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What impact global climate change will have on water resources of Pakistan? How will it affect inter-provincial harmony?

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I- INTRODUCTION

Global climate change has become an existential threat to countries that can inflict some grave socioeconomic and environmental repercussions on it. Pakistan's water resources are likely to deteriorate as the climate change wreaks havoc in the country. Climate change induces extreme events on both surface and sub-surface water resources. As rising temperature triggers glaciers to melt rapidly, water quality of lakes to deteriorate, overflow of rivers, coastal erosion, rise of Arabian sea level, and scarcity of underground water. Apart from this, water disputes among provinces occur regularly. However, the country can mitigate these impacts by taking concrete steps.

"Pakistan is responsible for less than one percent of Global Green House Gas emissions, yet it is facing super sized price for manmade climate change."

(Antonio Gutress)

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2. GLOBAL CLIMATE CHANGE: BURNING ISSUE OF PAKISTAN

Increasing CO₂ emissions contributes rise in global temperature. In a result, planet of earth gets warmer. Owing to this phenomena, Pakistan has become one of top victims of climate change. The Global Climate Index 2021 has also vindicated Pakistan's vulnerabilities to climate risks where Pakistan stands at number 8 in the vulnerability index.

3. HOW GLOBAL CLIMATE CHANGE DOES POSE GRAVE IMPACTS ON WATER RESOURCES OF PAKISTAN

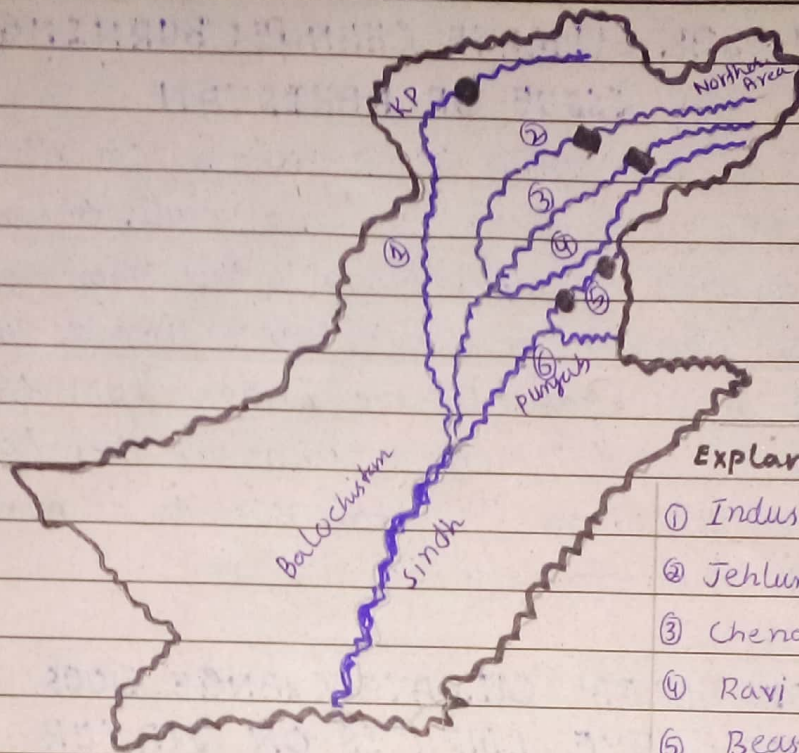
Surface water resources

- > Glaciers
- > Rivers
- > Lakes
- > Wetlands
- > Arabian sea

Sub-surface water resources

- > Underground water (Aquifers)

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Explanation

- ① Indus river
 - ② Jehlum river
 - ③ Chenab river
 - ④ Ravi river
 - ⑤ Beas river
 - ⑥ Sutlej river
- Dams
■ Lakes

(Hydrostatic map of Pakistan)

SURFACE WATER RESOURCES

i. Effects on Glaciers:

The rise in temperature has caused Himalayan Glacier to melt rapidly. They flow onto land surfaces causing Arabian sea level to rise. Thus, floods also emerge and devastate communities.

