ENVIRONMENT AND HEALTH

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First Edition: February 2019

ISBN: 978-93-88398-50-3

Price: ₹ 800/-

Publisher

SHANLAX PUBLICATIONS

61, 66 T.P.K. Main Road
Vasantha Nagar
Madurai – 625003
Tamil Nadu, India

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ENVIRONMENTAL REFUGEES –A FORCED FORM OF MIGRATION

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Introduction

A striking phenomenon of climate change is climate-induced displacement. Every year, around the globe millions of people are being forced to move or flee due to natural hazards in their environments and many of these risks relate to extreme weather situations. Climate change is making matters worse by increasing the intensity and frequency of important drivers of displacement such as droughts, floods and other extreme weather events.

In a changing world, the traditional definition and understanding of the concepts of 'refugee' and 'protection' may both need to change to accommodate new situations and circumstances that arise. A fundamental concern is that while refugees from persecution and war are protected by international law, it is unclear what conventions and policies protect people displaced by extreme weather events. This is the problem that the international community has to address urgently. "This new category of 'refugee' needs to find a place in international agreements. We need to better anticipate support requirements, similar to those of people fleeing other unviable situations."

The concept of environmental refugees was introduced by Lester Brown of the World watch Institute in the 1970s. It entered into common usage after a 1985 United Nations Environment Programme policy paper entitled 'Environmental Refugees'. The International Association for the Study of Forced Migration (IASFM) describes forced migration as "a general term that refers to the movements of refugees and internally displaced people as well as people displaced by natural or environmental disasters, chemical or nuclear disasters, famine, or development projects". We define here a forced environmental migrant as a person who "has" to leave his/her place of normal residence because of an environmental stressor as opposed to an environmentally motivated migrant who is a person who "may" decide to move because of an environmental stressor.

The definition for the term refugee is provided under Article 1A of the 1951 Convention relating to the Status of Refugees amended by the 1967 Protocol relating to the Status of Refugees (hereafter referred to as the Refugee Convention) which states that a refugee is any person who owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, unwilling to avail himself of the protection of that country, or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it.

Experts at last year's American Association for the Advancement of Science (AAAS) estimated their numbers would reach 50 million by 2020, due to factors such as agricultural disruption, deforestation, coastal flooding, shoreline eroston, industrial accidents and pollution. Others say the figure will triple to 150 million by 2050.

It is believed that the population of environmentally displaced has already far outstripped the number of political refugees worldwide, which, according to the United Nations High Commissioner on Refugees (UNHCR), is currently at around 10.2 million.

In 1999 the International Red Cross reported some 25 million people displaced by environmental disasters. In 2009 the UNHCR estimated that number to be 36 million, 20 million of whom were listed as victims of climate change-related issues.

More accurate statistics are hard to come by. Because the term "environmental refugee" has not been officially recognized, many countries have not bothered to count them, especially if the population is internally displaced. Other countries consider them migrants, and often undocumented immigrants, and therefore beyond the protection granted refugees.

Another factor obscuring the true scope of the population is the fact that their numbers can rise quite suddenly – such as after the Fukushima nuclear disaster last year, or Haiti's 2010 earthquake, which in a matter of hours displaced more than 3 million people.

- On average, 27 million people are displaced by climate- and weather- related disasters each year – roughly equivalent to the population of Ghana and more than Australia's entire population. In 2012, however, 31.7 million people were displaced by weather- and climate- related disasters. That's

one person every second, and roughly three times the number of refugees fleeing war or persecution.

- In the last six years, 2% of the world's population has been displaced by climate- and weather- related disasters, totalling a staggering 119.4 million people – a number slightly larger than the entire population of Mexico.
- 2013 broke the record for people displaced by storms, with 14.2 million people forced from their homes.
- In the ten countries affected by both conflict- and disaster-induced displacement in 2013, natural hazards displaced five times more people than armed conflict.
- According to a random survey of over 30,000 people in Pakistan, Nepal, India, Bangladesh, China, Vietnam and Indonesia, 68% of people believe that their community is at medium-to-high risk of extreme weather events and 87% believe that changes in weather and the availability of food and water will significantly impact their lives.

