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WATER CRISIS IN PAKISTAN: PROSPECTS AND IMPLICATIONS

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Abstract:

The Present study will shed a light on the ongoing water crisis in Pakistan. It was a problem in the past and it is still prevailing as a vital issue. This research will discuss the major issues leading towards water crisis in Pakistan because this crisis is leading gradually towards barren and dry lands in Pakistan. The paper will argue the possible factors of the water crisis that has alarmed a vast majority of people living in Pakistan. From wastage of water to illegal and poor supply on daily basis, every factor is clearly explained. How climate change has led to some already dried rivers and melting glaciers, apart from many other causes that are responsible for the lack of land irrigation and also responsible for constant floods which wrecks a lot of damage. It also includes the main factor which is the constant growth of population that increases demand

for water even more. This research also describes the possible solutions that can help in preventing the water crisis from expanding further in the country. Possible measures are elaborated to store more water to meet the needs of the increasing demand for water across Pakistan in present as well as in future.

Introduction:

World Economic Forum has identified water crisis as the most important threat in the long run and will have catastrophic consequence on society (Durrani, 2020). Similarly, water resources system is the life line for Pakistan. It is a source of life and energy. It is the most critical factor of production in Pakistan's agriculture resources (Asim et.al., 2012). The availability of water on annual basis is less than 1000 cubic meters. The demand of water will be reached around 274 million acre-feet by 2025, whereas the supply will be around 191 million-acre-feet (Meribole, 2020). Pakistan has been a subject of several issues since its independence. But the most crucial and one of the biggest problems lurking in the country is the water shortage. According to International Monetary Fund (IMF), Pakistan will be fully dried and barren by 2025 if the necessary measures are not taken to preserve the water (Baloch, 2018). People nowhere in the world including Pakistan cannot survive without water as water is the main source of life anywhere. In past, Pakistan has had several water issues from Dam Situations to Waterline issues across the country. Meanwhile, Security Paradigm is also on a shift due to the ongoing crises. In recent years, Pakistan has suffered from severe water shortages, flooding and declining water quality. The worsening water crisis must be resolved if the country is ever to achieve stability and development (Faruqui, 2004.). In addition to that, Pakistan is facing severe electricity supply shortages, causing forced power outages over the last decade ranging from 8 to 12 hours a day in urban areas and up to 18 hours in rural areas (Valasai et. al., 2017).

The development and research organizations warned Pakistan about the alarming state it has entered. Pakistani authorities have taken a long debate on social media as to how they can prevent the unimaginable threat worse than terrorism? It is predicted that it will also impact the economic condition of Pakistan in ways never seen before. The major effects of climate change are in terms of rise in temperature, variations in precipitation pattern, increasing glacier melt, and increasing evaporation and increased irrigation water requirements (Asif, 2013).

Pakistan is regarded as one of the water-intensive countries in the world today. Having the fourth-highest rate of water usage in the world, the country is already suffering a crisis. An organization affiliated with the South Asian Science Ministry has reported that Pakistan already entered the water scarcity 15 years from now, with the country touching the water stress line dating back 30 years from now it is about to reach its level of scarcity shortly if the issue persists. Climate Change and Population Growth have also contributed to water scarcity across the country which is now on the brink of becoming dry land where no one can survive for a longer period.

Not only Pakistan is a subject of water crises, but also the world. Due to various factors, the world is also being affected in the same manner. Climates, Pollution, and Global Warming around the world have opened up the gates for the global water crisis. The other developing countries are also on the brink of suffering the same fate as Pakistan.

Causes of Water Crisis:

Multiple causes have brought us to a possible drought-like situation today. From sewerage problems to improper water supply, from Dams to Canal Systems, each has contributed to the reality regarding water crisis which Pakistan is facing. There are also weather and climate problems which are yet another factor to the current situation.

Wastage of water:

This problem has been lurking around for decades. First of all, is the wastage of water. People living in the areas where the water supply is proper, the people tend to waste a lot of water in those areas, as it can be observed the water is free-flowing on the streets once they have filled up their tanks instead of preserving and closing the valves. People tend to let the water flow free on the streets as if they have ample water in the state. Some excessive wastewater while washing a car with a rapid water hose. Several movements have been held on social media. Some also initiated movements to save more water from being wasted. Whether they have yielded any satisfactory results is unknown. On one hand, people tend to waste more water in some areas whereas, on other hand, in many areas of Pakistan there is no water available to people even to drink.

The schedule of water supply is not accurate and proper at all; the water is amply provided in few regions of each city and while others suffer and they do not have any water to even meet their daily necessities. Notably, in summer, there are more problems for people living in urban areas. Because when the proper water supply is not offered to them, they are forced to up fill water cans and drums which they get from a noticeable distance from their places and they have to carry back all that water to their homes to ensure that they have water when they run out of actual supply. They often bring tankers to fill their necessary containers with water. But they are costly and do not guarantee pure water that they can get from the actual supply.

