

Hina Ashraf

Topic:

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themes/topics to bring further
maturity in your writing

Water Crisis in Pakistan : Causes and Impacts

Outline

(1) Introduction:

- (i) Hook
- (ii) General statement
- (iii) Thesis statement

(2) Causes of Water Crisis:

(A) Climate change:

- (a) Rise in temperature
- (b) Changing precipitation patterns
- (c) Melting Glaciers

(B) Over population:

- (a) Water shortage
- (b) Water pollution
- (c) Water distribution issues.

(C) Lack of Infrastructure:

(a) Insufficient dams and reservoirs.

(b) Inadequate waste-water treatment

(c) Poor water distribution networks.

(D) Traditional Agriculture Practices:

(a) Flood irrigation

(b) Crop selection

(c) Lack of crop rotation

(3) Impacts of Water Crisis:

(A) Impacts on Agriculture:

(a) Reduced crop yields

(b) Food insecurity

(c) Socio-economic deprivation

(B) Impacts on Economy:

(a) Reduced GDP growth

(b) Inflation

(c) Unemployment

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(C) Social Impacts

- (a) Rural - urban migration
- (b) Increased internal displacements
- (c) Social unrest

(D) Impacts on Health

- (a) Water borne diseases
- (b) Malnutrition
- (c) Mental health issues.

Conclusions:

Add recommendations in every problem based topic, whether they have been asked or not

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The Essay:

As the last drop of water evaporates, Pakistan's future hangs in balance, threatening the very survival of its almost ²⁴⁷ 22.5 million population, with only 30 days of water storage capacity. Pakistan teeters on the edge of catastrophic water scarcity, affecting 92 percent of its agricultural land. Water crisis is neither a new issue nor it is a fully settled one. Many countries are facing this crisis and unfortunately, Pakistan is one of them. The main causes of water crisis in Pakistan are climate change, over population, lack of infrastructure, traditional agricultural practice and water disputes. These causes pose serious impacts on Pakistan's agriculture, economy, social structure and health of people. The country's water availability is decreasing at an alarming rate. Unless all these causes are

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addressed properly, the adverse impacts of water crisis can not be reduced.

First comes the climate change which is one of the main causes of water crisis in Pakistan. Average temperature in Pakistan has increased by $0.5-1.5^{\circ}\text{C}$ since 1960 with projections indicating a further $1.8-3.8^{\circ}\text{C}$ rise by 2050. This warming trend intensifies water scarcity affecting 92 percent of Pakistan's agricultural land. This rise in temperature led to the changing precipitation pattern which ultimately results in more floods and drought. In 2022 catastrophic floods hit the country due to rise in temperature. More than one third of the country was under water. The climate minister Sherry Rehman referred it as the worst ever disaster, in her words, "This has exceeded every boundary, every norm we have seen in the past." This catastrophic flood

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displaced 33 million people. The flooding took a huge toll on Pakistan's infrastructure, severely damaging half of all water facilities in the worst hit areas of Pakistan. That resulted in less fresh-water availability to the affected population. Not only the changing patterns of precipitation but also the melting of glaciers is due to rise in temperature. Melting of Himalayan glaciers is causing scarcity of fresh-water availability, affecting agriculture and other sectors as well. Due to flooding the capacity of dams and water reservoir systems reduced which leads to wastage of water. Himalayan glaciers are a source of water for billions of people living around. But the rise in temperature particularly in Pakistan is adversely affecting this natural source of water. Because Pakistan does not have any effective method to store this water. So,

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the loss of water occurs which later becomes the cause of water scarcity in the country. Hence, climate change is adversely affecting the water bodies in Pakistan. The role of the developed countries in raising temperature of Pakistan can not be ignored. However, Pakistan is facing the consequences of the problems caused by other countries. Second comes over-population, which has severely affected the capacity of the country to ensure the security of water for future generations. Sadly, Pakistan's population is increasing at an uncontrollable rate, which is a great cause of concern for the country. According to Pakistan Bureau of Statistics, the population of the country has reached 241.49 million. It has increased from 207.68 million in 2017 to 241.49 million in 2023 at a growth rate of 2.55 percent. At this rate Pakistan's population is expected

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to double by 2050. With increase in number of people, the needs and demands also increase. Overpopulation is a significant cause of water shortages in the country. The vast majority of Pakistanis are dependent on surface and ground-water sources from a single source—the Indus River basin. Pakistan's maximum storage capacity is limited to 30-day supply. Water availability per person is declining year by year, leading country towards an unmanageable water crisis. Due to overpopulation water pollution is also increasing. The use of chemicals in washing, cleaning and other domestic chores is increasing day by day, which is polluting fresh water. Improper sanitation systems and poor water waste management are making fresh water scarce for drinking purpose. According to a study conducted by Azizullah et al, in 2011, out of 122 countries, Pakistan ranks both for drinking water availability, which is quite alarming.

