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A REVIEW ON ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS OF CLIMATE CHANGE

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Abstract:

Climate change is one of the most important global environmental challenges, with reference to food production, water, land and energy. in all continents and countries effects have different effects within and between countries. It is the main reason behind natural disasters like drought, flood, hurricane and earthquake and thereby it is increasing the socio-economic burden of the whole world like migration, yield reduction, poor health, malnutrition, recession and poverty. It is the need of the hour to review the situation to overcome the environmental and socio-economic issues of climate change which is possible only by understanding its impact. Present study is an attempt to integrate the environmental, social and economic impacts of climate change.

KEY WORDS:

global environmental , Socio-economic , poor health.

INTRODUCTION

Climate change is the most challenging issue world-wide in the 21st century and it is a critical provocation to humanity as no species can survive without suitable environment. IPCC defines climate change as a change in the state of the climate that can be identified by changes in the mean or the variability of its properties and that persists for an extended period, typically decades or longer. In the last century the global average surface .74° C and if it will continue, a few more degree change in temperature can attribute marked difference in the global environment (Sundarsan and Patel, 2011). is anthropogenic greenhouse gas concentrations. Anthropogenic climate change has a major role in disturbing physical and biological systems all over the globe.

Although climate change is a global phenomenon, but reports have indicated that developing countries are more vulnerable to because of their high dependency on natural resources, very limited capacity to cope up with this institutionally and financially and high poverty level. India is also a large developing country whose nearly 70% of the population depend directly on the climate sensitive sectors such as agriculture, forests and fisheries for their livelihood with the changes in key climatic variable like humidity, precipitation and temperature. It will likely affect the vital sector like agriculture, thereby affecting rural development. Population wise, India is the second largest country in the world and nearly 27.5 is still below the poverty line (Sandhu and Singh, 2014).

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Compared to other countries, climate change has greater impact on India because of its geography (mountain and sea), varied population characteristic and high carbon related energy dependence. Weaker sections of the Indian population will not be able to cope with specially the vulnerable group like children and elderly.

Impacts from climate change severely threaten the developmental efforts and opportunities across developing countries. Climate change is affecting the most perquisites of health, food, water and air. In one way it causes natural disasters like drought and floods frequently and in the other way it is affecting the economic activities and the welfare of the people all over the world. So to understand the overall impact not only essential to cover the ecological or environmental aspect which is directly visible, but also to cover the socio-economic aspect which is an after effect of environmental degradation. Present study is an attempt to simultaneously integrate the impacts of environmental, social and economic impacts of climate change.

Environmental impacts of climate change

Global warming

As per the IPCC, depending upon the scenario visualised, the will result in temperature increases world-wide ranges from 0.6 to 4 °C (IPCC, 2007). The warming trend in India 1901 to 2007) was observed to be 0.510 C with accelerated warming of 0.21 0C per every 10 years since 1970 (Krishna Kumar, 2009).

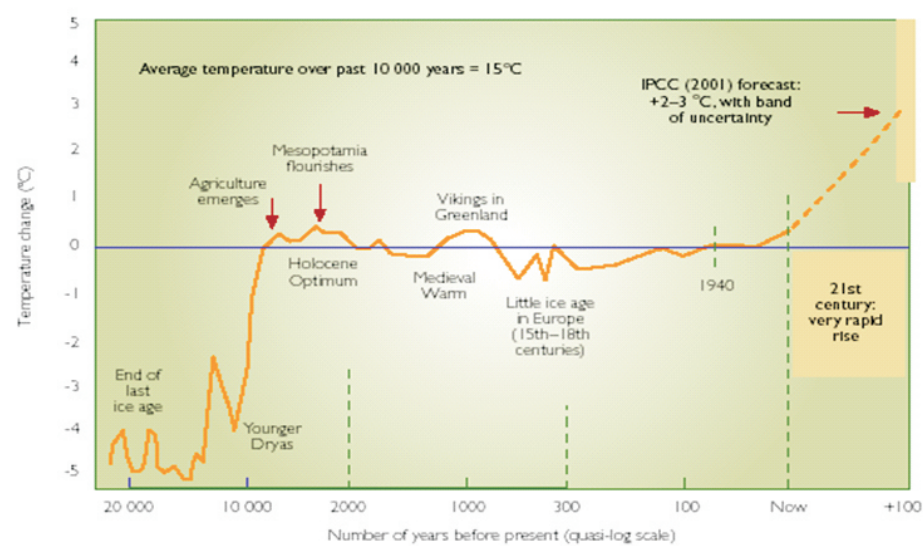


Fig 1.1: Variation in temperature change over the past 20,000 years. The IPCC (2001) has estimated that global temperatures will rise by several degrees centigrade during this century. As shown in Figure 1.1, there is unavoidable uncertainty in this estimate, since the intricacies of the climate system are not fully understood, and humankind's developmental future cannot be foretold with certainty.

