



## **Environmental Changes, Water and Food Scarcity and Displacement of Population**

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### **Abstract**

*No doubt environmental changes give an opportunity to reshape the current development model but the extreme and long turn impacts of environmental changes on resources threaten human survival. Most affected areas are developing countries and poor people because either they lack or no technology to cop with such devastating effects. Climate change will increase biodiversity loss, affecting both individual species and their ecosystems. The long-term consequences of global warming resulted into desertification and depletion of resources, especially shortages of water and fertile land. The depletion of such resources, generate poverty and resulted into displacement of population from one place to another. Food and Water are important issues which are affected by climate change because these are interwoven with so many sustainable development issues, such as health, food security, and poverty. The gravest effects of climate change may be those on human migration as millions of people are displaced due to shortage of water and food. This paper tries to link the issues of environmental changes, water and food scarcity and induced migration of people.*

**Keywords:** *Climate change, Scarcity, Migration*

## **Introduction**

Earth's environment is changing, that is widely accepted by most of the scientific communities of the world but the changes are at such a rate that has exceeded most scientific forecasts. Such environment change posse's greatest threats to human survival as these changes are adversely affecting the crops and fresh water sources. The long-term consequences of global warming resulted into desertification and depletion of resources, especially shortages of water and fertile land. The shortage or depletion of resources, generate poverty and often incite conflicts, political crises and, in turn, resulted into population displacement. Both gradual changes and extreme weather events can heighten pressures on land, food, and water resources. In turn, these pressures can contribute to existing problems, including food insecurity, malnutrition, poverty, the spread of disease, rapid urbanization, political instability and displacement of population. Glacial melting, shrinking ice cover, and thawing permafrost can contribute to the risk of flooding, mudslides, and avalanches in the near term, but also to more permanent loss of agricultural land and means of livelihood. In the long term, as glaciers continue to shrink, they will no longer release sufficient water to support the growing populations of the regions that depend on this runoff for agriculture and drinking purpose. Water shortages can hamper crop production in irrigated lands and hurt traditional forms of livelihoods, such as small-scale fishing and aquaculture. As per one estimate of the Intergovernmental Panel on Climate Change (IPCC) by 2080, 1.1 to 3.2 billion people will experience water scarcity, 200 to 600 million hunger. Changes in rainfall patterns can make some areas drier and more prone to drought, while subjecting other areas to increased precipitation and flooding. Both situations can destroy crops and make it even more difficult for people, especially those dependent on rain-fed agriculture, to have access to safe and sufficient amounts of food and water. More than two billion people worldwide live in regions facing water scarcity. 1.1 billion Of them without access to an improved drinking water source. The UN estimates that by 2025, forty-eight nations, with combined population of 2.8 billion, will face freshwater "stress" or "scarcity". Due to environmental changes, the hydrological cycle is expected to accelerate as rising temperatures increase the rate of evaporation from land and sea, leading to increased variability in rainfall and runoff and more frequent droughts and floods are affecting the agriculture and water resources, that resulted into movement of population from one place to another. The IPCC (Intergovernmental Panel on

Climate Change) initially warned: “the gravest effects of climate change may be those on human migration as millions are displaced by shoreline erosion, coastal flooding and severe drought” (IPCC, 1990:20).

According to UNHCR (United Nations High Commissioner for Refugees) the consequences of environmental change are enormous and one of the most important consequences of environmental change is human migration or displacement of people from one place to another. Such human migration, in the context of environmental change has renewed the attention of researchers and policy makers in recent years. Number of scholars has expressed that ‘among the many potential impacts of climate change for human societies is the possibility of changes in human migration patterns’ (Glantz and Ausubel, 1988; D’oos, 1994; Hugo, 1996; Mackellar et al., 1998; Magadza, 2000; Meze-Hausken, 2000; Hay and Beniston, 2001; Myers, 2002; Barnett, 2003). The relationship between climate change and migration is not linear one, rather more complex and unpredictable and is influenced by large social, economic, and political forces that shape how societies interact with the environment. Migration is a multi-causal phenomenon in which a range of factors are inter-related. Since the 1970s, a number of terms have emerged that attempt to describe the relationship between migration and climate change. The most widely used, but highly contested, is "environmental refugee." Variations include "climate refugee," "climate change refugee," "disaster refugee," "eco-refugee," and "environmental refugee-to-be (ERTB)." UN agencies and IOM have instead adopted terms like "environmental migrant," "environmentally displaced person (EDP)," and "environmentally motivated migrant" to describe those who, whether forced or voluntary, experience environmentally induced migration. IOM (International Organization for Migration) also suggests a continuum between those who are suddenly displaced by extreme weather events (i.e., forced) to those who preemptively migrate due to deteriorating environmental conditions (i.e., voluntary). There is broad agreement that internal migration often intensifies following major droughts or famines (see Leighton Chapter 6 in this volume; Shipton, 1990; Findley, 1994; Pederson, 1995; Ezra, 2001; Perch-Nielsen, 2004). For example, 88 per cent of migrant agricultural communities in Bangladesh were found to remain within two miles of their previous residence following the erosion of land and loss of homes due to flooding (Zaman, 1989).



