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Climate change and poverty alleviation

Ashwani Sharma
Associate Professor, Department of Political Science, Satyawati College, University of Delhi, New Delhi, India

Abstract
Global environment has emerged as the third most important issue in global politics alongside security and economic issues and continues to be one of the central themes in global political economy. Central to contemporary global environmental politics is the issue of *Climate Change* because of its inextricable linkages to economic growth and development. Climate change has adverse impact on development and unsustainable development escalates climate change. In the context of development, particularly in the developing countries, climate change has serious consequences for poverty alleviation efforts and food security, and could lead to decoupling of economic growth and poverty alleviation. The analysis addresses two interrelated dimensions of the issue: first, what is climate change and why it is considered the most serious issue confronting humanity; and second, climate change and efforts to sustainably alleviate poverty. The policies to address climate change mitigation will have a positive effect on efforts to alleviate poverty. Therefore, it is important that inclusive development policies adapted to changing climate conditions are adopted to alleviate poverty.

Keywords: climate change, poverty alleviation, food security, sustainable development

Introduction

The global environment has acquired a new status in global politics. The prominence of the global environment in global politics began with the 'UN Conference on Human Environment (UNCHE) in Stockholm in 1972'. The issue gained momentum in the 1980s, and by beginning of the 1990s it had emerged as a third major issue in global politics alongside security and economic issues. It has stayed its course in the new millennium as one of the central themes in global politics.

The focal point of contemporary global environmental politics is *Climate Change*. There appears to be consensus among analysts that climate change is perhaps the most serious environmental problem that is confronting the humanity as it is inextricably linked to the processes of economic growth and development. The issue of economic growth and development brings into the matrix of global environmental politics the division between developed countries (North) and developing countries (South). The North has about twenty percent of the world's population and is the repository of eighty percent of the world's wealth. In contrast, the South has about eighty percent of the population and twenty percent of the wealth. The South is relatively a newcomer to the processes of economic growth and development through industrialization. Therefore, any viable solution will have to revolve around the axis of 'environment *and* development' and also address the issue of 'sustainable development'.

Climate change is a global issue and therefore requires global solutions but strong national commitments. In contemporary global politics, global solutions are attempted at through a process of complex multilateralism conducted in multilateral institutions. In this process of complex multilateralism, nation-states continued to play a pre-dominant role in the outcome. However, as we move from the international system, with nation-state as the only actor of consequence, to a global system, there is an increasing significance of nonstate actors: the global social movements and transnational corporations. Therefore, in the formation of global climate change regimes in international organizations, state as well nonstate actors play a role.

The analytical construct will therefore address two interrelated dimensions of the issue. The first section will address the questions of what is climate change and why it is considered the most serious issue confronting humanity. The second part deals with the climate change and efforts to sustainably alleviate poverty.

Understanding Climate Change and Its implications

Global climate change refers to the increasing temperature of the Earth primarily due to anthropogenic emissions or simply human activities. The anthropogenic emissions refer to green-house gases that are emitted into the atmosphere due to human activities and range from carbon dioxide, methane, nitrous oxide and water vapors. These green-house gases facilitate the retention of heat radiated by the Sun and consequently increase the surface temperature of the Earth. Amongst these green-house gases, carbon dioxide is the most important one as it constitutes the dominant component of these gases and is the direct result of human activities. Carbon dioxide is generated by fossil fuels (which contain carbon) including coal, oil, gas and wood.

Since the industrial revolution, the usage of fossil fuels has increased exponentially and has substantially increased the anthropogenic emissions of carbon dioxide in the atmosphere leading to serious disturbance in the natural carbon cycle. The atmospheric concentration of carbon dioxide in the atmosphere has increased by more than 33 percent in the past hundred and fifty years due to burning of fossil fuels [1]. Alternatively, before the industrial revolution in 1750, the concentration of

atmospheric carbon dioxide was about 280 parts per million by volume (ppmv). It had increased to 358 ppmv by 1994 and was rising by 1.5 ppmv per year. If this trend continues then by end of the twenty first century, the atmospheric concentration of carbon dioxide would be around 5000 ppmv, almost double the level of the pre-industrial era [2].

As a consequence of 33 per cent increase in carbon dioxide in the atmosphere, the global mean temperature has increased by 0.74 degrees centigrade in the past hundred years. The global mean temperature is expected to increase further between 2 and 4 degrees centigrade by 2100 [3]. The actual increase of the temperature would depend on the rate of increase of carbon dioxide emissions. If the rate of increase in carbon emissions is low, then the rise in global mean temperature can be limited to 2 degrees centigrade. However, if the increase in emissions is high, then the global mean temperature could increase by as much as 4 degrees centigrade.

This increase in temperature has led to melting of the Arctic-sea ice and an increase in sea level by about 17 cm during the same period. Although scientific estimates differ, there appears to be consensus among scientists that the seal level would rise by one meter by 2100 if the warming is not stabilized [4].

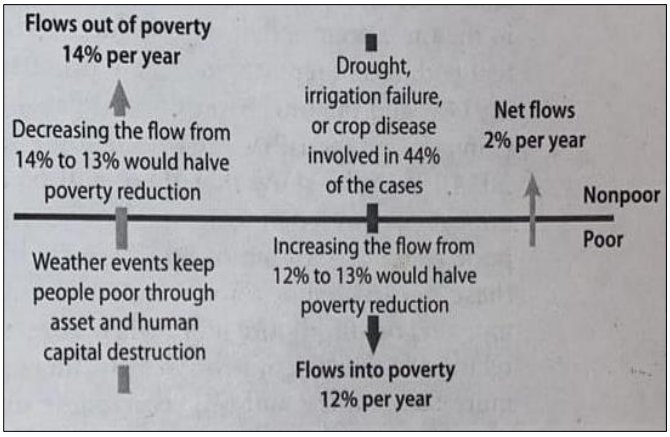
The long-term increase in temperature has led to long-term changes in humidity, clouds and rainfall. The frequency of incidence of heavy rainfall has increased in most land areas of the world in the past fifty years; and is expected to increase with the increase in global mean temperature.