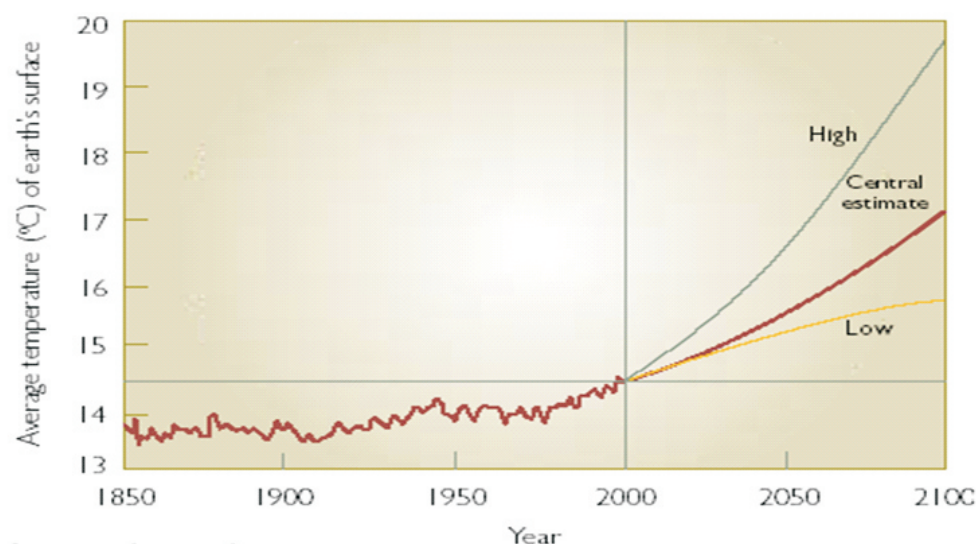


Fig. 1.2: Global temperature record, since instrumental recording began in 1850, and projection to 2100, according to the IPCC. World temperature has increased by around 0.4°C since the 1970s, and now exceeds the upper limit of natural (historical) variability. Climatologists assess that most of that recent increase is due to human influence.

Extreme weathers (Drought, floods, wildfires)

now a days (Eissa and Zaki, 2010).
Due to changing rainfall pattern and our country become while other parts are getting significantly wetter, and floods could become common (Mizra, 2003). An increase in extreme rainfall is which will substantially enhance damage by flood.

SEA LEVEL RISE AND MELTING OF POLAR ICE AND GLACIERS

Due to climate change, taking place which leads to expansion in already ranges from 0.18 to 0.59 m if current warming patterns continue (IPCC, 2007). This affects the which are experiencing

GENETIC EROSION AND BIODIVERSITY LOSS

.5°C to 2.5°C
Thousands of species risk extinction from disappearing habitat, changing ecosystems and acidifying oceans (Eissa and Zaki, 2010). According to the IPCC, climate change will put some 20% to 30% of species globally, possibly by 2100 (IPCC, 2007). Bellard et al. (2012), suggested that 35% of the world's bird population, 52% of amphibians, and 71% of warm water reef-building corals are also very susceptible to even the slightest change in global temperatures only 4% portion of animal species are expected to benefit from climate change.

Biodiversity also helps the farmers by regulating the diseases, flooding and climate, recycling water and plant nutrients and providing them cultural and educational opportunities. The mountainous ecosystems are feared to change further, resulting in loss of species adapted to the cold climate. Many

species will become extinct, primarily due to loss of vegetation and habitat (Malcolm, 2006).

CLIMATE CHANGE IN INDIAN CONTEXT

Climate change impacts are likely to vary in different parts of the country. Parts of western Rajasthan, Southern Gujarat, Madhya Pradesh, Maharashtra, Northern Karnataka, Northern Andhra Pradesh, and Southern Bihar are likely to be more vulnerable in terms of extreme events (Mall et al., 2006).