Jonathan Carrivick, environmentalist said that, "Our finding clearly shows that Himalayan glaciers melt ten times higher than average rate over past centuries."

ii. Effects on Rivers:

The rising sea levels will cause more water to flow into rivers. As a consequence, overflow triggers floods. Moreover, after the flood, the river will not be able to make up its water level and this will cause the aquatic life to suffer as well as the harmful pollutants cannot be diluted.

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iii. Effects on Lakes:

As climate change results in warm temperatures this results in warmer waters which slow down the rate of oxygen absorption in the lakes as when temperature of water increases, oxygen absorption is decreased. Therefore, this results in these regions becoming dead zones.

iv. Effects on wetlands:

Increasing temperatures and changing storm and rainfall pattern are affecting wetland negatively. Due to rise in sea level, the increased high tides and waves carry away fertile top soil which harmful for mangroves.

v. Effects on Arabian sea:

Pakistan's territorial waters open up into the Arabian sea from the Karachi coast. Thus, changes in the sea will spell negative impacts for the country. The main impacts would be extreme weather events and rough waves that can pose a threat of flooding and cyclones for Pakistan.

Sub-surface water resources

> Fresh water and Groundwater:

In many areas where groundwater is used as drinking source, floods due to climate change may result in submerged lands and thus the groundwater tables and freshwater sources will become extremely scarce as the availability of groundwater will be reduced due to lands being submerged with salty water.

> Some key harmful effects of Pakistanis Existing underground water resources

HUMAN HEALTH EFFECTS DUE TO UNSAFE GROUND WATER	> Gastrointestinal Diseases
	> Reproductive problems
	> Respiratory problems
	> Lung Cancer
	> Kidney cancer
	> Neurological disorder
	> Hormonal imbalance
	> Liver and Heart Diseases

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4- EFFECTS OF CLIMATE CHANGE ON INTER PROVINCIAL HARMONY IN PAKISTAN

a) Mismanagement in Mangla Dam

Agrigarian province Sindh claims that water mismanagement in Mangla creates severe water shortage at downstream from Sukkur and Kotri barrages despite issue is taken to the CCI.

b) Demand of Permanent closure of Chashma-Jhelum link canal:

Mainstream political parties like PPP demand for the permanent closure of Chashma-Jhelum link as it obstructs the share of water of small provinces. Punjab becomes big beneficiary from this which is injustice to other provinces.

c) Abandoning construction of Taunsa-Panjnad link canal:

Mainstream political parties from small provinces also demand to abandon construction of Taunsa-Panjnad link canal as it will cut share of water of small provinces.

d) Balochistan's stance about its water theft:

Balochistan has shown its grievances over water distribution several times. The province accused Sindh of its water theft. During provincial assembly session, former senior provincial minister Mir Zahoor Buledi alleged that Sindh was stealing Balochistan's water despite repeated complaints. Similarly, Sardar Abdul Rehman Khetran, provincial minister also accused Federal government of stealing its water.

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5. CRITICAL ANALYSIS:-

Increasing CO₂ emissions can prompt severe impacts of climate on Pakistan. They are ranging from contamination of water quality of both surface and subsurface resources, coastal erosion, droughts to deadful floods. Pakistan's per capita water availability is depleting sharply and is expected to fall 800m³ by 2025, which will make it **absolute water scarce** country. This situation is threat to social fabric of the country. Pakistan also witnesses interprovincial disputes over water which do not only pose a threat to the federalism but also cause food insecurity.

6. CONCLUSION

Pakistan is confronting ever-increasing water security issues, which are likely to compound further due to negative impacts of climate change. Unusual monsoon season, sea level rise, coastal erosion, small and large scale devastating floods, and increasing contaminated water for the drinking are some major manifestations of severe impacts of climate change on water reservoirs across the country. In a consequence, crops, industry, and lives come at risk. Hence, surface and sub-surface water in Pakistan is depleting sharply, and if not addressed in time, has the potential of becoming the biggest national security problem.

"We have a single mission: to protect and hand on the planet to the next generation."

(-Francois Hollande)

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