GLOBAL WARMING AND ITS IMPACTS IN PAKISTAN

Global warming is the hot new topic of this century as catastrophic climatic events keep on ravaging the whole planet, annihilating entire villages and towns, and financially crippling the affected regimes. However, most of the people are not even familiar with the term "Green House Effect". Therefore, we must first know what the terms mean, and only then we can truly understand its impacts.

GLOBAL WARMING AND GREEN HOUSE EFFECT

Definition of Green House Effect

The green house effect is a natural process by which the earth retains some of the energy of the sunrays, and utilizes it to warm it enough to sustain life on it. This process is mediated by the presence of some gases in the earth's surroundings, that form a layer around it, and are known as 'Greenhouse Gases' (GHG's).

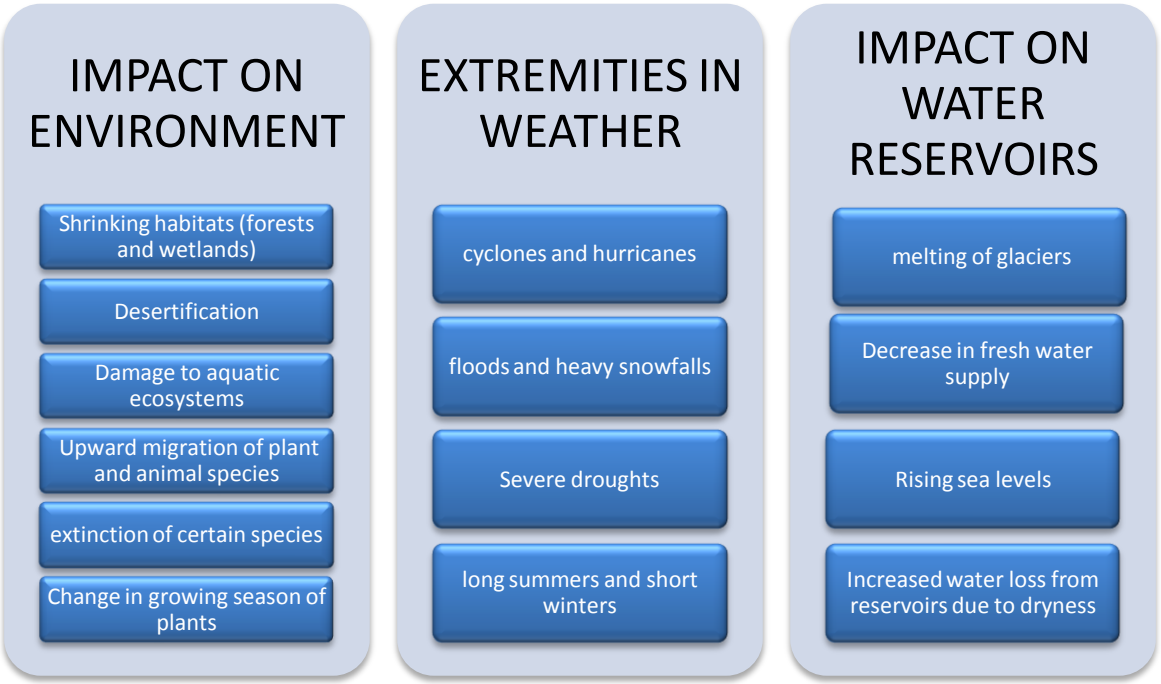
Enhanced Green House Effect- Global warming

The term Global warming and enhanced green house effect are synonymous with each other. The human activities like burning of fossil fuels, excessive smoke discharges from factories and the depletion of forests have led to an increase in the concentration of the Greenhouse Gases(GHG's), mainly carbon dioxide, Methane and Nitrous oxide, in the earth's outer atmosphere, , which are responsible for trapping excessive heat inside the environment and thus increasing the overall temperature of the earth, leading to the phenomenon of Global Warming.

EFFECTS OF GLOBAL WARMING ON THE WORLD'S CLIMATE

Global warming has emerged as one of the biggest threats to our planet in this century. It has been proved that due to the increase of the GHG's in our outer atmosphere, the earth's temperature has warmed by 0.74 degree Celsius over the last 100 years. This has resulted in a devastating disruption of the earth's climatic processes, leading to floods, famines, droughts and cyclones among other natural disasters.

