

## IMPACT OF CLIMATE CHANGE IN SOUTH ASIA ESPECIALLY IN PAKISTAN

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**ABSTRACT**

Currently Climate Change is one of the most ignored, overlooked and ongoing manmade disaster. Climate change is no longer an issue for the distant future. It is already taking place in South Asian countries particularly the poorest people, are most at the risk. The impact of high temperature, more variable precipitation, more extreme weather events and sea level rise in South Asia will continue to intensify. These changes have major impacts on economic performances on South Asian countries. These impacts will exacerbate existing social and environmental problems leads to migration within and across the national borders. The high rates of population growth, and natural resource degradation, with continuing high rates of poverty and food insecurity make South Asia one of the most vulnerable regions to the impacts of climate change. In sum, climate change is not just an environmental issue but one with socioeconomic implications in South Asia. The unprecedented changes in environmental issues, caused by climate change, veritably broke all previous records of loss of life, property, infrastructure and livelihood. The effects of climate change relatively more pronounced in the country due to its over-reliance on the environment for basic survival, high population growth rate and density, low capacity to mitigate the negative impacts of climate change and poverty. The poor use natural resources for their livelihoods without paying much attention to seen or unseen consequences, thus limiting their livelihood assets such as employment, health, education and access to water and other basic amenities of life.

**KEYWORD:** Currently Climate water and other basic amenities of life.**INTRODUCTION**

One fifth of the world's population is located in south Asia. It is the most disposed region in the world. The majority of the poor people also lived there. There is a big figure of undernourished people according to FAO 2009. Climate change appeared as the single most persistent issue dominating society on a global basis, with severe consequences for the food security of billions of people in the developing countries. The inter-annual, monthly and daily distribution of climate variables (e.g., temperature, radiation, precipitation, water vapor pressure in the air and wind speed) disturbs a number of physical, chemical and living processes that vigor the yield of agricultural, forestry and fisheries systems (Easterling *et al.* 2007). Climate change is defined by the IPCC as any change in climate over time, whether due to natural change or as a result of activity by humans (IPCC 2007). Evidence from annotations of the climate system has led to the conclusion that human activities are paying to a warming of the earth's atmosphere. Human activities chiefly burning of fossil fuels and alteration in land cover are adapting the concentration of atmospheric elements or properties of the earth's surface that captivate or scatter radiant energy.

**Observed and Future Climate Change**

Evidence from comments of the climate system show an rise of  $0.74 \pm 0.18^{\circ}\text{C}$  in global average surface temperature during the 100 year period from 1906 to 2005 and an even greater warming trend over the 50 year. period from 1956 to 2005 than over the entire 100 year period i.e.,  $0.13^{\circ}\text{C} \pm 0.03^{\circ}\text{C}$  vs.  $0.07^{\circ}\text{C} \pm 0.02^{\circ}\text{C}$  per decade (IPCC 2007). Eleven of the 12 year period between 1995 and 2006 are among the 12 warmest years since the instrumental record of global surface temperature was started in 1850 (IPCC 2007). The following information on the experiential weather alteration in South Asia was short from the report of the Working Group II chapter on Asia (Chapter 10 – Cruz *et al.* 2007) of IPCC. Decreasing inclinations in yearly mean rainfall have been observed in the seaside belts and arid plains of Pakistan and parts of North-East India with growing trends in Bangladesh. In general, the incidence of more strong rainfall events in many parts of Asia has increased, affecting severe floods, landslides, and debris/mud flows. It is interesting that at the same time, the number of rainy days and total annual amount of rain has decreased. An example of this can be demonstrated by the risky rainfall event which occurred in Mumbai,

India on 26 and 27 July 2005. In a matter of 18 h, 944 mm of rain was verified which was the highest rainfall ever verified in the last 100 years in India. Mumbai and together areas of Maharashtra skilled one of their bad floods in history (Government of Maharashtra 2005). In many parts of South Asia, there have been an increasing incidence and strength of droughts. The linear leanings of rainfall decreases for 1900–2005 were 7.5% in South Asia (significant at <1%). Droughts have become more common, especially in the tropics and subtropics, since the 1970s (IPCC 2007). In 1991, a 20-foot storm surge that followed a cyclone killed nearly 140,000 people in Bangladesh and left up to 10 million homeless. The population of Maldives mainly depends on groundwater and rainwater as a source of freshwater. Both of these sources of water are vulnerable to changes in the climate and sea level rise. With the islands of the Maldives being low-lying, the rise in sea levels is likely to force saltwater into the freshwater lens (Ministry of Environment and Construction 2005).

