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EDITORIAL

GLOBAL WARMING AND PAKISTAN: LOCAL RESPONSE TO A GLOBAL CHALLENGE

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Global warming is emerging as one of the biggest threats to earth in this century. It not only has deleterious effects on individuals' health but could also trigger natural disasters such as floods, famines, droughts and cyclones etc. Intergovernmental Panel on Climate Change reported that industrial revolution of the mid-19th century has caused a 1°C rise in global temperature. It is further estimated to rise by >1.10°C to 6.40°C over the 21st century.[1] This increase in temperature along with loss of biodiversity may lead to devastating effects on health.

Increase in earth's temperature has both short and long term adverse consequences. Global warming is changing the physical, chemical and biological processes of earth that are evident in every continent. To recognize the dangers of global warming, it's important to identify its deleterious effects on human society and natural environment. Sea levels are rising, glaciers are shrinking; record high temperatures, severe rainstorms and droughts are becoming increasingly common. Changes in temperatures and rainfall-patterns alter the behavior of both plants and animals and have significant implications on humans as well.[2]

It's an established fact that temperature rise of >1.5°C has detrimental effects on health.[1] Data revealed that mortality of people above sixty five years age have increased >50% in the past fifty years because of global warming.[3] Increased dehydration, derangements in renal function, dermatological malignancies, tropical infections, mental health problems and pregnancy complications, allergies, pulmonary and cardiovascular complications are some of its obvious effects.[4,5] Populations at extremes of ages, poor communities and people with underlying health problems are the ones that suffer the most.[1,3]

A decline of 1.8-5.6% in global production of major crops is observed since 1981. This along with extreme weathers and depletion of soil for harvesting has increased the risk of undernutrition.[3] Extensive damage to natural ecosystems, decreasing freshwater resources and rising sea levels, extremes of temperatures and food depletion increases the risks of pandemics.[2,6]

Pakistan has been ranked among the top ten most affected countries because of global warming in the past twenty years[7-9] and expected to have wide-ranging impacts. Agricultural yield, availability of water could be greatly affected and increased coastal erosion, sea water incursion and increased extreme climatic events could occur more frequently.[7]

Global Climate Risk Index reported that Pakistan has lost 0.53% per unit GDP with economic losses worth US$ 3792.52million. Pakistan witnessed 152 extreme weather events from 1999 to 2018.[7,9] Similarly Asian Development Bank reported that socioeconomic costs of environmental degradation are considerable with climate adaptation needs ranging between $7 billion and $14 billion per year.[10]

In Pakistan, a temperature rise of 0.6°C has been observed over the past century which falls within the allowed limit of global temperature increase. But this century could be devastating and expected rise is between 3°C and 5°C, much higher than the rest of the world.[10] Availability and access to food and food quality could be greatly disturbed. Increases in temperature in the caused wheat yield losses. Studies have shown that wheat production in arid areas would be affected by 17% in case of 1-2°C rise in the temperature.[7]

Similarly, mean annual precipitation has been increased in most parts of the country.[7,10] This could be associated with a number of adverse impacts, including the increasing frequency of extreme events (floods, droughts, heatwaves, and cyclonic activity); steady regression of most glaciers and changes in the rainfall patterns.[7] During the past ten years, Pakistan has been hit by floods almost every year and floods of 2010 and 2011 have appeared as huge disasters in its history. It is predicted that by 2030 an additional of 1.5 million people may be at risk of river floods annually as a result of climate change.

Infectious diseases (vector, water and food borne) are highly sensitive to temperature changes. During the years 2021-2050 an estimated of 35 million population is at risk of malaria annually (with 1-2°C rise) in Pakistan. It is predicted that by 2030 diarrhea-related deaths in children (<15 years) can increase by 11.7%, while heat-related deaths in elderly are expected to increase by 100% in Pakistan.[11] In 2013, 45% of children (<5 years) have stunted growth while underweight and wasting in children (<5 years) was prevailing in 31.6% and 10.5%, respectively.[11] Reported data in 2012 showed that out of total deaths (326,100) from cardiac and lung diseases (18+ years), 37% were attributed to household air pollution.[11,12] Around 52% of 68200 deaths due to acute lower respiratory infections in children (<5 years) were attributed to household air pollution.[12]

Forest could play a major role in overcoming pollutions, but Pakistan is a forest poor country. Forests and planted tree area of the Pakistan is 4.2 million ha, which equals to 4.8% of the total land area of Pakistan. This constitutes 0.05 hectares of forest/capita against the world's average of 1.0 hectares/capita. Every year thousands of hectares of forests are destroyed because of human activities which could lead to a very intense weather in future.[13]

It's encouraging that government of Pakistan is taking measures to tackle the temperature changes. These measures include the increased forestation drives in country through projects like billion tree tsunami and ten billion tree tsunami, national and monsoon plantation drives. Moreover, the government is building new dams for irrigation of land, preservation of freshwater habitats (to increase the quality and quantity of food) and production of hydropower to limit the use of oil, coal and gas for production of electricity. Besides this public should be made aware to limit the use of electricity and eat more vegetables, fruits, whole grains and less meat and dairy products as it will results in fewer greenhouse effect. Furthermore, implementation of hybrid busses for mass transit projects, easing import of electric/hybrid vehicles and installation and promotion of solar panels in new buildings are some of the steps towards achieving the goal of climate control.

However, Pakistan still needs to put a lot of efforts in preventing the calamities and extend such projects further to produce more green energy and preserve nature. Public should be educated to purchase fewer electronics and other household items and to increase the reuse, repair and recycle already purchased items to reduce carbon emission. In addition to that, government should intervene in redesigning transport systems; city planning; production and distribution of food and household items; reforms in healthcare system, limiting the use of fossil fuels and increasing use of alternate energy sources etc. This vision can only be achieved by increasing awareness and interactive partnerships between the government, society, health professionals and scientists, businessmen etc.

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CONFLICT OF INTEREST

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