The following figure shows the impacts of the Global warming on the world's climate.



IMPACTS OF GLOBAL WARMING ON PAKISTAN

AN INTRODUCTION TO THE PROFILE OF PAKISTAN

Pakistan is an autonomous country that occupies a strategic location in South Asia, with a wide variety of landscapes. On the southern side, the country has a coastline border of 1046 km along the Arabian Sea and the Gulf of Oman while the northern side exhibits the awesome glaciated mountains that attract mountain climbers from all over the world.

The major portion of the Pakistani land is dry and barren, mainly because of the great variability in the climatic parameters. The major water resource of Pakistan is the melting snow from the Himalayan glaciers, as well the heavy monsoon rainfalls.

EFFECTS OF GLOBAL WARMING ON CLIMATE OF PAKISTAN

Although Pakistan itself contributes very little to the overall emissions of the Greenhouse Gases, yet it remains one of the most severely hit countries of the world by the process of Global warming. Global warming has affected the climate of Pakistan in the following manners.

RECENT CLIMATIC CATASTROPHES IN PAKISTAN

Pakistan ranks 16th on the Climate Change Vulnerability Index(CCVI) by Maple Croft, jumping up 13 positions in one year. German watch also places Pakistan as the "most affected" country for 2010 and in top 10 for 1990-2010 by climatic changes. Climate changes are costing the economy $14 billion a year, which is almost 5% of the GDP. According to the Asian Development Bank, more than 10 million people have been displaced in Pakistan over the last 2 years due to these climate related disasters.

Given below is a brief summary of the recent disastrous climatic changes in Pakistan

1. **FLOODS**

Pakistan's economy has been crippled heavily by devastating and repetitive floods during the last decade. In the past 10 years, Pakistan has been hit by floods almost every year. However, the floods of 2010 and 2011 have emerged as the biggest catastrophes in the country's history.

2010 floods

The flood of 2010 remains as one of the biggest tragedies in the world's history, with 20 million people affected by it. The floods resulted in approximately 1,781 deaths, injured 2,966 people and destroyed more than 1.89 million homes.

2011 floods

Although nowhere near the 2010 floods, the 2011 floods also wrecked havoc , and affected 5.3 million people and 1.2 million homes in Sind, as well as inundating 1.7 million acres of arable land.

A distressed woman clutches her children as she wades through shoulder high water in the flood affected areas of Sind.

2. DROUGHTS

A Drought is a period of abnormally dry weather due to the lack of rainfall. The chief characteristic of a drought is a decrease of water availability in a particular period and over a particular area.

Pakistan's economy has been punched heavily by the continuous spell of droughts for the last many years, particularly in the provinces of Baluchistan and Sind. The drought in these areas has reduced the river flows, resulting in drying up of the irrigation canals, leading to a severe agricultural deprivation. It has also been responsible for causing immense losses to poultry and other animals, causing a general deficiency of food and water for people. The increased temperatures because of the increased GHGs as well as a mismanagement of the water reservoirs need to be blamed for the condition.

A malnourished child sits in his mother's lap, waiting for some food to magically appear in the drought.

3. INCREASING FREQUENCY OF CYCLONES

Tropical cyclones are also a dreaded characteristic of the climate in various parts of Pakistan. As a result of global warming, the frequency of Cyclones has increased over the Arabian Sea during the last 50 years. Moreover, the intensity of these cyclones has also increased during the last quarter of the 20th century. Strong tropical activity in the Arabian sea in 2001, 2004, 2007, 2010 and 2011 shows an increasing trend towards more cyclones, indicating that there are bright chances that future cyclones can directly strike mega metropolis cities like Karachi and kill thousands of people and may change the way these cities used to live.

A mosque lies submerged in water as cyclone Yemyin hit the coastal areas of Pakistan.