In 2014, the IPCC's Fifth Assessment Report section on impacts, adaptation and vulnerability featured, for the first time, chapters dedicated to the security implications of climate change. It concluded that climate change will generate new challenges to states and that slow- and rapid- onset environmental changes have significant impacts on forms of migration that compromise human security.

As rainfall becomes increasingly erratic, seasons become less predictable, saltwater intrudes into coastal areas and surface temperatures and sea levels rise, the natural systems which support our global population are being compromised. More intense and in some cases more frequent flooding, tidal surges, cyclones, droughts, wildfires, extreme cold and mudslides constitute grave threats to lives and livelihoods.

The poorest and least-developed countries and small island developing states are already disproportionately affected by displacement as a result of climate-related hazards. The world's most vulnerable with the least resilience to change will be the first and worst affected by climate change. In many instances, they will have no choice but to leave their homes.

In the last six years, 140 million people - or roughly one person every second - were displaced by a climate or weather-related natural disaster. This figure outstrips the number of refugees fleeing war or persecution. As our global climate changes, more extreme weather

events are taking hold - more floods, droughts and sudden-onset events such as cyclones that claim lives and livelihoods. Ninety-nine percent of all deaths from climate- and weather- related disasters occur in Less Developed Countries (LDCs). Yet the world's 50 least-developed countries together emit less than 1% of total carbon emissions. Those who have contributed least to climate change are those feeling its effects first and worst.

Causes:

Environmental Refugees are the people, who might have left their homes and communities because of the effects of climate change and scarcity of resources and livelihood and also due to the failure of agriculture or changing cropping pattern. Some of the major contributing causes are detailed below:-

Global Warming

Global warming (Temperature rise) is the most recent chapter of climate change. Human activities like burning fossil fuels and cutting down forests contribute to global warming because they release greenhouse gases. Greenhouse gases trap heat in the atmosphere. Rising temperatures associated with global warming cause glaciers and icecaps to melt. This can cause flooding and make sea levels rise.

Rising temperatures also lead to droughts and desertification (the transformation of arable land to desert). Some of these effects, such as sea level rise, can put land completely underwater, making it uninhabitable. Sea Level Rise

The Intergovernmental Panel on Climate

Change (IPCC) predicts that sea levels would raise a total of 0.18 to 0.6 meters (7 inches to 2 feet) between 1990 and 2100. Rising sea levels already cause problems in low-lying coastal areas of the world. Sea level rise is particularly high along the coastlines of the Bay of Bengal, the Arabian Sea.

A study imply that if future anthropogenic warming effects in the Indo-Pacific warm pool dominate natural variability, mid-ocean islands such as the Mascaren has Archipelago, coasts of Indonesia, Sumatra, and the north Indian Ocean may experience significantly more sea level rise than the global average. While a number of areas in the Indian Ocean region are experiencing sea level rise, sea level is lowering in other areas.The study by World Bank found that the rivers on upper

Bidya and Raimangal - Pathankhali and Jhila- should have been at least 340 and 420 meters wider respectively to withstand the impact of sea level rise, the human habitat on the islands like Gosaba and animal habitats in the forests of Jhila, Arbesi and Khatuajhuri are being threatened. The study was confined to the Basirhat range of forest in Sunderban of West Bengal.

Drought

While rising seas threaten coastal regions, drought can create climate refugees inland. When people cannot grow crops on the land where they live, they have to move somewhere else in order to survive. Millions of people in western India are suffering their worst drought in more than four decades. The middle part of India is facing a water shortage worse than the severe drought in 1972.

Loss of livelihood in agriculture sector Agriculture sector alone represents 23 per cent of India's Gross National Product (GNP), plays a crucial role in the country's development and shall continue to occupy an important place in the national economy. It sustains the livelihood of nearly 70% of the population. It seems obvious that any significant change in climate on a global scale would impact local agriculture, and therefore affect the world's food supply.