Limited Water Supply:

Rural areas have more severe troubles than urban areas because they have limited water supply. Some reside on the drylands where hope for water is impossible. The rural areas can hardly store water for themselves at this point as there is no proper reservoir built-up by the government in those areas, most people rely on the wells they have made to meet their water requirements but the sad reality is that the wells are also going dry in many areas due to less rainfall in recent times.

Outdated water pipes throughout the country are also one of the main reasons of water shortfall. The water supply system has not been updated since decades. It is estimated to be 30 to 50 years old in different areas and hence rusted. There had been no initiatives from the locals or the municipal committee for replacing the old pipelines (Toppa, 2016). This contributes further in water shortage and increases the risk of lower water supply in Pakistan, as these clogged lines are not going to supply water much longer if they are not taken care of.

The one big culprit that has come forward in recent times is the Water mafia in Pakistan that is trying to take control of the waters. They are responsible for stealing water, cutting off supplies to the people by destroying the water supply lines so that the people are unable to get water through pipelines laid by the government and the people are forced to buy water tankers from the

mafia (Kunbhar, 2016). The Chief Engineer of Karachi water and sewerage board (KWSB) Jawed Shamim says that 30% of the water supply has been lost because of water thefts and leakages (Dry Dams, 2020). The people continue to suffer worse from this situation; even they might get deprived of it near future.

Irrigation System:

On The other hand, Pakistan's agricultural lands also consume most of the water from its canal system which is believed to be utilized poorly. Operating mechanism and maintenance are also not effective and inadequate. It also contributes to record low production of crops per acre in Pakistan. The rigid system and insufficient drainage have led to the current situation. Water logging and over-exploitation of groundwater is yet another factor. These practices are preventing people from having clean water in different areas. Irrigation system is poorly governed and the system has become outdated due to absence of periodic maintenance. Due to it, the production of agricultural products in general and food items in particular can be put to a long halt if this issue is not resolved. Crops and fields do not receive pure water preventing them from growing or letting them die without the water, bringing a decrease in the agricultural development of the country. Without it, the economy will also have a larger impact as the production of fruits, vegetables, and grains diminishes shortly.

Pakistan is an agricultural country and most of its economy is largely based on agriculture. So, no water means no agriculture or crops. The Government has not taken any effective measures to prevent Pakistan from falling into its current state. Bringing its water supply and rich lands of water to an inevitable fate. The earlier governments have also completely ignored this issue and such issues have not been resolved since many decades.

Storage capacity of dams:

Heading into the current state, the water crisis has reached its breaking point. As the Dams are storing water less than their estimated capacity. The two major reservoirs of Pakistan, namely the Tarbela and Mangla dams have recently reached their record low. Muhammad Khalid Rana, a spokesman for the Indus River System Authority (IRSA) claimed, "The Country receives 145 million acre-feet of water every year and can save only 13.7 million acre feet. Pakistan needs 40 million acre feet of water but 29 million acre feet of our floodwater is wasted because we have few dams. New Delhi raised this issue with international bodies, arguing that it should be allowed to use the western rivers because Pakistan can't use them properly" (Baloch 2018). The India is not fulfilling its responsibilities that Indus Water Treaty has administered upon both countries. Moreover, India is also showing a sense of selfishness in providing water through its rivers to Pakistan (Khan, 2019). Pakistan's per capita availability of water has fallen to only 1017 cubic meters, which is much less than that of 1500 cubic meters in 2009 (Baloch, 2018).

The construction of new dams, namely the Diamer Basha and Mohmand dam, is also underway in recent years. The government advised the people of Pakistan to donate for the construction. The government of Pakistan has requested both national and international Pakistani to help in raising funds of \$14 billion to build dams (Meribole, 2020). The response has been positive from the citizens across the country, but further investment is required for the development. They have not been fully developed till this time. In a landscape where Pakistan cannot prevent the floods from damaging the properties, the development of the dam to stop such disaster is still

unknown. The water crisis has reached its level of intensity and the dams have not been ready yet. Without them, where will the water be stored if there are not enough dams in Pakistan.

Climate Change:

Climate Change has also affected the current situation as well. Extreme heat, melting glaciers and the gas emission has contributed in the water crisis. The rivers and seas are soaking year by year due to extreme weather. In May 2018, 65 people died due to heatstroke only in Karachi. Whereas, almost 1200 people died because of extremely hot weather in 2015 (Baloch, 2018). Due to the extremely hot weather and an unforgiving atmosphere, water scarcity is no stranger to it. The rivers and the seas are soaking dramatically, which may turn into a scorching desert shortly. The monsoon season is uncertain in recent years. Weather experts are facing difficulties in predicting when the monsoon might occur. Winter and Monsoon seasons are also seemed to have decreased due to the climate change. Their duration has been minimized year by year. Winters' time duration has also seemed to decrease in the recent years. The winter season used to last for almost four months in a year but now it barely lasts for 2 months in most parts of the country. Green House Emissions and extreme hot weathers are also the results of social change (Meribole, 2020). Some of Pakistan's Glaciers, most notably the Ultar Glacier, have been a victim of global warming and environmental pollution. The valley living near it has benefitted from the glacier in the form of fresh water and growing crops. But now they are deprived of it in the same manner as the rural and urban civilizations (Hadid, 2019). Melting of glaciers and heavy raining in hilly areas are leading to various floods that destroy several lands and houses in many parts of the country. It also contributes to the wastage of water.