Socio-Economic Impacts of Climate Change

Social Impacts

Health

Water buffaloes need frequent baths for heat exchange but due to drying of ponds the drought will deprive the buffaloes from taking baths which intern will adversely affect the productivity of buffaloes. Similarly, the increased energy deficits may decrease cow fertility, fitness and longevity (King et al., 2006). Recent studies have suggested that air pollution is associated with infant mortality. There was a direct association between air pollution and respiratory system (Rodriguez et al. 2007).

disabled and low-income households particularly vulnerable. In 2003, the World Health Organization published their seminal report 'Risks and Responses' in which it persuasively argued that impact of environmental degradation, the rising of global temperatures and the continued release of greenhouse gas emissions into the atmosphere would be dramatically detrimental to human health, via pathways of varying complexity (McMichael, 2003). Climate change leads temperature, and humidity and thereby it affects the agriculture and rural development. Climate change affects all the factors responsible for maintaining good health, clean air and water, sufficient food, shelter, freedom from disease which finally leads to an increase in poverty, poor health and low nutritional level (Vinay, 2008). Macro and micronutrient deficiencies occur due to a reduction in overall consumption after drought and floods (WHO, 2008).

Migration

Ground water depletion due to climate change has changed the pattern of food available which further causes disease burden and rural urban migration. Crop failure occurs because of the increase in average temperature. Lack of awareness and appropriate medical facility make the situation more critical (Jeremy et al. 2010). High mortality in women and children has been reported in the eastern coastal district of Srilanka after tsunami. Natural disasters like drought, flood and environmental degradation can lead to population displacement. Women and Children have been accounted as a major proportion of displaced persons after disasters and are susceptible to adverse health (Sapir, 1993; Chew and Ramdas, 2005).

Emotional conflict

The emotional cost of flooding was long lived. Some of the non-recovery impacts of the severity of the flooding are in financial hardship, age and socio-economic status. Elderly people on low incomes whose houses were deeply flooded were the most ill-affected (Flood Management in Australia, 1998). Increased rates of depression, mental illness and suicide rates have been consistently reported on the effect of drought farming families of Australia (Judd et al., 2006; Kilkkinen et al., 2007).

Indigenous knowledge

The small farmers, mostly illiterate or with low levels of education depend largely on their habit, culture, and traditional practices to earn their livelihood without understanding the science behind their day to day decisions. Rapid change in the climate is making such indigenous knowledge and traditional practices outdated and, these costs heavily to these innocent farmers. Application of modern inputs though increases the livestock and crop results into the simplification of agro ecosystems, brings losses in fertility

and increases risk of exposure to new pest and disease variants (Ensor, 2009).

Multiple Effects (Health, Infrastructure and Education)

Mendelsohn et al. (2000) reported that those Nepalese farmers, who are without the access to the irrigation water, need to struggle a lot to adapt to the changed climate. Such farmers are in a great need of financial and technical resources for adaptation. Such farmers need improved infrastructure and farming technologies like research, climate information, good roads and access to energy. The floods that occurred in Sarlahi district in Nepal left a lot of houses damaged washed away and uninhabitable. The type of construction influenced the extent of flood damaged (thatched homes) (Kimbrough, et al. 2007). Yande (2009) concluded that the effects of floods in one sector can influence other sectors of society like health section, the outbreak of disease incidences (malaria, diarrhea and coughing) was attributed to the impact of floods on water sources and sanitation facilities. Further, accessibility to health services was a major problem due to infrastructure (roads and bridges) damage after a flood. In addition to this school attendance was also disrupted due to blocked roads.

Cultural Loss

According to Lind et al. (2008) the major loss in case of flooding has different dimensions. It not only causes economic loss, but it also causes loss of life and injury. There may be an irreversible loss of land for cultural and historical values and loss of nature or ecological values.

Economic Impact

Reduced Yield

European Parliament (2008) reported the major impacts of climate change like rainfed agriculture which will be affected by erratic rainfall in coming years, with every 1°C rise in temperature there is a drop in wheat production by 4-5 million tones, floods, threatened fresh water resources and displacement of large number of people (Singh, 2011). The potential is the shifts in the sowing time and length of growing seasons geographically, which would alter planting and harvesting dates of crops and varieties currently used in a particular area (IPCC, 2001). Seasonal precipitation distribution patterns and amounts could change due to climate change which reduces yield. The associated impacts of altered patterns of precipitation, high temperatures, and possibly and drought, will probably lead to reduced yields and increase production risks in many world regions, broadening the gap between rich and poor countries.

Increased price of land

Price of agricultural land is determined by its productivity. Climate change decreases the productivity of the land which will further reduce the price of land asset. Long-term decline in rainfall has increased the spread of deserts in western and southern Africa, resulting in shifting sand dunes and loss of flora and fauna (IPCC, 2007).