Considerable studies have been carried out to investigate how farming might be affected in the different regions. Several uncertainties limit the accuracy of current projections. One relates to the degree of temperature increase and its geographic distribution. Another pertains to the concomitant changes likely to occur in the precipitation patterns that determine the water supply to the crops, and the evaporative demand imposed on the crops in carbon dioxide enriched atmosphere.

The problems of predicting the future course of agriculture in the changing world are compounded by the fundamental complexity of natural agricultural systems, and socio-economic systems governing the world food supply and demand. Many climatologists predict a significant global warning in the coming decades due to rising atmospheric carbon dioxide and other green house gases. As a consequence, major changes in the hydrological regimes have been also forecast to occur. Changes in the temperature, solar radiation, and precipitation would have an effect on crop productivity and livestock agriculture.

As in few places of the Himachal Pradesh, the apple orchidsare relocated towards the hill top as the temperature rise in the middle hill region is now no more suitable for the cultivation of apples.

The mean temperature in India is projected to increase by 0.1-0.30C in kharif and 0.3-0.70C during rabi by 2010 and by 0.4-2.00C during kharifand to 1.1-4.50C in rabi by 2070. Similarly, mean rainfall is projected not to change by 2010, but to increase by up to 10% during kharif and rabi by 2070.

Climate change would also have an economic impact on agriculture, including changes in farm profitability, prices, supply, demand, trade and regional comparative advantages. The magnitude and geographical distribution of such climate induced changes may affect our ability to expand the food production area as required to feed the burgeoning population of more than 10,000 million people projected for the middle of the next century.

Indian environmental challenges

Migration does not necessarily signify a rejection of a rural livelihood. Rather, it demonstrates that the survival strategies of rural habitants are not only rooted in their immediate vicinity, but are also linked into economies in other rural and urban locations. It is precisely this inter-linkage which supports rural communities and helps them to survive in such climatically unstable environments.

In rural India the scarcity of food, water and other resources as well as the assorting climatic conditions are major reasons for a forced migration. On the other hand India is facing the burden of climate change and would see severe stress on water resources and food-grain production in the future, as seen in middle part of the country that heat sensitive species of wheat and rice had stopped yielding at a high level and in future they may not even grow. India, like other developing economies, may lose up to 1.7% of its Gross Domestic Product (GDP) if the annual mean temperature rises by 1 degree Celsius compared to pre-industrialization level, hitting the poor the most.

An increase in extreme weather events are reported such as last year's flash floods in Uttarakhand and cyclone Phailin in Odisha if steps are not taken to control the rise in temperature.

In India, there is a general concern about environmental migrants. A study by Dr. Hefin Jones, Cardiff University estimated that the country itself would have around 30 million environmental migrants within next 50 years. At the same time, the current illegal influx from

Bangladesh would also rise subsequently. In future decades around 15million affected persons in Bangladesh and around 30 million persons in China would be required to leave their local area because of the rising sea levels, erosion and scarce soil fertility due to climate change.

The average temperature in India, Jones continues, would increase by 3 to 5 degree Celsius by 2100. The warming would be felt mainly in the Northern parts and would lead to a 20 percent rise in the summer monsoon rainfall. In addition, the estimated rise in sea level in the Bengal coastal areas may also be one meter in 2050 and two meters in 2100.

This is not to say that environmental change and the existence of high risk environments with highly variable climatic or other conditions- are not the factors behind large-scale rural migration. People have historically left places with harsh and deteriorating conditions, whether this is in terms of poor rainfall, high unemployment, or political upheaval or even some combination of these or other adverse factors.

As a result, it is expected that the sea wouldsubmerge most of the Ganga-Brahmaputra delta including the Sunderbans. Being the largest delta region in the world, its 12 southern islands are threatened with erosion and submergence. Prof. Sugata Hazra from the School of Oceanographic Studies at Jadavpur University, Kolkata, estimates that out of the 4.1 million people living in the islands, 70,000 would be rendered homeless by 2020.