4. RISING TEMPERATURES IN PAKISTAN

As an ill effect of global warming, the annual mean surface temperatures in Pakistan have been steadily increasing during the past century. A rise in mean temperature of 0.6-1°C in the coastal areas along with a 0.5 to 0.7% increase in solar radiation over southern half of country has been observed. In central Pakistan, a 3-5% decrease in cloud cover with increasing hours of sunshine have also been responsible for increasing the temperatures.

Heat wave of 2010

The year 2010 broke all records as Mohenjo-Daro, a city in Sind faced the temperature of 53.5 °C ,the hottest temperature ever recorded in Asia and the fourth highest temperature ever recorded in the world . The summer of 2010 caused a temperature of above 50 °C in twelve cities of Pakistan. The scorching heat resulted in the death of at least 18 people.

5. RISING SEA LEVELS

The increasing temperatures due to global warming have resulted in a progressive melting of glaciers, which has resulted in a gradual increase in the sea levels. According to the Karachi Tidal Station, an increase in the mean sea level at a rate of 1.1 mm/yr has been recorded during the past 100 years. The ravaging sea continues to engulf the surrounding land, and consumes 80 acres a day on an average. Six subdivisions of Thatta, which were previously considered extremely prosperous due to extensive agriculture, are now amongst the poorest parts of the country due to the engulfment by the sea.

EFFECT OF CLIMATIC CHANGES ON THE FOOD SECURITY OF PAKISTAN

Definition of food security

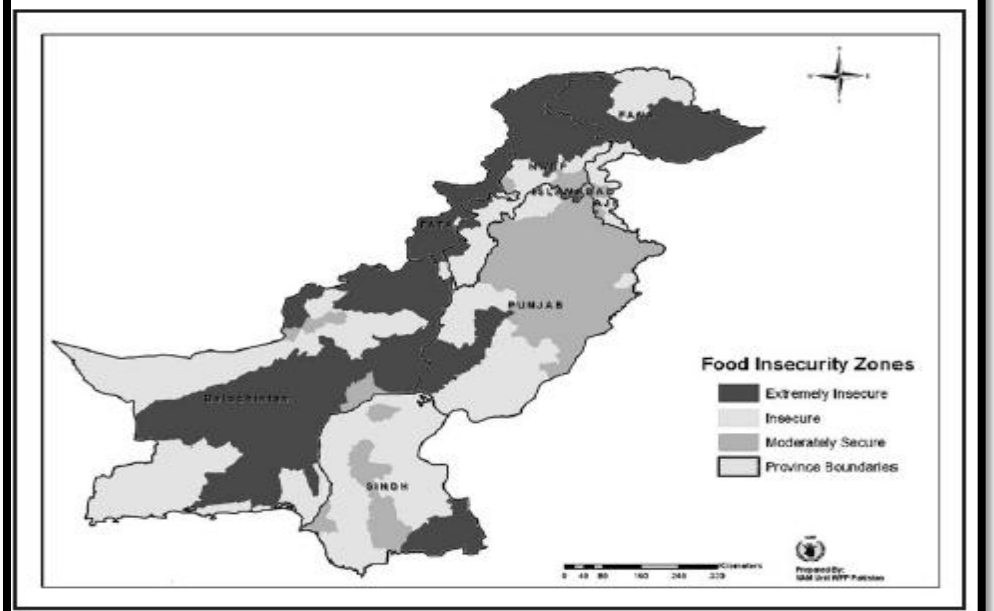
'Food security is achieved when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life'

Situation of food security in Pakistan

Pakistan faces a severe crisis regarding the food security issues. The whole nation has been gripped by a grave state of malnutrition as catastrophic climatic events resulting because of the process of global warming have destroyed the food resources and halted its availability to the masses. The food security has diminished to such an extent that it is a norm in thousands of houses to have foodless days.

The picture of Food deficiency in Pakistan was revealed to people all over the world, as many heart rendering events captured by cameras hit screens around the globe. The most appalling among these was the death of 20 malnourished women and girls occurring as a result of a stampede to get sacks of rice in Karachi. Similarly, the disturbing situation of food security in Pakistan was also exposed as in 2010,as a man blew himself up at the office of United Nations World Food Program(WFP) in Islamabad, killing 5 employees.