The climate change is considered as one of the most serious challenges facing humanity because of its inextricable linkages with the contemporary processes of economic growth and development. Climate change has an adverse impact on economic growth and development and the current processes of economic growth and development contribute to climate change. This dialectical relationship between economic growth and development and climate change can be illustrated by a couple of examples. Industrialization over the years along with the modern means of transportation, mainly automobiles, have contributed to increasing volume of carbon dioxide in the atmosphere and the consequent increase in global mean temperature. The increase in temperature adversely affects productivity in agriculture and industry. This adverse impact on agricultural productivity is further aggravated by increasing events of heavy rainfall due to increase in global mean temperature. Similarly, the climate change has an adverse impact on development. The increase in global mean temperature has led to rise in sea level that poses a serious threat to the people living along the coastline, particularly in the developing countries where the density of population in the coastal areas is very high and a large proportion of them belong to low income groups and are dependent on climate sensitive livelihoods such as agriculture and fishery. The social and economic cost of displacement and loss of livelihood adversely impacts on development.

Climate Change and Poverty Alleviation

Climate change plays an important role in keeping as well as bringing in more people below the poverty line due to natural disaster. For example, floods cause loss of assets and health shocks. Houses, livestock and crops are washed away due to floods. Health shocks, such as post-flood epidemics, lead to health expenditures and loss of labor income. Poor people are more exposed and vulnerable to climate-related shocks as they lack any form of social security. Climate change is likely to worsen these shocks and lead to decoupling of economic growth and poverty alleviation.

It is generally believed that once poor people/households are brought above the poverty line, they would remain out of poverty. This is indeed an inaccurate assessment as households come out poverty and remain vulnerable to sink back into poverty. Also, those households who are just above the poverty line are as vulnerable to sink into poverty due to natural disasters. In a path-breaking study carried out by an analyst strongly suggests that poverty alleviation efforts can be affected by climate change shocks, such as floods, droughts [5]. The study which was carried out over a period of 25 years reveals that 14 per cent of households in 36 communities in Andhra Pradesh, India, were alleviated out of poverty but 12 per cent nonpoor households sunk below the poverty line. This resulted in a mere 2 percent alleviation in poverty. The figure below illustrates how poverty alleviation programs may not lead to the desired results. It also reveals that in case instead of 14% only 13% are lifted above the poverty line or 13% instead of 12% sink below the poverty line, then the poverty reduction would be only 1%: a fall in poverty reduction by 50%.



Source: SHOCK WAVES: Managing the Impacts of Climate Change on Poverty (World Bank, 2016).

Fig 1

World Bank [6] and Intergovernmental Panel on Climate Change [7] suggest that climate change has worsened, and is likely to further worsen, climate-sensitive shocks. There is already an increase in natural hazards and the poor are more often exposed and vulnerable to such hazards. The intensity and frequency of natural hazards will increase over time. According to one estimate, 75 percent of the moderate hot extremes over land and 18 percent of moderate precipitation extremes are attributable to climate change [8]. Heat waves, generally considered exceptional, are likely to become common leading to more deaths across the world and in particular the developing countries. The number of drought days would increase by more than 20 percent in most of the world by 2080 and this could lead to 9-17 percent people exposed to drought in 2030 and 50-90 percent in 2080. The number of people exposed to floods are likely to increase by 4-15 percent in 2030 and this could increase to 12-29 percent by 2080. Also, coastal flood risks would increase with the sea level rise [9].

One of the worst affected sectors due to climate-sensitive shocks would be agriculture which is a source of income for majority of the population in the developing countries. Long-term changes in climate change coupled with frequent natural disasters impact agricultural production negatively and consequently increase prices. High temperature reduces productivity of those who are poor and often work outside such as open fields. Low productivity leads to lower incomes. As poor households/households just above the poverty line spend a significantly large amount of their income on consumption, the rise in consumption goods prices and decline in rural income would affect the poor people the most. Thus, losses in the agricultural sector, rise in food prices, and reduced income pushes vulnerable consumers into poverty.

Health of the poor and climate change is another important issue area of concern. Poor people are more prone and strongly affected by diseases and health issues. Climate change will increase threats to the health of the poor people. Health issues are important for poverty alleviation for two reasons. First, poor people are affected by diseases such as malaria and diarrhea which are likely to be exacerbated by climate change. Transmission of malaria increases even with a small increase in temperature. Increase in mean temperature by 2 degrees centigrade at the global level could increase the number of people at risk for malaria by 5 percent or more than 150 million people.[10] This is particularly important as people have no naturally acquired immunity against malaria. Second, poor people are unable to afford medical expenditure. Therefore, climate-sensitive health shocks would push more people below the poverty line.

Conclusion

Climate change will escalate threats to health of the poor as they are more vulnerable to climate related diseases such as malaria and diarrhea. Climate change is also likely to lead to decline in agricultural production and rise in agricultural prices that could threaten food security in poorer regions such as Sub-Saharan Africa and South Asia. There is indeed an urgency of efforts to reduce poverty and vulnerability of the poor in the developing countries due to climate change. The policies to address climate change mitigation will have a positive effect on efforts to alleviate poverty. Therefore, it is important that inclusive development policies adapted to changing climate conditions are adopted to alleviate poverty.

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