Currently, most of the displaced people from two already submerged and six shrinking islands have been heading for Pathar Pratima Island and Sagar Island. India grants asylum and provides direct assistance to some 200,000 refugees from neighboring countries. As the country lacks a national legal framework for asylum, UNHCR conducts registration and refugee status determination (RSD), mostly for arrivals from Afghanistan and Myanmar. More than 24,000 refugees and asylum-seekers of diverse origins are protected and assisted by their office in India.

The status of refugee regarding India

Refugees Residing in India	188,395
Asylum Seekers	3,675
Total Population of Concern	192,070
Refugees Originating from India	11,042
Asylum Seekers	11,879
Total Population of Concern	23,332

Source: 2014 UNHCR regional operations profile -South Asia

In turn, it is unclear that the complex set of factors that lead to 'environmental migration' as defined would suddenly evaporate or crystallize into a single 'environmental' cause at the time people become refugees. Although a distinction could be sustained at the level of proximate causes of flight, this is unhelpful from an academic point of view if it is accepted that the response to forced migration needs to be guided by underlying, rather than simply proximate causes.

The good, the bad, and the (very) ugly: Climate migrant scenarios

The impact of climate change as a driver of future forced migration depends on several factors:

- The quantity of future greenhouse gas emissions;
- The rate of future population growth and distribution;
- The meteorological evolution of climate change;
- The effectiveness of local and national adaptation strategies.

The IPCC has devised a series of scenarios, called the Emission Scenarios of the IPCC Special Report on Emission Scenarios (or SRES for short), which set out a range of different future emissions scenarios varied according to demographic, technological and economic developments. There are six basic "storylines"; each of which aggregates different rates of population and economic growth as well as the future "energy mix". For reference, these storylines are described in Annex 1. They range from the most-greenhouse gas intensive (A1F1 – where energy is mostly derived from fossil fuels and economic growth is rapid) to the less-intensive B1 storyline (where the world economy moves towards less-resource intensity and cleaner technology). All the scenarios assume no additional climate change initiatives such as the emissions targets under the Kyoto Protocol. Three of the SRES scenarios are used here as starting points to imagine three highly speculative scenarios for future climate-induced migration.

The good

The first (B1) is the best case scenario. Its impact is relatively low but so also is its likelihood. The B1 storyline describes a world whose population peaks mid-century around 9 billion and declines thereafter towards 7 billion. There is a rapid change in economic structures towards a service and information economy with a reduction in material intensity and the introduction of clean and resource efficient technologies.

"The emphasis is on global solutions to economic, social and environmental sustainability, including improved equity, but without additional climate initiatives". In addition (and this is where this scenario diverges from the B1 storyline) we can imagine that a serious post 2012 regime is put in place by the international community to reduce carbon emissions. The BRIC countries (Brazil, Russia, India and China) join as full members and work to cut their own emissions. Atmospheric concentrations of CO2 stabilize around 600 ppm by end of century leading to temperature rise over the century of around 1.8 degrees and sea level rise of from 18 to 8 cm.

In addition a "Marshall plan" for adaptation helps countries deal with the worst impacts of climate change. Nonetheless, according to the Stern report, such a temperature rise would still lead to a 20 to 0 per cent decrease in water availability in some vulnerable regions such as Southern Africa and the Mediterranean countries. It would also result in declining crop yields in tropical regions. In Africa crop yields could be cut by between 5 to 10 per cent. Meanwhile up to 10 million more people would be affected by coastal flooding each year. In this case the headline figure for climate migration (the 200 million "climate refugees" by 2050) might, in hindsight, seem like an exaggeration. Instead we could expect increased migration of between 5 and 10 per cent along existing routes. There would be increased rural to urban migration but it would prove largely manageable, if not indistinguishable, within existing patterns of migration.

