



Some concerns about climate change: An analysis

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Abstract: This paper tries to analyse the concerns of climate change in the dimension of economics. It deals with the impact of climate change on agriculture, GDP and poverty.

Introduction

Developing countries are particularly more vulnerable to climate change due to their exposure to low latitude geographical region which curses them with poor rainfall availability and high temperatures. Many developing countries are located in tropical areas which experience extreme climates along with variability in monsoon pattern and high temperature. Country like India and others where rainfall occurs once in a year will be particularly vulnerable if rainfall fails thereby affecting the agricultural productivity and leading to adverse rates of growth and development. It has been said that because of poor soils, high crop respiration rates due to warmer temperature, water scarcity and presence of pests will lead to deteriorating conditions of agriculture.

Agriculture which employs majority of the population in developing countries is concentrated in rural areas and around few crops and yields low level of income. Concentration of activities in agriculture makes it difficult and inflexible to switch to non agricultural sector like industry or services.

Humans are to a varying extent are dependent on nature. Poor are dependent on nature for their subsistence income, food security and health. Degradation or destruction of nature will seriously worsen their conditions. For e.g. more than a billion people are dependent on Amazon rain forests.

With rising population and resource constraints will put more strain on resources. Developing countries witness high rates of urbanisation, which is goes hand in hand with growth and poverty reduction (as less proportion of people will be dependent on agriculture for their livelihood) but most of them are living in destitute conditions with poor public services, lack of access to clean water and sanitation, malnutrition and are prone to environmental hazards and floods. These areas also witness high cases of malaria and other vector borne diseases.

Problems concerning climate change

Majority of the population in developing countries is undernourished due to poor diet and repeated infections. Malnutrition also lowers the immune and thereby weakening the



resistance to infections. It also lowers people's productivity and mental development. Climate change will increase the cases of malaria leading to high rates of mortality.

Developing countries don't have good water irrigation systems and dams. They don't have proper water management systems to store water to deal with seasonal fluctuations in rainfall. Water tables have depleted in some drought affected areas due to excessive drawing of water which is again a result of subsidised electricity and water prices. (Kumar, 2014)

Poor people have low incomes and limited access to credit and world financial systems to diversify risks, which makes it vulnerable for them to deal with extreme climate.

Developing countries have poor governance and limited resources. They lack education, nutrition, control measures and awareness which make them all the more vulnerable to climate change.

Extreme variations in climate may negatively affect growth and development through lower output and income and affecting health too. Managing the rising death from heat, rising cases of malaria, malnutrition will lead to rising health costs thereby draining away the resources of poor leaving them with little or nothing to save. Environment may lower labour productivity through poor health or damage infrastructure and capital investment, either ways it is going to decrease the output esp. for developing economies which are dependent on agriculture and are unable to switch to non-agricultural activities. Erratic pattern in rainfall has damaging effect in terms of destruction of infrastructure during heavy rainfall and scanty rainfall will affect agricultural output, irrigation and hydroelectricity generation. (Goulder, 2006)

Climate change will lead to greater percentage of financial costs for poor countries although absolute amount may be greater for rich countries.

In order to deal with adverse impacts of climate change poor may indulge in low risk crops and this can reduce their average income. They may be forced to sell their assets like land and cattle. This would lead to fall in long term revenue and they would be unable to educate their children. Most of them even reduce their consumption but this will severely affect their health and mental strength. It can lead to irreversible damage in children which will hamper their educational abilities like learning etc. Climate change will severely affect education levels as income and health conditions deteriorate. This is because schooling becomes less affordable as income levels fall and children engage in domestic household activities. While deteriorating health conditions would hamper learning abilities and attendance. Poorly educated farmers will not be able to innovate and process new information. (Hoerling, 2006)

Climate change is likely to result in greater gender inequalities as work load like collecting water; work etc would rise leaving less time for marketable activities, particularly for those homes which are short of labour. Women and children are mostly employed in agriculture and informal sector and therefore are more vulnerable to climate change.



