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Climate Change and Food Security: Health Impacts in Developing Countries

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Abstract

Today, it is widely agreed by the scientific community that climate change is already a reality. The Intergovernmental Panel on Climate Change (IPCC) has concluded that human activities are altering our climate system and will continue to do so. Over the past century, surface temperatures have increased and associated impacts on physical and biological systems are increasingly being observed. Science tells us that climate change will bring about gradual changes, such as sea level rise, and shifts of climatic zones due to increased temperatures and changes in precipitation patterns. Also, climate change is very likely to increase the frequency and magnitude of extreme weather events such as droughts, floods, and storms.

This paper focuses on the impacts of climate change and food security as well as Health impacts in Developing Countries. It discusses ways of mainstreaming and integrating adaptation to climate change into food security, poverty reduction and sustainable development efforts.

Keywords: climate change, food safety, food security, poverty, nutrition, regulation, adaptation, health impact

Introduction

According to the FAO (Food and Agriculture Organization of the UN), by 2050 the world will need to double food production in order to feed its growing population. Climate change and its consequences will have a decisive impact on productivity in agriculture. If we fail to successfully manage the process of adapting agriculture to climate change, we will have to expect a sharp decline in food production, famine and unprecedented setbacks in the fight against poverty in developing countries. Adapting agriculture to climate change is the key to food security in the 21st century**.**

Ever since the 2008 food crisis struck, many developing countries have come to recognize how important it is to invest in agriculture and have committed themselves to raising investments in this sector considerably. Development cooperation should support these efforts and, in particular, promote food security on a significant scale through measures directed at climate change adaptation. Whether the trend in the ODA financing of agriculture and rural development can be reversed will determine global food security in the future.

According to the United Nations Development Programme (2011), the number of people living under the international poverty line[1] has reduced from 1.8 billion to 1.4 billion between1990 and 2005. These results validate several previous studies (Chen and Ravallion 2010; Milanovic 2012) that report a continued decline in global poverty during the last three decades. These authors show that the proportion of the world's people living below the international poverty line varied from 52% in 1980 to 25% in 2005. However, progress is currently not fast enough and is different across regions. From 1980 to 2005, the poverty rate in East Asia fell from 80% to 20% and stayed at around 50% in Sub-Saharan Africa. Despite national and international efforts to reduce poverty, the number of people suffering from chronic hunger has risen from 815 million in 1990 to 1,023 million in 2009 (FAO 2009), and a significant proportion of households depend on agriculture. They are more exposed to the risks of food shortages and hunger that could be caused or increased by climatic change (St.Clair and Lynch 2010).

Food security

In May 2007, at the 33rd Session of the Committee on World Food Security, FAO issued a Statement to reaffirm its vision of a food-secure world:

"FAO's vision of a world without hunger is one in which most people are able, by themselves, to obtain the food they need for an active and healthy life, and where social safety nets ensure that those who lack resources still get enough to eat." (FAO, 2007f)

This vision has its roots in the definition of food security adopted at the World Food Summit (WFS) in November 1996: "Food security exists when all people at all times have physical or economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO, 1996).

Food system

Food systems encompass (i) activities related to the production, processing, distribution, preparation and consumption of food; and (ii) the outcomes of these activities contributing to food security (food availability, with elements related to production, distribution and exchange; food access, with elements related to affordability, allocation and preference; and food use, with elements related to nutritional value, social value and food safety). The outcomes also contribute to environmental and other securities (e.g. income). Interactions between and within biogeophysical and human environments influence both the activities and the outcomes."

Climate change

Climate change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer). Climate change may be due to natural internal processes or external forcing or to persistent anthropogenic changes in the consumption of the atmosphere or inland use.

Climate Factors

Several factors directly connect climate change and agricultural productivity:

- Average temperature increase
- Change in rainfall amount and patterns
- Rising atmospheric concentrations of CO2
- Pollution levels such as troposphere zone
- Change in climate variability and extreme events

Objectives of the Study

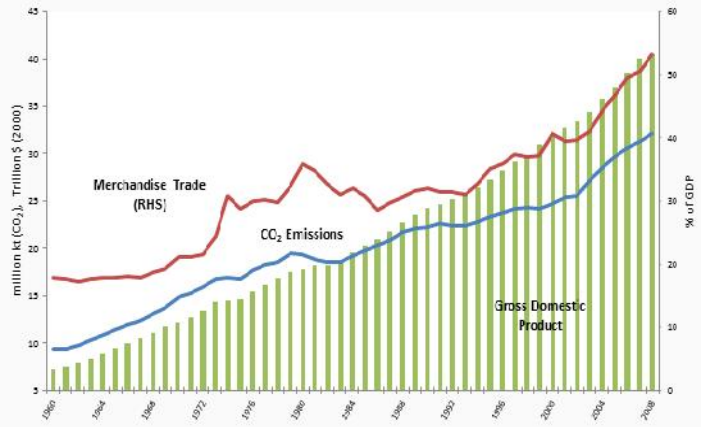
The Following objectives are framed by the researcher in this study