Size of income

Economic losses are faced by the livestock industries in terms of decreased performance (growth, lactation), increased mortality and decreased reproduction. is largely dependent on crop and livestock production. The negative weather impact on livestock rearing directly affects the size of income of farmers (Gaugan et al., 2002).

Indirect Cost

The farmers have to bear both direct and indirect costs costs of adaptation. The direct costs involve increase in costs of production and decrease in yield of livestock and crops. It also involves the costs of the increased risks of natural hazards. The indirect costs involve the change in socioeconomic conditions, lost opportunities for the improvement of the living conditions and adaptation costs. The much higher than the benefits. (Pant .2011).

Disturbance in economic stability

Nxumalo (1984) stated that South Africa did not only suffer from the effects of the world economic recession, but also economic stagnation due to the effects of natural hazards such as floods since the government had to divert funds to deal with the impact of floods (Parry et al. 2001). Developing countries are more vulnerable to climate change than developed countries, because of the scarcity of capital for adaptation measures, predominance of agriculture in their economies, their warmer baseline climates and their heightened exposure to extreme events.

Socio-Economic Impact

Nott (2006) concluded that a major tangible loss in floods is physical damage to property. It involves the cost of damage to goods and possessions, clean-up costs and loss of income or services in the floods aftermath. Some impacts of floods are intangible and are hard to place a monetary figure on. Intangible loss also includes emotional and psychological health problems suffered from flood-affected people.

CONCLUSION

the world.
up with

will rapidly alter the land and water all over the world which will cause more diseased pattern and mortality. Most vulnerable population will be elderly, women, children and poor. Changing weather patterns influences food production reduces crop yield, migration, displacement, and food and water scarcity. Climate change will have adverse effects on economic growth. Personal, emotional and social conflicts are increasing over stressed ecosystems conflict which leads to poor social and mental health. If no solution explored for mitigation and adaptation, it will pose greater risks and sustainability and development depends.

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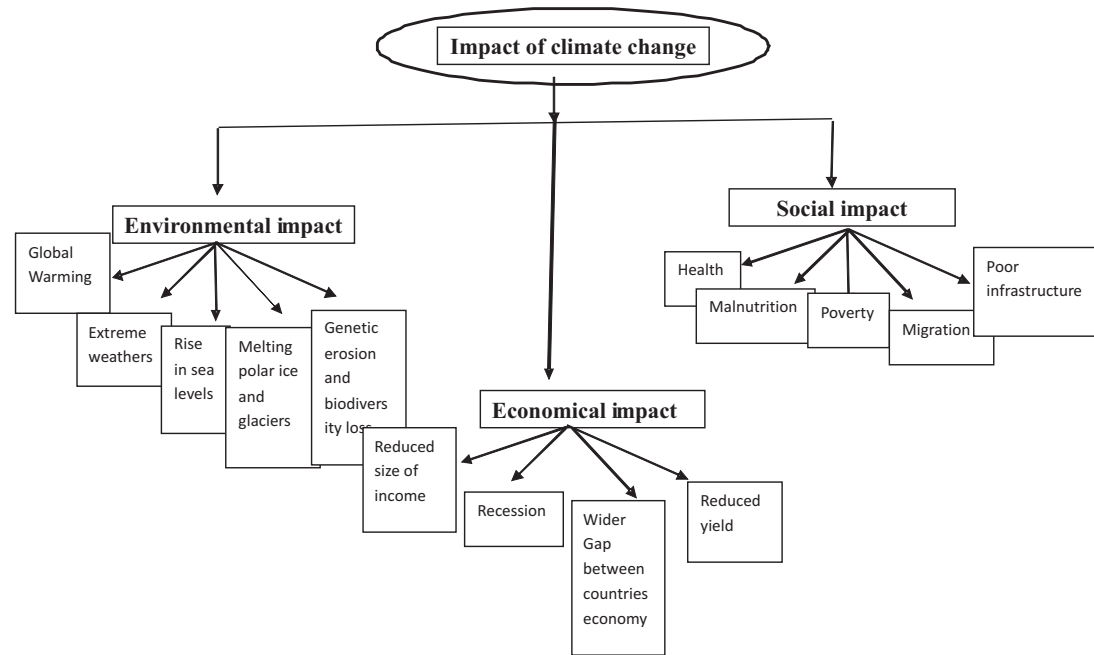
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