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The increase in water pollution is causing high levels of phosphorous eutrophication in the water, which makes it difficult to fulfill the demands of drinking water. Because the growth of algal blooms on the surface water renders it contaminated and unsuitable for drinking purposes. Moreover, the surge in use of pesticides is also contributing to water pollution. Due to rise in population equal distribution of water has become a serious issue in the country. Karachi is the most populated city of Pakistan, facing water scarcity. According to a water expert invited by Engro Expert foundation, Karachi is facing a huge shortage of water, with citizens seeing a huge change in the last 10 to 20 years where water used to be free flowing 24 hours' day, now water only comes in small quantities for 30 minutes a day. Other provinces like Balochistan is also facing severe water shortage due

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to its increased population and unequal supply of water. Thus overpopulation is a prominent cause of water crisis in Pakistan.

Third comes the lack of infrastructure such as insufficient dams and reservoirs, inadequate waste-water treatment and poor water distribution networks are leading Pakistan towards a terrible water crisis. Due to lack of dams and reservoirs it becomes difficult to store water during monsoon season. Heavy rain falls causes heavy flooding which ultimately damages lives, property and livelihood of people. Pakistan has only 18 dams to store water, which is insufficient to deal with the growing needs of citizens. Due to the lack of dams, annually 20 million acre feet of water goes wasted in the country. The flow of river water is 145 million acre feet and only 13 percent of it is stored. Inadequate waste-water treatment also dwindles

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ng the availability of fresh water. According to an article by Institute for Educational Development, Pakistan, currently Pakistan is able to treat only 1 percent of its wastewater, far from its commitment under the sustainable development goals (SDGs) to treat upto 50 percent of its wastewater. The rapid urbanization of cities without corresponding improvements in infrastructure to collect and treat wastewater leads to poor water and sanitation. Moreover, the water distribution networks are poor, making drinking water contaminated, which results in diseases outbreaks. In order to keep up with the demand, water supply systems require periodic inspections, maintenance and repairs. In urban areas of Pakistan, about 43 percent of the population does not have access to safely managed water highlighted by Pakistan Institute of Development Economics. Consequently, lack of infrastructure is posing a challenge to the availability of clean and adequate water supply.

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Fourth comes the traditional agricultural practices such as flood irrigation, crop selection and lack of crop rotation are causing severe water scarcity in Pakistan. Agriculture is the mainstay of Pakistan's economy. It accounts for 23 percent of the GDP and together with agro-based products fetches 80 percent of the country's total export earnings. So, major portion of water is used in agriculture.

According to Water Resource and Industry, agriculture in Pakistan consumes 98 percent of available water. Tube-well irrigation is widely used in Pakistan, especially in areas where there is a shortage of surface water. This type of out-dated irrigation method results in loss of huge quantity of water, causing waterlogging, seepage, and depletion of ground water. Further more, by selecting the right crop for the given soil conditions and climate, one can optimize yields and save water requirements for irrigation. But there is a lack of knowledge and skills

in farmers due to which failure in selecting a favourable crop results in huge water losses in Pakistan. By rotating crops preservation of soil minerals and productivity of soil can be enhanced. In Pakistan there is a lack of awareness about crop rotation. Lack of crop diversification results in soil degradation, increased water demands, and reduced water retention. By cultivating the same crop repeatedly water consumption in irrigation increases, which further diminishes the stored amount of water. Hence, traditional agricultural practices has severely affected water resources in Pakistan.

As a result of water crisis in the country various sectors have been suffering badly. The impacts of water crisis on Pakistan's agriculture, economy, society and health cannot be ignored. Water crisis is the most critical resource issue of our life-time and our children's lifetime. It is important to

investigate the impacts of the causes, responsible for water scarcity in Pakistan. The impacts of water crisis in Pakistan are explained in the following paragraphs.

Agriculture is one of the most affected areas due to water crisis in the country. Lack of rain over a long periods of time affects water availability for crops which ultimately results in reduced production of crops.

Because in dry weather rivers do not have enough water to irrigate all the fields on time as a result crop production decreases. Pakistan's cash crops, sugar and cotton, collectively consume almost a third of its water resources. In dry weather it becomes difficult to supply crops, such ample amounts of water. Therefore, decline in crops production occurs. According to Islamabad chamber of commerce and Industry's ^{Former} vice president Malik Subair Hussain, "agriculture

sector is the worst-hit sector as it is facing a shortage of water upto 50 percent at some places. Reduced crop yields result in food insecurity.