- The potential impact of climate change on food security (nutrition and food safety) and the implications for human health in developing countries
- To identify the measures to take for mitigating climate change around the Global level.
- To offering suggestion and recommendations for removing food insecurity problems.

Methods

Expert input and structured literature searches were conducted and synthesized to produce overall assessments of the likely impacts of climate change on global food production and recommendations for future research and policy changes. The entire data has been collected from the researcher with the help of secondary sources like FAO, IPCC, IMO, GECAFS, UNFCCC, WFP, respectively.

Trends in output, openness and emissions



Source: World Development Indicators Database.

Climate Change is Happening and Will Increasingly Affect the Poor

Today, it is widely agreed by the scientific community that climate change is already a reality. The Intergovernmental Panel on Climate Change (IPCC) has concluded that human activities are altering our climate system and will continue to do so. Over the past century, surface temperatures have increased and associated impacts on physical and biological systems are

increasingly being observed. Science tells us that climate change will bring about gradual changes, such as sea level rise, and shifts of climatic zones due to increased temperatures and changes in precipitation patterns. Also, climate change is very likely to increase the frequency and magnitude of extreme weather events such as droughts, floods, and storms. While there is uncertainty in the projections with regard to the exact magnitude, rate, and regional patterns of climate change, its consequences will change the fate of many generations to come and particularly impact on the poor if no appropriate measures are taken.

The impacts of climate change, and the vulnerability of poor communities to climate change, vary greatly, but generally, climate change is superimposed on existing vulnerabilities. Climate change will further reduce access to drinking water, negatively affect the health of poor people, and will pose a real threat to food security in many countries in Africa, Asia, and Latin America. In some areas where livelihood choices are limited; decreasing crop yields threaten famines, or where loss of landmass in coastal areas is anticipated, migration might be the only solution. The macroeconomic costs of the impacts of climate change are highly uncertain, but very likely have the potential to threaten development in many countries. Therefore, the task ahead is to increase the adaptive capacity of affected poor communities and countries

Undernourishment around the world, 1990-2 to 2012-4

Number of undernourished and prevalence (%) of undernourishment

	1990-2 No.	**1990-2 %**	**2014-6 No.**	**2014-6 %**
World	**1,010.**6	**18.6**	**794.**6	**10.9**
Developed regions	**20.0**	**<5**	**14.7**	**<5**
Developing regions	**990.**7	**23.**3	**779.**9	**12.**9
Africa	**181.7**	**27.**6	**232.**5	**20.0**
Sub-Saharan Africa	175.7	33.2	220.0	23.2
Asia	**741.**9	**23.**6	**511.**7	**12.1**
Eastern Asia	295.4	23.2	145.1	9.6

South-Eastern Asia	137.5	30.6	60.5	9.6
Southern Asia	291.2	23.9	281.4	15.7
Latin America & Carib.	**66.**1	**14.**7	**34.**3	5.5
Oceana	**1.0**	**15.7**	**1.4**	**14.2**

