walk the green path.

The penultimate chapter on "A sustainable way to mitigate Ozone pollution by reducing biogenic VOCS through landscape management programme" by Pallavi Saxena investigates four different types of trees viz. *Dalbergia sissoo, Butea monosperma, Mangifera indica and Azadirachta indica*. The result suggested that *Mangifera indica and Azadirachta indica* were more suitable for planting as they can mitigate ozone pollution and can be used in greenbelt development programmes. The last chapter "The Effect of Fire and Grazing Interaction on carbon Sequestration in Grassland Ecosystem of Sohra (Cherrapunjee)" by U. Shilla and B. K. Tiwari deliberated on the adverse impact of fire and grazing on the surrounding environment.

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CHAPTER TWO

AN EYE OF THE STORM PERSPECTIVE CLIMATE CHANGE

LEON MONROE MILLER[1]

1. Introduction

Research on the consequences of climate change has drawn attention to the plight of indigenous people and the impact that environmental and climate change challenges have on their right to autonomy and self-determination. This has resulted in questioning the extent to which the right to autonomy can apply in a world increasingly interconnected by an interdependent techno-economic network. In addition, there is the prospect that an appropriate response to the world's environmental and climate change challenges will demand the concerted effort and cooperation of all global stakeholders for example, which would necessarily involve dialogue and cooperation with the very technologically advanced societies that are most responsible for creating the environmental challenge. This article emphasizes the normative value choices that both indigenous cultures and the global society have to make in their endeavor to reconcile the tension between technological determinism and self-determination, for instance, during a time when forces of the technological age will challenge the culture's right to autonomy and self-determination due to the extent that globalization creates interdependence and the necessity to adopt techno-economic strategies for development.

This article argues that culture has always been a manifestation of a social group's endeavor to organize social relations in such a way as to maximize the satisfaction the members of the group experience in their social relations, and in a way that promotes the flourishing of the culture. The eye of the storm is used as a metaphor to depict the imposing conditions that surround indigenous cultures due to powerful macro-level social, economic, and technological forces. That is to say, given the current environmental and climate change challenges, indigenous cultures

exist in the midst of the eye of a storm, with an approaching threat of devastation imposed upon their identity and their culture. The eye of the storm also represents a micro-level cultural value perspective that indigenous cultures have maintained which provides the potential for the culture to function in a way that enables it to experience a complementary connection between its culture and the reality imposed by the surrounding forces.

However, the current environmental and climate challenges are different in that they are not imposed by nature, but are man-made. This creates a unique challenge for indigenous cultures in that they have to discern not only how to appropriately respond to the forces of nature in a way that reinforces the complementary connection between the culture and the natural forces which surround them; but the culture must also determine how to respond effectively to the powerful industrial and technological forces imposed by the developed world which seem to be most responsible for the climate challenges, and thus are most responsible for creating the current reality. This article re-evaluates the micro-level challenge imposed on cultures in light of what seems to be macro-level technological, social-economic determinism and explains a theoretical model for progressive and sustainable development that allows a culture to rise above what seems to be determinism.

Because the critical perspective on peace research provides insight into the connection between globalization and self-determination, it is used as the basis for a theoretical stance that is in line with the natural rights or Human Rights of indigenous cultures. In other words, the critical perspective on peace research represents a viable perspective from which to analyze the dichotomy between the right to self-determination and techno-economic determinism because it represents an interdisciplinary intersection between disciplines that address global issues, for example, an intersection between international relations, peace research, the social sciences, and international legal philosophy (Patomäki 2001; Jutila et al. 2008). This article contributes to science and the research on climate change in that it points out the extent to which environmentalism, sustainability, and climate change have been under-researched by international relations scholars, that is, as a factor affecting future security, conflict, peace-building, and global stability.

The primary hypothesis is that there are two factors involved in the micro-level capability of an indigenous culture to adjust to the current macro-level environmental and climate change challenges, that is, a

culture's ability to exercise their right to autonomy and self-determination. The first is the fact that the phenomena that culture is adapting to represent an integration of internal and external processes that result from adjustments cultures necessarily have to make in response to the conditions imposed by the progression of civilization especially in terms of colonization, assumptions about Modernity, plus the industrial revolution and its techno-economic forces. The second factor is the proposition that knowledge needed for successfully responding to the challenge requires dialogue and cooperation with other segments of the global population which could necessarily impel the culture to consider making use of technological means for a successful social-economic adjustment.

The article proceeds with section two explaining the concept of culture, it argues - on the basis of a critical approach to peace research - that indigenous cultures, in particular, have continuously portrayed the capacity to respond to natural challenges in ways that maintain a complementary connection between culture and the forces of existence, that is, the significance of indigenous knowledge and/or the value of what is increasingly referred to as ethnoscience. Section three introduces the concept of technological determinism and analyses the challenge it imposes on indigenous cultures for example, especially in light of the current environmental and climate change challenges.

The final section proposes a theoretical model for a progressive response to contemporary environmental and climate change challenges that allows a culture to rise above what seems to be techno-economic determinism. A critical analysis of the democratic peace concept is used as the basis for proposing a theoretical strategy for establishing a complementary connection between contemporary environmental demands, that is, the necessity for the concerted and cooperative collaboration of all global stakeholders, and a culture's right to self-determination. In addition, the final section offers a Constructivist-based dialectic contribution to the global society's effort to effectively respond to the current challenges, and proposes that indigenous cultures are in a position to make a significant type of cultural-technological adjustment to the challenges imposed by climate change in a way that maintains the culture's integrity while, at the same time, provides a progressive model for sustainability. The final section concludes by explaining how the critical perspective on peace research contributes to international relations theory and practice by indicating how a multi-level approach to methodology increases the

capacity for addressing issues related to peace building, security, conflict and global stability.

2. Indigenous Cultures and a Complementary Connection with Existence

The late Talcott Parsons - regarded as one of the most influential thinkers of the 20th century especially in regards to both economics and sociology - defined culture as an organized and systematic strategy for structuring social relations so as to effectively manage the complicated processes involved in the interchange between its members and the environing system(s). That is to say, that a culture exists in a state of interpenetration and interchange with processes internal and external to its system, for example, the culture is embedded in some other more extensive system(s) (2007, 421). As a result, according to Parsons, a culture is subject to being influenced by phenomena that it did not constitute but is able to influence its system. Thus, culture can be challenged by the need to establish an effective response to forces that could otherwise threaten the flourishing of that culture. To withstand the forces that could diminish the vitality of the culture, the social group institutionalizes normative and structural systems that serve as functional strategies for maintaining *equilibrium,* that is, the endeavor to maintain a complementary integration between the culture and its environment.

> "Equilibrium is a fundamental reference point for analyzing the processes by which a system either comes to terms with the exigencies imposed by a changing environment, without essential change in its own structure, or fails to come to terms and undergoes other processes, such as structural change [and/or] dissolution as a boundary-maintaining system" (Parsons 2007, 423).

Parsons explains that given the variability of a system's relation to its environment the integrity of culture can only be maintained by means of culture engaging in the goal-orientated or goal-attainment behavior. The goal or intended outcome is to reduce the discrepancy between the constraints imposed by the environmental forces and the normative principles of culture, that is, the material and intrinsic needs of culture due to its value orientation and/or worldview (Parsons 2007, 426). In other words, an effective adaptation to the variability of external environmental constraints demands maintenance of the culture's social processes, its material and aesthetic artifacts or systems, and its boundaries, but in a way