

Pakistan Affairs.

Question # 4:-

Climate change in Pakistan

What is climate change?

It refers to long term changes in the average weather patterns on earth. The primary cause of recent climate change is due to the increase of green house gases such as methane and carbon dioxide usually as a result of combustion of fossil fuels. These gases trap sunlight which ultimately rises the temperature of earth and the phenomenon commonly is known as global warming.

Although

Pakistan contributes only 0.88% of the world's greenhouse gas emissions yet it is the 5th most vulnerable country to climate change.

For Pakistan climate change is alarming as it has led to:-

Rising temperatures: Pakistan average temperature is rising and leading to intense heatwaves and hotter days like the highest temperature recorded was 49° on thermometer and feels like was much greater dated 25th July, 2024.

Extreme Weather Events: more severe and unpredictable weather events such as storms, floods and droughts.

Melting ice and rising sea levels: polar ice is melting, leading to rising sea levels

Disruption of ecosystems. Many plants and animals are struggling to survive as their natural habitats are changing or disappearing due to excessive land use.

Impacts of Climate Change on Pakistan. (stats)

- Pakistan has experienced significant temperature increase over the past few decades. The average annual temperature has increased by about 0.5°C since the 1960s. By 2050 it is projected that the average temperature will rise by an additional 1.3°C to 1.5°C .
- Over the past years the intensity of climate induced disasters in Pakistan has significantly increased. With over 1700 deaths and 1200 injuries World Bank reported the economic losses and reconstruction flood-hit areas of Pakistan in 2022 to be over USD40 billion.
- An increase in the no of people affected by flooding is projected with a likely increase of around 5 million people exposed to coastal flooding by 2035-2044 and a potential increase of around 1 million annually exposed to coastal flooding by 2070-2100.
- The World Bank estimated that the combined risks of extreme climate related events, environmental degradation, and air pollution are projected to reduce Pakistan's GDP by at least 18 to 20% by 2050. This will stall progress on economic development and policy reduction.

Overview of events due to climate change

→ Climate disasters such as the 2010 catastrophic floods, the 2015 heatwave, and recurrent droughts, have caused significant loss of life, economic damage and displacement.

→ Between 1992 and 2021, climate-related disasters resulted in \$29.3 billion in economic losses, about 11.1% of Pakistan GDP.

→ 2022 floods:

It was a major event affecting 33 million people, and displacing 8 million. The damage was estimated at over \$14.9 bn with total economic losses at \$15.2.

The agriculture sector was particularly affected with significant GDP contractions in this area.

Role of Climate Change in economic uncertainty of Pakistan

Climate change has a substantial influence on macro-economic variables. Financial indicators and macroeconomic variables have a critical part in country's economic volatility.

The fluctuation in the stock prices can be the result of disparities in macroeconomic factors that might affect not only the stock market but be also the dividends and so many other factors.

According to a research conducted climate change affects the economy on macro-economic level. Tropical cyclones are said to have a linear relation with economic

growth and they may result in slowing down GDP growth depending upon the intensity of storm. Moreover the temperature has a non-linear influence on productive capacity is so significant that output is greatest at about 13°C . Heavy precipitation hurts businesses and communities, especially agriculture-based surroundings. It is predicted that upcoming heating can sluggish the development by 0.281. Climate change may also results in demographic distortions.

Climate-Economic growth nexus in Pakistan

Pakistan being a warm area, is particularly sensitive to atmospheric changes since it is located in geographical zone where temperature exceeds the global average. The nation is predominantly dry and semi-arid (approximately 60% of land revenues receives less than 250mm of rain per year, with the remaining 24% receiving between 250 and 550 mm), the rivers are mostly supplied by Hindu-Kush Karakoram Himalayan glaciers. They are rapidly disappearing because of global warming and the economy is agrarian hence particularly variable.

Over 25 million people are employed in Pakistan's agriculture-based economy. Also Pakistan is world's fifth most populous economy where the population growth rate is more than 2.83%. Therefore

being an agro-based country, low agricultural productivity translates into lesser economic output for the country.

Way-Forwards:-

To effectively address climate change and its impact on Pakistan's environment and economic security, a well defined and actionable framework is essential. Population planning.