The bad

Our second scenario uses the "A1B" storyline as its starting point. A1B envisages a world of very rapid economic growth, with a global population that peaks mid-century and declines thereafter, as well as the swift up-take of new and more efficient technologies. The scenario predicts economic convergence among regions, increased social and cultural interactions and a substantial reduction in regional differences

in per capita income. In this scenario the world's energy is sourced from a balance between fossil intensive and non-fossil energy sources. We can imagine that international efforts to reduce greenhouse gas emissions are delayed, patchy and not particularly effective. Some effort and funds are invested into adaptation, but not enough.

The estimate for temperature rise over the 21st century for the A1B storyline is 2.4ºC (with a likely range from 1.7ºC to 4.4ºC). Atmospheric concentrations of CO2 by the end of the century are 850 ppm (three times pre-industrial levels).With higher temperatures the practical implications of climate change are much greater. Under this scenario sea level rise would be between 21 cm and 48 cm and precipitation in sub-tropical areas would fall by up to 20 per cent. According to the Stern report, a ºC temperature rise would mean 1 to 4 billion people would suffer water shortages and between 150 to 550 additional million people would be at risk of hunger. Conversely other areas would gain unwelcome water with coastal flooding affecting between 11 and 170 million additional people each year.

Marginal lands would become increasingly uninhabitable, with dramatic increases in internal rural to urban migration and also emigration to richer countries, particularly of young, skilled people. Meanwhile, millions of people would be temporarily displaced by individual extreme weather events.

The ugly

The third scenario uses the A1F1 storyline as its starting point. A1F1 is similar to A1B in that it forecasts rapid economic growth and a global population that peaks mid century and falls thereafter. However, unlike A1B, energy in the A1F1 world continues to be overwhelmingly sourced from fossil-fuel supplies – and is a "business as usual scenario" without any Kyoto emission reductions or serious attempts at adaptation. On this trend, atmospheric concentration of CO2 by 2099 will be 1,550 ppm: five times pre-industrial levels and four times current levels. Such CO2 levels would result in a temperature rise over the century of 4.0ºC (with a likely range from 2.4ºC to 6.4ºC) and sea level rise from 29 cm to 59 cm. According to the Stern report a temperature rise of 4.0ºC would result in a 10 to 50 per cent decrease in water availability in Southern Africa and Mediterranean. Agricultural yields would decline by 15 to 5 per cent in Africa and entire regions, such as parts of Australia, would fall out of production. With high climate sensitivity, the number of people flooded per year

could be as many as 160 million by the 2050s and 420 million by the 2100s.Under this scenario, predictions of 200 million people displaced by climate change might easily be exceeded. Large areas of southern China, South Asia, and the Sahelian region of sub-Saharan Africa could become uninhabitable on a permanent basis.

Climate forced migration would be unmistakable with tens of millions of people at a time displaced by extreme weather events, such as floods, storms and glacial lake outburst floods, and many millions more displaced by climate processes like desertification, salinization of agricultural land and sea level rise.

The above scenarios all assume a roughly linear evolution of climate change. But the picture would change again in the case of abrupt climate change such as the collapse of the Gulf Stream or melting of the Greenland or Antarctic ice sheets. The IPCC estimates that the elimination of the Greenland ice sheet would lead to a contribution to a sea level rise of about 7m.The Stern report estimated that the melting or collapse of the ice sheets would raise sea levels and eventually threaten 4 million km of land which is currently home to 5 per cent (around 10 million people) of the world's population.

Conclusion

History has demonstrated that the creation of a binding and effective international convention is no small feat. As with most international issues, creating a treaty for the protection of environmental refugees encompasses a wide range of issues that go well beyond the protection of people and the elimination of the causes of their displacement. However, the growing number of 'environmental refugees' has made this an issue which, in coming years, will be hard to ignore. By adopting a new Convention, the international community will protect human rights and significantly reduce the environmental events which lead to migration and displacement.

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