The United States intelligence community, and in particular, the Department of Defense, are worried that climate change may provoke armed struggle in the future. The IPCC is more kept in drawing a direct link between climate properties and conflict; despite the commonplace rhetoric of "water wars," India and Pakistan are no more likely to go to war over resources than any other issue that divides them. But strains still hold back action against climate change, and future shortages will no hesitation be politically and economically challenging to all regional governments.

#### **How is Pakistan affected by climate change?**

The snow melt contribution keeps the rivers perennial throughout the year. Pakistan is highly vulnerable to climate change as its economy is heavily reliant on climate-sensitive sectors like agriculture and forestry, and its low lying densely populated deltas are threatened by a potential risk of flooding. In Pakistan, annual mean surface temperature has a consistent rising trend since the beginning of 20th century. Rise in mean temp. of 0.6–1.0°C in arid coastal areas, arid mountains and hyper arid plains, 10–15% decrease in both winter and summer rainfall in coastal belt and hyper arid plains, 18–32% increase in rainfall in monsoon zone especially the sub-humid and humid areas is observed. There is 5% decrease in relative humidity in Baluchistan, 0.5 to 0.7% Increase in solar radiation over southern half of country. Geographically much more extensive is the El Niño-Southern Oscillation (ENSO) phenomenon, which has an especially important influence on the weather and interannual variability of climate. The strength of such connections for Pakistan has been demonstrated in several studies. El Nino phenomena suppress monsoon rainfall activity over Pakistan (Chaudhry 1995). La Nina phenomena has a negative impact on winter precipitation over Pakistan (Azmat 2002). Recent history's worst drought (1998-2002) over Pakistan and most of South

Asia is linked with La Nina phenomena (Hoerling, M., and A. Kumar. 2003).

#### **Extreme drought of 1998 – 2002**

The drought of 1998-2002 is considered worst in 50 years in Pakistan. The drought started in 1997 as El-Nino developed, but the drought gained intensity in 1998 and reached its peak in 2000 till 2001 and thus gradually weakened in 2002. The extreme drought also affected much of India and Afghanistan. The World Bank warned that the drought would inevitably hit economic growth of Pakistan. Thus it denoted several hundred-million dollars to help Pakistan through its worsening drought. The drought was at its peak in Baluchistan and Sindh, 26 districts of Baluchistan were suffering from severe famine as a result of the drought. 1.2 million People in the province were affected by the great drought.

#### **Moderate drought of 2004 till 2005**

The drought of 2004 till 2005 was an on and off phenomenon, the drought gripped the lower parts of Pakistan mainly Baluchistan and Sindh, However no damage or death was reported during the period possibly due to 2003's flooding.

#### **Weak drought of mid 2009 – mid 2010**

This drought developed over the upper parts of Pakistan that is Punjab, Khyber, Gilgit, Kashmir and Northern Baluchistan. Sindh was unaffected by this drought. The major reason of this drought was the development of El-Nino which badly affected India, India experienced the driest monsoon year since 1977.