Population welfare programs under the ministry of National Health Services aim to control population growth through family planning and reproductive health services. These initiatives face resistance due to cultural & religious factors, lack of awareness, and inadequate resources. Hence strengthening public awareness campaigns, addressing the socio-economic benefits of population control. By involving religious leaders to dispel misconceptions and endorse family planning. Also, by ensuring greater access to contraceptives in rural and underserved areas.

Climate-Resilient Agriculture.

The government has worked on such agriculture by introduction of high-yield, drought resistant crop varieties (e.g. wheat and rice) and farmer training programs. The challenge still lies due to poor implementation, lack of funding, political instability and insufficient reach in

remote areas. For climate-adaptive crops with a focus on a local ecosystem needs to be expanded in research and development area. The agrometeorological services should be established in order to provide real-time weather forecasts and guidance to farmers.

Water Resource Management:-

Various Irrigation modernization efforts and construction of dams (Diamer-Bhashia Dam) and small-scale water conservation projects have already been implemented with few being under process. The amendments in legislation should be introduced to regulate water groundwater extraction and promote rain water harvesting. In water intensive farming areas mandate drip and sprinkler irrigation systems should be made compulsory by making the accessibility easier.

Renewable energy transition:-

The current measures include Qaid-e-Azam Solar Park project and alternative and renewable energy Policy 2019. The challenge lies in its limited grid infrastructure and slow adoption by private sectors. The difference still can be made in such initiatives by providing tax breaks and low interest loans to businesses adopting renewable energy. In rural area, the off-grid renewable energy solutions should

be expanded.

Question # ~~018~~ - 07.

Pakistan as a semi-industrialized country, relies heavily on agriculture, which contributes significantly to its economy employing nearly 40% of the labor force and accounting for approximately 20% of GDP. However, this dependence makes the industrial vulnerable to challenges in agriculture as both sectors are intricately linked through raw material supply change and economic change interdependence.

Importance of Agriculture.

- Raw material supply: agriculture provides raw material like cotton for the textile industry. Sugar cane for sugar production and wheat for food processing industries.
- Foreign exchange earnings: The key exports such as rice, fruits and vegetables are agricultural products. Therefore a decline in agricultural output overall reduces export earnings.

Pakistan is fourth largest cotton producer globally and the textile industry relies heavily on ^{domestic} cotton supplies contributing 60% of total exports. Declining cotton yields due to pest outdated farming techniques and water shortages disrupts production and textile mills leading to increase

costs and reduce export competitiveness
for example cotton production fell
from 14.8 billion bales into 2004 to
2005 to 6.5 billion bales in 2020

Causing significant losses. Moreover the
fluctuation in sugar cane production due
to water scarcity and delay harvesting
affected sugar mills. For example.

In 2022, 10% reduction in
sugar cane production led to sugar
shortages and price ~~high~~ hiked affecting
the industrial output of sugar refineries.

Disruption in Agrobased Manufacturing.

Industries like food processing beverage
and edible oil manufacturing heavily
depend on agricultural produce. Any
decline in crop yields directly reduces
the availability of raw materials.

For example. Wheat a staple crop saw
significant production shorts falls in
recent years leading to disruption and
flour mills and higher product
prices. Furthermore ~~horti~~ ^{horti} culture industry

suffer due post harvest losses of fruits
and vegetables which account for
upto 40% of the total production
due to poor storage and transport
infrastructure.

Inflation And Cost pressure:-

Agriculture inflated increases the cost of industrial production for instance rising food and raw material prices due to poor agricultural output drive up wages for industrial worker as they demand higher income to cope with the cost of living. For example during the 2022 floods agricultural losses worth dollar \$ 30 billion lead to a search in food prices. Which affected the labour productivity.

Energy crisis due to agriculture irrigation

Like. Over reliance on hydropower which contribute 27% of Pakistan's energy mix ties ^{industrial} energy supply to agricultural water usage. Low water levels in reservoirs driven by prolonged droughts or excessive irrigation, reduce hydropower generation, causing power outages for industries. For instance, During the 2021 drought, reduced energy production from Tarbela Dam led to power shortages for industrial zones in Punjab and KPK.