

## **SOCIAL DIMENSION OF CLIMATE CHANGE ON TRIBAL SOCIETIES OF JHARKHAND**

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### **ABSTRACT**

Climate change is one of the most concerned areas of the modern world. Most of its study pertains to elaborate the physical characteristics and behaviors. However, it is to be noted that climate change is an ecological problem not a machinery problem and ecological problem can give birth to many social problems for human being. It is necessary to understand the social dimension climate change in order to advocate and develop future discourse. Tribal societies who live in marginal lands and whose livelihoods are highly dependent on natural resources are among the most vulnerable to climate change. Social vulnerabilities of climate change can affect health, education, family, gender, social conflicts, access to political power, income generating activities, migration, dignified access to food and employment. This paper tries to study the social vulnerabilities and their possible impacts on the vulnerable tribal societies of Jharkhand by studying various literatures. It also reviewed the status of indigenous peoples' concerns at different discussion and policy forum pertaining to climate change. This paper stressed on further studies need to understand the climate change and human system interaction and the adaptation strategies required to combat these adverse impacts.

**KEYWORDS:** Climate, Tribal, Indigenous, Societies, Vulnerability.

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### **INTRODUCTION**

The climate of the earth has always changed. Since the formation of Earth, its surface conditions have fluctuated. Past changes have etched on the landscape. They have influenced the evolution of all life forms and have become a subtext of our economic and social history (Garner 2011, p.3). Generally, climate is defined as the average weather for a specific location, region or the entire globe over an extended period of time (Critchfield 1983, p.3; Tebteba 2000). The landscape, plants and animals in it, are all determined to a large extent by climate acting over long intervals of time. Over geological time, climate has helped to shape mountains, build up the soil, determine the nature of the rivers, and build flood plains and deltas (Pittock 2009, p.1).

Previously, it was climate that changed humans but now, human being is changing the climate with high rate. The current climate change issue is brought by the massive dependence of human societies on fossil fuel such as coal, oil and natural gases causing excess emission of greenhouse gases (GHG). Greenhouse gases are responsible for maintaining earth's surface warm by absorbing infrared radiation but excess emission of GHG increases the earth's surface temperature and causing global warming (Tebteba 2008).

World Meteorological Organization (WMO) and United Nation Environmental Program (UNEP) were the first multilateral organizations tasked to address the issues of global warming and climate change. In 1988, the WMO and UNEP co-established the Intergovernmental Panel on Climate Change (IPCC), an ad hoc, open ended Intergovernmental mechanism composed of scientists from all over the world, tasked to provide most authoritative, scientific and technical voice on climate change and its assessment influence the negotiators at National and International level. The first assessment report (1990) of the IPCC which concluded that temperature has risen by 0.3-0.6C over the last century and humanity's emissions are adding to the atmosphere's natural complement of greenhouse gases (BBC news 2009), served as the basis for negotiation at UN Framework Convention on Climate Change (UNFCCC). UNFCCC is a multilateral environmental agreement adopted during the Earth summit (1992) held in Rio, Brazil to tackle the challenges of climate change (Tebteba 2008). In a political context, the UNFCCC defines climate change as a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. Major characteristics of climate change include a rise in average global temperature, ice cap melting, changes in precipitation, storm, and the increase in ocean temperature leading to sea level rise (Govt. Of India 2012).

## **SOCIAL DIMENSION OF CLIMATE CHANGE**

Climate change poses challenges to fundamental elements of our understanding of appropriate goals for social and economic policy, such as the connection of prosperity, growth, equity and sustainable development. Human-induced climate change is widely perceived as threatening the long-term resilience of societies and communities throughout the world. It also poses unprecedented challenges to systems of global governance responsible for both controlling the scale of the phenomenon and responding to its impacts (Mearns and Norton 2010).

Climate change almost always has a negative effect on people. First, it involves more and more-fierce weather related disasters. Second, since human systems are closely tied to established climate systems, climate change creates societal stress. This is especially true for the poor, who have fewer resources to help them adapt to change and who usually rely more directly on local ecosystems than their wealthier neighbors do. The poor adapt in ways that are usually unnoticed, uncoordinated, and unaided by national governments, development agencies, or international agencies (Christoplos et al. 2009).