Climate can increase the fiscal expenditure thereby worsening the budget situation. Government needs to deal with after effects of extreme climate and long run fall in food and water supply. When government falls short of funds it may resort to borrowing which will again have negative effect on growth and development thereby leading to infinite postponement of investment in development. The funds used for emergency purposes are diverted from other productive sources.(Stern, 2006)

Climate change is likely to lower GDP and growth and thereby raising poverty and child mortality. There will mass migration and increase in number of people below poverty line. The rise in child mortality is due to lower expenditure by both public and private sector on health improvement measures like clean water, sanitation etc. It has been observed that with rising sea level coastal areas will be endangered and small islands are at risk therefore all this puts pressure of migration. Lack of resources like clean water, sanitation, malnutrition, drought, floods, and growing population in developing countries will drive migration. But the actual number of migration will depend on how well government equips itself will dealing with disasters and taking precautions to avoid them. But due to rising population and scarce resources migration can create political tension with neighbours. It is said that with adverse growth shocks climate change will negatively influence the employment opportunities. (Lettenmaier 2005)

Conclusion

With the rise of temperature by 1-2 degree Celsius the impact on certain sectors and regions will be positive but with the increase of 4-5 degree Celsius the impact on overall globe would be damaging. The events of extreme weather would rise. Poor countries suffer the most because they have low resources for abating climate change; they are situated in low latitude geographical location and have high population growth and majority of the population living in unhygienic slums with poor health conditions. All these adverse consequences of climate change would lead to high rates of migration and political instability It is often seen that poor people usually live in high risk areas (like coastal floodplains) and have poor quality housing ,lack financial resources for insurance cover and are less aware and worst prepared for extreme events like flood, cyclones etc. While the rich countries have enough resources to devote to adaptation; they are situated in high latitude regions and have low population growth.

Water is required for sanitation, good health, used as an input in production and for sustainable development. It has been said that with climate change there will be erratic rainfall and snowmelt patterns which will affect the supply of runoff. Water availability in high latitude regions will begin to rise while areas like Mediterranean which were already facing water problems would face high shortages due to fall in rainfall and loss of snowmelt water and rising population growth. Developed countries like Australia, South Europe which are situated in lower latitude regions will also face water scarcity due to fall in rainfall. It has



been said that increase in water availability during wet season due to melting glaciers and loss of mountain snow may cause floods and also due to lack of storage facility it cannot be managed for dry seasons implying that dry season will encounter water shortages. Also around 50 percent of river flows are not available to humans.

Agricultural production of some crops in high latitude region will increase if there is strong carbon fertilisation effect while in lower latitude regions esp. developing countries and developed countries like Australia and South Europe would be witnessing rise in water shortage leading to fall in agricultural productivity due to low carbon fertilisation effect.

Energy requirement in high latitude regions for heating esp. during winter will fall, but may rise by a small margin due to air conditioning effect in summers. But in low latitude regions, energy requirement will rise sharply in summers due to increase in demand for air conditioning and fall in heating demand in winters.

In high latitude countries the winter death will fall while in low latitude countries where majority of the developing countries are situated will face a rise in summer death rate, due to heat stress, drought and floods, which far exceeds the fall in winter mortality thereby leading to overall rise in mortality. There will be increase in vector borne diseases like malaria.

Tourism will boost in high latitude regions (like Russia and Canada) esp. in summers but places like Alps and Rockies which attracted tourist for its snow recreation will witness a decline in tourism. Countries like Australia etc will suffer a fall in tourism due to bleaching of Great Barrier Reef.

REFERENCES

1. Stern, N. (2007) “The Economics of climate change: The Stern Review”, Cambridge: CUP
2. Goulder, Lawrence, and William A. Pizer. (2006) “The Economics of climate change”, NBER, Working Paper No. 11923
3. Kumar, Arun. (2013): “Indian Economy since Independence: Persisting Colonial Disruption”, New Delhi: Vision Books
4. Mendelsohn, Robert, William D. Nordhaus and Daigee Shaw(1994) “Impact of global warming on Agriculture: A Ricardian Analysis”, American Economic Review 84(4): 753-771
5. Kumar, K.K., B. Rajagopalan, M. Hoerling et al. (2006): “Unravelling the mystery of indian monsoon failure during the El Niño”, Science 314: 115-119, doi: 10.1126/science.1131152
6. Barnett, T.P., J.C, Adam, and D.P. Lettenmaier (2005): “Potential impacts of a warming climate on water availability in snow-dominated regions”, Nature 438: 303-309