Pakistan contributes very little to the overall Greenhouse Gas (GHG) emissions, but remains severely impacted by the negative effects of climate change by the following ways:

- ✓ Glacier melt in the Himalayas is projected to increase flooding will affect water resources within the next two to three decades. This will be followed by decreased river flows over time as glaciers recede.
- ✓ Freshwater availability is also projected to decrease which will lead to biodiversity loss and reduce availability of freshwater for the population.
- ✓ Coastal areas bordering the Arabian Sea in the south of Pakistan will be at greatest risk due to increased flooding from the sea and in some cases, the rivers.
- ✓ Being a predominantly agriculture economy, climate change is estimated to decrease crop yields in Pakistan which in turn will affect livelihoods and food production. Combining the decreased yields with the current rapid population growth and urbanization in the country, the risk of hunger and food security will remain high.

#### **According to the IPCC report on 31 august, 2014**

"Extreme weather events like storms, floods and droughts are to become the "new normal"; and it is already happening." These disastrous effects of climate

change are also now considered normal in Pakistan. Millions of people every year are affected by it. Although Pakistan has negligible contribution in global carbon emissions, it is high among the list of countries that are suffering from climate change. German watch, a NGO that publishes an annual Global Risk Index of countries most vulnerable to climate related disasters, in 2010 listed Pakistan as the number one most affected country in the world. And in 2011 & 2012, Pakistan was ranked as number three in the list of countries hardest hit by weather disasters because of Climate Change. Pakistan is used to suffering from multiple crises at a time, news headlines are usually dominated by issues like terrorism, injustice, extremism, political unrest and power shortages etcetera. But the dangerous threat we all know as climate change has been virtually left off the radar when it comes to issues of national priority. Environmental issues have always found little space in Pakistan, mainly due to mass unawareness within the political culture of the country. Studies from the Pakistan Metrological Department shows dramatic changes in Pakistan's climate, such as; 10 to 15% decrease in rainfall in the coastal belts and hyper arid plains, 18-32% increase in rainfall in the monsoons zone, especially in the sub-humid and humid areas 0.5 to 0.7% increase in solar radiation over southern half of the country, 3 to 5% decrease in cloud cover in Central Pakistan, with increase in sunshine hours 17 to 64% departure of rainfall from normal during EL Nino events, increase in frequency of extreme events such as heavy rains, storms, heat waves, cold waves, cyclone and flash floods, significant shift in weather patterns/monsoon, change in availability of irrigation water, less snowfall and reduced river flow, less rainfall in arid areas, prolonged droughts, decline in gross per capita water availability, decline in crops productivity and increased food insecurity in coming 50 years. Different ailments caused due to the rise in temperature have created further difficulties for the people, who are already living below the poverty line. Diseases like malaria, diarrhea and dengue are common now. In 2010, there was a dengue fever outbreak in Pakistan, which has affected more than forty thousand people till now, claiming numerous lives. Despite the continuous harmful impact of climate change in Pakistan from the past few years, people still don't the changing weather patterns in the country. Majority of the rural population and even those living in urban areas with easy access to latest information, are still unclear about the concept of climate change and its consequences.

## CONCLUSIONS

South Asia is one of the most vulnerable regions in the world to climate change in view of the huge population, the large number of poor facing food insecurity, inappropriate soil and management practices on marginal lands in the semi-arid regions leading to increasing rates of land degradation and the projected impacts of climate change on the agricultural, forestry and fisheries sectors. The coping capacity of the rural poor, especially in the

marginal areas, is poor and there is a need to mainstream the good practices for adaptation to climate change into sustainable development planning in the region. Improved understanding of the climate change impacts, vulnerability and the adaptation practices to cope with climate change could help this process. The developing countries of Asia like Pakistan, where impacts of climate change are likely to be felt most severely because of resource and infrastructure constraints, need to develop and implement incremental adaptation strategies and policies to exploit no regret measures and stressing the importance of considering climate change in planning, designing and implementing development activities. The first is a macro strategy and involves rapid sustainable and equitable development that will increase income levels; education and technical skills; improve public food.

Distribution, disaster preparation and organization and health care systems and reduce susceptibility. The second strategy is a micro strategy and involves the management of sectors most complex to the climate change. This means developing new institutions, existing ones to encourage version to climate change. It would also involve adapting climate-sensitive substructures already planned or applied or other long-term choices that are subtle to climate.

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