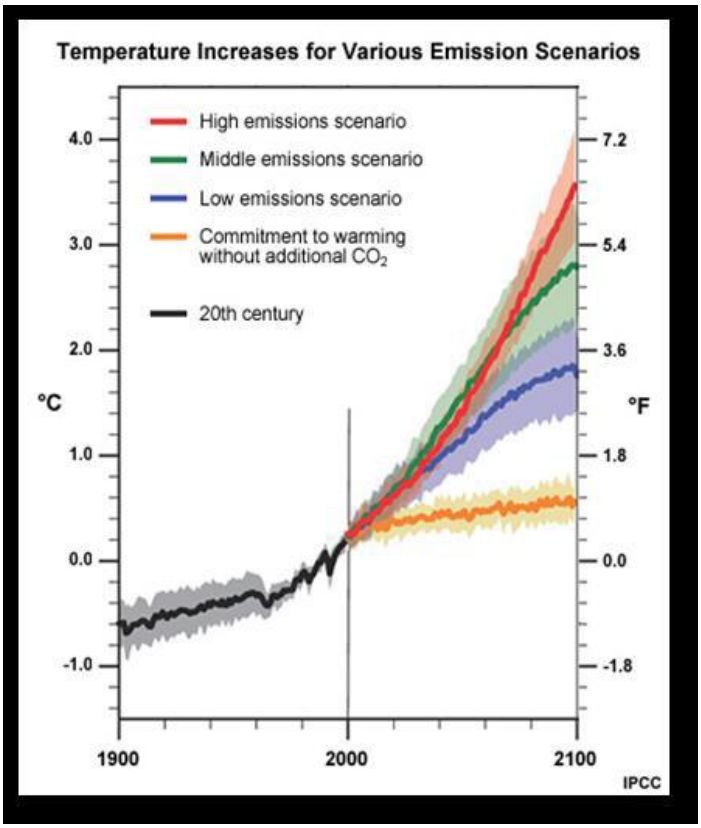
Source: FAO The State of Food Insecurity in the World 2015 p. 8

Developing Countries Will Be Particularly Affected

The impacts of climate change vary across geographical regions (IPCC 2001b). Some of the anticipated impacts of climate change are positive (see IPCC 2001b). For example, water scarce regions such as parts of Southeast Asia may benefit from increased water availability. However, developing countries are likely to suffer most from the negative impacts of climate change (IPCC2001b). This is due to the economic importance of climate-sensitive sectors (for example, agriculture and fisheries) for these countries, and to their limited human, institutional, and financial capacity to anticipate and respond to the direct and indirect effects of climate change. In general, the vulnerability is highest for least developed countries (LDCs) in the tropical and subtropical areas. Hence, the countries with the fewest resources are likely to bear the greatest burden of climate change in terms of loss of life and relative effect on investment and the economy (IPCC 2001b).

Addressing nutrition and diet in development policies and education can help reduce food insecurity. Photo: International Rice Research Institute (IRRI)

GLOBAL SCENARIO OF CLIMATE CHANGE



Source: IPCC, 2007

Climate Change and Health Impacts

Global climate change threatens human health in ways that are numerous and profound. Many parts of the world will experience more extreme events such as droughts, heat waves, altered exposure to infectious disease, and more frequent natural disasters that will put added strain on an already overstressed health system. Moreover, climate change threatens the bases of public health around the globe: sufficient food and nutrition, safe water for drinking and sanitation, and secure homes to live in. It will make the MDGs that much harder to achieve. Many low-income countries with populations at the greatest risk from climate change are already overwhelmed with existing public health challenges from treatable conditions such as malnutrition, diarrhea, acute respiratory infections, malaria, and other infectious diseases. Diverting limited personnel and resources away from these ongoing problems to address future threats from climate change could make things worse instead of better.

The greatest health impact of climate change may be its impact on global nutrition. It has been estimated that at least one-third of the burden of disease in poor countries is due to malnutrition, and roughly 16 percent of the global burden of disease is attributable to childhood malnutrition. Climate change is also expected to alter exposure to infectious disease, including waterborne disease outbreaks caused by a variety of organisms, and to increase food poisoning events. In addition, the distribution of vector-borne diseases, which affect nearly half the human population, is expected to change as a result of changes in temperature, humidity, and soil moisture. While there is some debate about the net impact of climate change on the distribution of these diseases, there is little debate that they are likely to spread into regions where they have not been historically endemic.

Key Recommendations

- Adopt a 'no-regrets' approach
- Adopt an 'adaptation without Borders' approach
- Diversify sources of food based on Emerging climatic pattern
- Identify options for adaptation financing and climate insurance markets
- Support regional cooperation for climatic disaster early warning and monitoring systems
- Participate in regional cooperation and dialogue on food production
- Embark on robust food stockpiling system
- Invest in food processing and storage
- Build capacity in producing countries

Conclusion

Climate change impacts on our health are driven by a network of interactions among a diversity of developments. As vulnerability to climate change is hazard and context dependent, climate change should not be seen as 'a stand-alone risk factor, 'but as a potential amplifier of important health and food security risks. Due to their particular vulnerability context, the health effects of climate change are expected to be especially harsh in the developing countries. Climate change could exacerbate climate sensitive hurdles to sustainable development faced by developing countries, in particular with regard to important MDGs related to malaria and malnutrition. This is not only due to differential exposure to the hazard, but also due to the interactions between climate and non-climate factors that fundamentally shape the high vulnerability of developing countries' populations to the anticipated health impacts.

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