Communities who live in marginal lands and whose livelihoods are highly dependent on natural resources are among the most vulnerable to climate change. Many indigenous and traditional peoples who have been pushed to the least fertile and most fragile lands as a consequence of historical, social, political and economic exclusion are among those who are at greatest risk. These people have long been exposed to many kinds of environmental changes and have developed strategies for coping with these phenomena. They have valuable knowledge about adapting to climate change, but the magnitude of future hazards may exceed their adaptive capacity, especially given their current conditions of marginalization (Macchi 2008).

IPCC in its Second Assessment Report (1995) concluded that the balance of evidence suggests "a discernible human influence" on the Earth's climate. This has been called the first definitive

statement that humans are responsible for climate change. IPCC Third Assessment Report (2001) finds "new and stronger evidence" that humanity's emissions of greenhouse gases are the main cause of the warming seen in the second half of the 20th Century (BBC news 2009). Fourth Assessment Report of IPCC (2007) mentioned that greenhouse-gas (GHG) emissions from human activity particularly from burning fossil fuels for energy are changing the Earth's climate (Rosenzweig et al. 2007, p.81).

Gautam and Sharma (2012) refer to the UN weather agency (World Meteorological Organization), climate change has accelerated in the past decade (2001 to 2010) and it was the warmest decade on record since records began in 1850. This period was marked by extreme levels of rain or snowfall, leading to significant flooding on all continents, while droughts affected parts of East Africa and North America. The global land and sea temperature estimated at 0.46 C above the long term average of 14 C.

Warner (2011) mentions that research made by United Nations High Commissioner for Refugees, Geneva has substantiated the fact that environmental change is one of a larger set of factors that affect human migration and displacement worldwide. Processes such as natural disasters and shifts in climate patterns which may bring glacial melt, sea level rise and desertification are and will increasingly affect migration and displacement. Some of the most vulnerable regions include areas like low-lying islands and deltas, coastal areas, areas dependent on glacial-fed water systems and areas subject to persistent drought. Field-based research suggests that most environmentally induced migrants and displaced people will move within their own countries. Some movements will resemble familiar migration and displacement patterns, but other movements will likely occur under emergency circumstances or complex humanitarian crises, particularly where climate change exacerbates natural hazards, such as cyclones, and communal violence and conflict.

The Stern Review (2006) examines the economics of this complex phenomenon, a detailed understanding of which is needed to underpin an effective global response; whereas others have focused their attention on its politics. Human Development Report (2007) made clear that there are glaring inequities in the distribution of responsibility for the causes of global warming and the distribution of its impacts among the nations and peoples of the world. Poor people in developing countries bear the brunt of its impacts while contributing very little to its causes (Salick and Byg 2010).

Boulding (1983) concludes that in the development of social impact assessment, which became a way to identifying interactions between new physical technologies and social system, there was little effort on the part of social scientists to understand the physical technologies in their own right. Author further mentioned that there has been no lack of research setting where environmental impacts are critical to local communities. However, social scientists rarely do research include physical scientists in their study team and if they try, funding agencies will become unresponsive. Study of climate change requires an interdisciplinary understanding that can bridge not only the gaps between the natural and social sciences but also the considerable differences among the individual social sciences disciplines themselves. As a result of these, human and social dimensions of climate change have been woefully neglected in the global debate at least, until recently (Salick and Byg 2010; Commission on Climate Change and Development 2009; Global Humanitarian Forum 2009; Roberts and Parks 2007; UNDP 2007).

## **STRUGGLE OF INDIGENOUS PEOPLE AGAINST CLIMATE CHANGE**

Negligence of human and social dimensions of climate change on Indigenous and other traditional peoples have caused serious concern as they are rarely considered in academic, policy and public discourses on climate change, despite the fact that they will be greatly impacted by impending changes. Their livelihoods depend on natural resources that are directly affected by climate change, and they often inhabit economically and politically marginal areas in diverse, but fragile ecosystems. Negligence of indigenous peoples in the study of climate change discourse can be seen as, the IPCC second assessment report (1995) summary of climate change impacts makes only scarce mention of indigenous peoples, and then only in polar regions and merely as helpless victims of changes beyond their control. The IPCC third assessment report (2001) on mitigation of climate change does not consider the role of indigenous peoples (Salick and Byg 2010).