Figure 1: Food Insecurity Zones of Rural Pakistan



Source: Sustainable Development Policy Institute and World Food Program.

The above figure depicts the situation of food insecurity in Pakistan, revealing that most of the regions face from a shortage of food, particularly the provinces of Baluchistan and (N.W.F.P), the regions that have been hit most hard by climatic calamities like floods and droughts. The climatic disturbances have reduced the agricultural productivity by altering bio-physical relationships as they have affected the growing periods of the crops, altered the schedule of cropping seasons, changing the water requirements of irrigation and altering the characteristics of soil, thereby increasing the stresses on crops.

Role of droughts on food insecurity situation of Pakistan

Pakistan has been in the grip of severe droughts for the last many years. Pakistan is extremely vulnerable to these climatic changes as it is already facing significant water shortages with temperatures touching the sky.

A Decline in the wheat yield in semi-arid areas of Pakistan in the range of 9 to 30% for temperature increases of 1 degree centigrade is estimated. The extremely reduced crop yields in 2009 and 2010 are believed to be a consequence of droughts. Farmers claim a 50% decrease in their crop yields, particularly in the province of N.W.F.P.

Role of floods in food insecurity situation of Pakistan

The mammoth floods of 2010 and 2011 wiped out the entire agricultural apparatus of Pakistan. In addition to the destruction of the standing and stored crops, damage to irrigation infrastructure and roads, as well as farmers' losses of seeds, tools and machinery also occurred at a large scale, annihilating entire villages and hitting the economy hard. The 2010 floods caused widespread damage to monsoon kharif crops that were still standing in the fields in August and early September. The losses have been estimated at $2.2 billion in Pakistan, with rural Punjab contributing $1.2 billion to it. The irrigated areas affected in Khyber Pakhtunkhwa is estimated to be 400,000 hectares, which is a minion as compared to the 1.5 million hectares in the province of Punjab, the irrigation hub of the country.
The floods have reportedly destroyed 71% of the standing rice crop, 59% of vegetable crop and 45% of the maize crop in the country.

Decrease in the amount of seafood
Although almost everybody is familiar with the term 'Global warming', yet most of the people don't understand its consequences on the sea life. The human activities like burning of fossil fuels with their deadly emissions have resulted in a gradual heating up of the oceans with a trend towards acidity of the ocean water because of the CO_2 in these emissions. Reportedly, an increase of about 30% in the sea water acidity has occurred.

The aquatic habitats are not adaptable to these changes, and therefore are rapidly dying out, reducing the sea food supply of people, especially in coastal areas like Karachi and Gwadar.

The aquatic habitats of Karachi suffered a serious devastation as on August 14th 2003, a Greek oil tanker spilled 15,000 tonnes of crude oil across a 14 kilometre stretch of the Karachi coast. In addition to causing a destruction of the sea life, the spill also caused severe respiratory, digestive and skin problems for the 13 million people living in that city.

CONCLUSION

Thus, the erroneous activities of the humans have finally started to take a toll on the earth's environment, leading to the formation of a volatile and capricious atmosphere, which is liable to be detrimental for the humanity itself in the form of unpredictable catalytic climatic events. The example of such recent events include the destructive Hurricane Katrina of 2005 in the U.S, the ravaging droughts of 2006 in Australia and China, and of 2011 in Texas, the floods of 2010 and 2011 in Pakistan, and of 2012 in Spain, and the 2010 Northern Hemisphere summer, which killed over 2000 people.

Pakistan, which is an already resource stressed country, has been crippled by the process of global warming, as the blatant floods and droughts continue to wreck the country's economy. More than 10 million people have been displaced over the last two years, the agricultural land lies barren and financial losses have been estimated at $2 billion.

These climatic catastrophes will not die down. Research studies have concluded that changing weather patterns will be the foundation for more intense and prolonged droughts and heat waves. Meanwhile, tremendous precipitation events will become more frequent and future tropical cyclones will become more strong.

Therefore there is a growing consensus that steps will have to be taken to uproot the cause of these events. In addition to the formation of well thought flood and drought prevention policies, steps to reduce the overall emission of green house gases have to be taken so that the planet Earth and its inhabitants can survive.

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