Climate change does not impact all people and all parts of the world in the same way. While floods ravage some areas, deserts are spreading in others. The extreme weather events can hit any part of the world, but their impact is most acute in least developed countries, where the poor often live in marginal lands subject to flooding or mudslides, and, therefore, are more prone to being displaced. So these environmental changes vary, in term of their intensity and distribution over the space of the earth. Climate change is generally expected to hit LDCs harder than DCs (IPCC, 2001, 2007b). Key concerns in LDCs include serious threats to food security and health, considerable economic decline, inundation of coastal areas, and degradation of land and freshwater resources. The 2007 IPCC report estimates that a global temperature rise of 2 to 3 degrees Celsius (3.6 to 5.4 degrees Fahrenheit) could contribute to lower crop yields in Africa, the Middle East, and Southern Asia by 30 to 40 percent. The same report also finds that yields from rain-fed agriculture could fall by up to 50 percent by 2020. In the last three decades, following one of the worst droughts in the region from 1982 to 1984, West African households have increasingly turned to temporary migration as a way to cope with more frequent periods of drought and the pressures that a growing population place on the limited availability of agricultural land. Decreases in rainfall have already reduced the amount of land suitable for agriculture, the length of the growing season, and crop yields, according to the 2007 IPCC report. The 2009 report *In Search of Shelter* finds that 1 meter (about 3.3 feet) rise in the sea level could affect nearly 24 million people in the densely populated Ganges, Mekong, and Nile river deltas, and significantly reduce land available for intensive agriculture. Since much of the population depends on rain-fed agriculture, crop yields are expected to fall by more than 50 percent in some of the poorest African countries as early as 2020. In Africa alone, 75 to 250 million people might be exposed to increased water stress due to climate change by 2020 (World Water Assessment Program me, 2009). South Asia, on the other hand, is predicted to experience higher-intensity precipitation within an even stronger monsoon season. While annual flooding is already embedded in the cultural and livelihood traditions of many South Asians, climate change is expected to worsen these conditions. In his briefing on global warming, scientist John Houghton estimates that India and Bangladesh will experience up to 20 percent more rainfall by 2050. The land degradation and scarcity have been growing in Bangladesh (East Pakistan before 1971) since the 1950s. Poor and dependent on agriculture, many Bangladeshis became less able

to make a living. Frequent storms, floods, and droughts made things worse. Largely due to these forces, 12 to 17 million Bangladeshis moved to India, and half a million moved internally (e.g., Homer-Dixon, 1999; Lee, 2001; Swain, 1996). Already, over 500,000 Bangladeshis are displaced by floods every year, and more are likely to face the devastating loss of home, incomes, and life from cyclones and floods. The Himalayan glaciers are among those in retreat, a situation that will ultimately affect the river flows that support the quarter of the world's population that lives in Pakistan, India, China, and Southeast Asia. Environmental degradation is also increasingly common in those areas, such as in West Africa and Haiti, where depleted agricultural land can no longer produce crops sustainably and is abandoned. Not only developing but developed countries are also affected by climate changes and experience migration due to failure of crops. Below-average rainfall, accompanied by the Great Depression, resulted in the widespread failure of small farms and the migration of about 300,000 people from "Okies" to California.

However, severe environmental damage, whether natural or manmade, can leave populations with little recourse and influence the decision to move either temporarily or permanently. In most of the cases if environmental changes are slow and less effective the decision to move is generally temporary. But during extreme weather events, sudden and collective displacement is a common. The temporary migration is only safety strategy. The 2000 floods in Mozambique, for example, displaced up to a million people; most returned to their homes within a few months.

No doubt environmental changes are an opportunity to reshape the current development model but the effects of such changes are lives threatening. So there is urgent need to tackle the situation of scarcity of food and water especially in developing countries. The possible solution is sustainable water management and the sustainable provision of adequate drinking water to the affected area and affected poor people. Water policy and institutional reform is urged, in order to promote water use efficiency, protect freshwater ecosystems and achieve water, energy and food security. The focus must be on getting "more crop per drop," by adopting farming techniques that harvest more rainfall, conserve soil moisture, reduce waste in irrigation and – in some cases – by making changes in dietary choices to favour crops and foods that use less water. The highest priority must be given to the 'bottom billion' people. Proper education and public awareness on water and food scarcity, along with latest techniques to cope with natural disasters is must, to

reduce the impact of environmental changes. More over to tackle climate changes there is need to build resilience, adaptiveness, and adaptability, learning from past mistakes. Due to the inherent uncertainty of future environmental change projections, water and food management needs to be flexible and able to cope with possible future dangers.

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