However, Fourth Assessment Report of IPCC published in early 2007 mentioned that communities who live in marginal lands and whose livelihoods are highly dependent on natural resources are among the most vulnerable to climate change. Many indigenous and traditional peoples who have been pushed to the least fertile and most fragile lands as a consequence of historical, social, political and economic exclusion are among those who are at greatest risk (Macchi 2008).

Viewing climate change through a social development lens leads us, at the outset, to put the agenda in terms of social justice, at all levels from the global to the local. The causes and consequences of climate change are intertwined deeply with global patterns of inequality. Climate change acts as a multiplier of existing vulnerabilities in a warming and transforming the world (Salick and Byg 2010; UNDP 2007).

As mentioned in the chapter 7 of the IPCC fourth assessment report of working group II that IPCC (2007) understand the social dimensions of climate change through the industry, settlement and society. These systems are diverse and dynamic, expressed at the individual level through livelihoods. They tend to revolve around such aims of humanity as survival, security, well-being, equity and progress; and in these regards weather and climate are often of secondary importance as sources of benefits or stresses. It mentioned that issues like access to financial resources, institutional capacities and potentials for conflict and such stresses as rapid urbanization, disease and terrorism plays huge role in society. It is in its complex interactions with these kinds of social contexts that climate change can make a difference, easing or aggravating multiple stresses and in some cases potentially pushing a multi stressed human system across a threshold of sustainability (Wilbanks et al. 2007, 2003).

IPCC (2007) further explains that climate change affects human society in three principal ways. First, it provides a context for climate-sensitive human activities ranging from agriculture to tourism. For instance, rivers fed by rainfall enable irrigation and transportation and can enrich or damage landscapes. Second, climate affects the cost of maintaining climate-controlled internal environments for human life and activity; clearly, higher temperatures increase the costs of cooling and reduce costs of heating. Third, climate interacts with other types of stresses on human systems, in some cases reducing stress but in other cases exacerbating them. For example, drought can contribute to rural-urban migration, which, combined with population growth,

increases stress on urban infrastructures and socioeconomic conditions (Wilbanks et al. 2007, p.361).

India is also experiencing the impacts of climate change. The increasing temperature and rainfall pattern over the Indian region is expected to adversely affect the human population, infrastructure and the marine ecosystem associated with its long coastline. It might also lead to high instances of water borne diseases including malaria, loss of soil fertility, decline in agricultural productivity and so on.

### **IMPACT OF CLIMATE CHANGE ON TRIBAL SOCIETIES OF JHARKHAND**

Jharkhand, the habitat of 32 tribal communities is seriously vulnerable to the climate change. As mentioned in the disaster plan of Government of Jharkhand, 'A draft on Jharkhand State Disaster Management Plan 2011', Jharkhand is vulnerable to various natural & human induced disasters which cannot be overlooked as over the years these have been inflicting heavy damage and loss on the state economy. Almost all the 24 districts are affected by different kind of Disasters. Drought is experienced by all the 24 districts. Jamshedpur, Ranchi and Saraikela are frequently experiencing flash flood. 9 districts are having a regular incidence of forest fire and lighting. Severe heat wave conditions are noticed in the years 2004, 2005 & 2010. Highest maximum and minimum temperatures were reported in the recent years in Jharkhand. The state has faced a deficit of rainfall in the year 2010 by 47%, 10 lakh hectares of the area could not have a plantation of paddy. Statistics for Drought Years for Jharkhand state during 1875 – 2010 (Based on monsoon rainfall) has shown an increased frequency of Drought years in Jharkhand in the last decade. The last decade has shown the increasing severity of Drought situation in Jharkhand. The total food production has decreased in the year 2010 by half. Recurring drought has started showing impact on Food crisis, ground water availability and Human health (Govt. Of Jharkhand n.d., p.20)

Ramesh Saran (n.d.) mentioned in the paper 'Drought in Jharkhand: A recurring and poorly managed tragedy' that the drought has become a recurrent phenomenon in Jharkhand. It affects the livelihoods of the majority of its people, particularly tribal living in rural areas. The worst-affected are primitive tribal groups which historically are late entrants to settle cultivate and own land on hilly slopes with very low fertility. The economy of the tribal societies is mainly based upon agriculture and forestry. Due to unauthorized alienation of tribal land and deprivation from forest has seriously affected the tribal economy. In certain area, it has resulted in migration of tribal from their traditional habitat in the urban areas and other states to earn their livelihood (Verma 1995).