Rising temperatures and changing precipitation patterns are affecting major crops like wheat, rice, maize and sugarcane.

According to Integrated Food Security Phase classification, nearly 10.5 million people were experiencing high levels of acute food insecurity between April to October 2023.

The most affected areas are Sindh, KPK and Balochistan. Livelihood of population also gets affected due to water scarcity. This results in socio-economic deprivation in the society.

Majority of the population in Pakistan depends on agriculture for their livelihood.

Agriculture is the primary source of income for 34 percent of economically active men and 74 percent of women, employing 25 million people. Hence,

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Water scarcity impacts socio-economic status of people that leads to increased unemployment and poverty. The second most affected area of Pakistan due to water crisis is economy. As water shortages causes reduced crop production which is source of income for more than 50 percent of the population. According to World Bank Report, agriculture's share in GDP dropped from 38.9 percent in 1969-70 to 19.82 percent in 2015-16. Water scarcity hinders Pakistan's economic growth. According to Pakistan Bureau of Statistics, agriculture contributes 24 percent of Gross Domestic Product and accounts for half of employed labour force and is the largest source of foreign exchange. So, in case of reduced crop production the economy of the country suffers the most. As there is a lack of dams in Pakistan so floods destroy agricultural yields and other sources of income of the people. According to a World

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Bank's Report: the 2022 floods in Pakistan caused a significant increase in national poverty rate, the agriculture sector contracted by 0.9 percent of GDP, that led to significant job losses in Pakistan, the GDP loss due to floods was around 2.2 percent of FY22 GDP. During the times of crisis price hike of commodities occurs, which causes inflation and ^{more} unemployment. Water scarcity causes increased food prices due to reduced agricultural productivity. According to Pakistan institute of development Economics, the water crisis in Pakistan contributed to an average inflation rate of 20 percent in Pakistan. Moreover, water crisis is a significant cause of unemployment, inflation and overall reduced GDP growth. In addition to economical impacts, water crisis has huge impacts on society of the country. Due to unavailability of fresh water a large number

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of people migrate from rural areas to cities. Water stress directly impacts human migration because it affects the human livelihood and socio-economic conditions of the migrants. The lack of access to clean water and reduced agriculture productivity exacerbates migration. According to a report given by United Nations Development Programme, 2022, 40 percent of internal migration in Pakistan is from rural to urban areas. This results in rise in urban population and affects overall economy of the country. There is a dire need of dam's construction and effective reformation to counter such problems. As in 2022 destructive floods caused huge numbers of internal displacements. According to a World Bank report 2022, the floods of 2022 caused more than 8 million people to leave their houses and moved to other places. Those internally displaced people are still facing health and employment issues. Water shortage results in unequal access to

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Water resources which leads to increased tensions between different classes of the society as well as provinces of the country. Which is a cause of social unrest.

The overall stability of the country is also affected in this way. As

it is quite obvious in Pakistan. The issue of water distribution is still present. This unequal resource

distribution has become a cause of contention between provinces like Balochistan, Sindh and Punjab.

Therefore, social unrest due to water crisis can not be ignored.

The last but not the least, impacts of water crisis in Pakistan are affecting public health. Due to increasing water pollution a large number of water borne disease occurs. According to World

Bank, poor sanitation and a lack of wastewater treatment cause water borne diseases that kill 40,000 children each

year. Moreover, water stress also causes

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health problems like malnutrition and mental health issues. Food insecurity due to water crisis leads to reduced availability of food particularly in rural areas of the country. Hence malnutrition occurs, which leads to malnourishment of children. Diseases like kwashiorkor and marasmus increases and mortality rate rises in the country. Migration and internal displacements produce mental-health issues like anxiety, depression and other psychological problems. Stress and anxiety are prevalent due to the scarcity of clean water affecting daily life and livelihood. According to Pakistan Institute of Development Economics only 36 percent of the population has access to safe drinking water. As it is rightly said by Audrey Hepburn, water is life, and clean water means health. Therefore, impacts of water scarcity on health of the people of Pakistan can not be overlooked.

In a nutshell, water crisis due to climate change, over population, lack of infrastructure and traditional agriculture is a frightening situation in Pakistan. The impacts of water crisis on agriculture, economy, society and health of the people of Pakistan are increasing day by day. There is a dire need of policy making and reforms to resolve the catastrophic problems of water crisis. The importance of water can not be underestimated as it is crucial for the survival of every living being in the world. As John F Kennedy rightly stated: Anyone who can solve the problems of water will be worthy of two noble prizes - one for peace and one for science. Hence, this is the right time. People and government should work collectively to save the most crucial asset of their lives. As it is never too late to pledge for a new change. Because, where there

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is a will there is always a way.