When the rains fail, agriculture is usually the first to be affected because of its critical dependence on stored soil water. First, soil water in the uplands starts to deplete. Then shortage of water starts to affect people collectively and individually. Frequent droughts have weakened the capacity of the people to bear the shock. He further stressed that the problem of drought has been aggravated by large-scale open-cast mining; deforestation; irregular and non-scientific mining and quarrying; inefficient management of resources, particularly water resources; and the decline in traditional systems of water management. In addition to it, seasonal food insecurity aggravates the vulnerability of climate change on tribal societies. National Sample Survey Organization (NSSO) (55th round) data reveal that 10.46% of all households in Jharkhand face

seasonal food insecurity. The incidence of food insecurity is higher among tribal families. Assured food supplies exist for only three to four months of the year, after the harvest in late October-early November. The starvation period begins by midsummer (June) and in many cases, continues till the end of October. Tribal societies are worst-affected as they are generally resource less and depend on migratory employment for an income. When earning members of a family are unable to migrate due to ill health or other reasons, the entire family faces starvation. Decrease in employment opportunities leads to a reduction in wages. People resort to the suffering by sale of assets, cattle and fuel wood makes them more resource less and vulnerable. They increase the frequency of trips to the forests for sustenance (Saran n.d.).

During the crisis situation, social and economic ties between different groups of peoples may be beneficial. Groups hit by adverse climate conditions can acquire resources from other groups not experiencing the same problems. Thus, social interaction can have positive or negative effects (Salick and Byg 2010, p.21).

If climate change has a huge impact on tribal community as a whole then women are the most disproportionately affected the change. Gender discrimination combined with current marginalized situations increase the probabilities of women casualties and victims during disaster and emergency situations. In some areas of Southeast Asia, women are not forewarned because early warnings are placed where women rarely go. Women and girls in some communities are not taught to swim. These lessen their chances of survival during the occurrence of disaster. Women also risk their lives because of their tendency to stay behind to rescue their children and the elders. Food insecurities may force women to eat last and eat least even if they are pregnant or nursing mother making them susceptible to illness and diseases (Tebteba 2008).

## **RESEARCH PRIORITIES**

IPCC (2007) identified key issues which require serious research in order to understand the social dimension of climate change. It mentioned that further research is required on the understanding of uncertainties about climate-change impacts at a relatively fine-grained geographic and sectoral scale, both harmful and beneficial, which undermines efforts to assess potential benefits from investments in adaptation. It stressed on further research to improve understanding of indirect second and third order impacts: i.e., the effects of temperature or precipitation change, storm behavior change and sea-level rise, through interrelationships among human systems. It also identified that relationships between specific effects in one location and the well-being of other locations, through linkages in inflows/outflows and inter-regional trade and migration flows should be researched to understand the social dimension of climate change. It also stressed on improving understanding of uncertainties about potentials, costs and limits of adaptation in keeping stressful impacts within acceptable limits, especially in developing countries and regions and uncertainties about possible trends in society, economic and technological change with or without climate change. These social dimension issues of climate change are important for understanding the complex vulnerabilities, capacity of victims, decision makers, adaptation and mitigation. (Wilbanks et al. 2007, p.385).

## CONCLUSION

Vulnerabilities of climate change in Jharkhand can affect health, education, family, gender, social conflicts, access to political power, income generating activities, migration, dignified access to food and employment. Thus the Vulnerability in the state of Jharkhand is about Omni dimension and perpetually derived upon the consistent inaccessibility to resources, inappropriate ecological setting, unavailability of transport, hollow market opportunities, mismanagement of common/natural property resources, resource intensive family size and composition, conflicting ethnicity, gender injustice, fragment social network, education, and political unassertiveness (Govt. Of Jharkhand 2011).

The vulnerability and adaptation aspects in climate change have not been given the focus required (IPCC 2007, p.385). A preliminary analysis of climate change impact in India has been made. However, further studies need to be carried out to exactly understand the climate change and human system interaction and the adaptation strategies required to combat these adverse impacts.

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