Population Growth:

Population growth is also a contribution to the ongoing crisis of water across Pakistan. It is the sixth-largest country in the world with a population of approximately 220 million. Making it the country with more water usage than countries like Saudi Arabia and U.A.E. Constant increase in population growth even increases the possibility of the water crisis in Pakistan. As the population grows, the demand for water increase. People living in rural areas often migrate to urban areas to seek better education and to get employment and to live better life style with better facilities available in the urban areas. As a particular season arrives, some of them return to their areas after storing enough necessary resources. Due to the growing population and migration, the supply of water has also begun to diminish over time. Since more people come towards urban areas and big cities, more water is required. Largely in Apartments, the water supply is difficult to utilize due to the large number of people residing in the same building.

Drying Rivers:

The rivers of Pakistan are also drying due to the climatic conditions of the country. Punjab, which consists of five main rivers that contribute to the water supply of the country, is the most affected area. The Beas and Sutlej rivers have already disappeared and already turned into scorching deserts (Khalid, 2018). Legendary rivers had given birth to many civilizations in recent times. It has also benefitted people living near the river with fresh water and crops. Ravi River has also met the same fate as Sutlej. The Indus River is also continuing to dry every year which is also known for the birth of several civilizations. When these rivers have already dried up, then the other rivers are also at risk. Due to extreme hot weather, they are also drying every year which will leave them with no fresh water at all. Due to the pollution and climate changes,

even the small villages and tribes are deprived of water (Khalid, 2018). India has made it clear a while back that they will stop the water coming to Pakistan from their side as they have to build a reservoir to overcome their water crisis. Pakistan is also deprived of the supply it had from one of the largest rivers in the world. Furthermore, the recent Indian intentions of building “chain of dams” on Pakistani (western) rivers have once again posed a serious challenge for Pakistan (Iqbal, 2010). On the other hand, India is also responsible for the poor utilization of water from the river. UN reports are suggesting that Pakistan is going to become a water scarce country in near future. Moreover IMF has also ranked Pakistan at the third number among those states facing the water shortage problem (Durrani, 2020). It is being affected in the same manner as Pakistan and other countries in the world. If these rivers keep on disappearing, it will be difficult for both nations to survive.

Possible Solutions:

Pakistan is blessed with a lot of water resources. It has natural resources of waters such as the Hindu Kush Himalayan mountain range which annually provides approximately 8.6 million cubic meters waters to the country (Asim et. al., 2012). Pakistan has the world’s biggest irrigation system which irrigates 16 million hectares of cultivable land but the system is not fully operational due to an ongoing huge water crisis. An effective strategy must be made and implemented to resolve the ongoing issue of water crisis. The following steps can be taken to meet the water requirement in Pakistan;

Construction of Dams:

The first immediate action that should be taken is the construction of dams such as Kalabagh Dam which was to be located on the Indus River at Kalabagh in the Mianwali district, Punjab. If it is constructed it can generate 3600 MW electricity and it will also provide the solution for flooding problems and other water crisis. But it has been in a debate between the regions and has been pending for almost last 40 years due to multiple reasons (Valasai et. Al., 2017).

The construction of Diamer Bhasha dam will also help in resolving the issue of water crisis. The Daimer Bhasha dam is situated on the Indus river and it will provide water for irrigation and drinking purpose. It will have a water storage capacity of 8,5000,000 acres feet once it is completed. It will also be used as the protector of the Terbela Dam as it will help in stopping flow of silt towards Terbela Dam that is decreasing the storing capacity of the dam (Qureshi, 2020).

New dams and reservoirs both small and large should be constructed to save the water which comes through rainfalls in the scarce monsoon season and especially near the areas where India releases water from their rivers which cause flash flooding all over. According to the Indian government, in 2019 they had to release water more than they used to before from their side because of the excessive rainfalls. India released a total of 10,000 cusecs of water in Pakistan through different barrages and all went waste causing floods. This water can be utilized by construction of water channels, small reservoirs and big dams.

In recent years, India also started two new dam construction projects named Kishanganga Dam which has already been constructed over the Jhelum River and the other one Ratle Dam near the disputed territory Indian Occupied Kashmir’s (IOK) district Kishtwar by violating Indus Water

Treaty agreement signed by India and Pakistan, brokered by World Bank (Zaafir, 2019). Pakistan has asked India to stop these constructions as the country has an equal share in water provided from the rivers of IOK, but India refused. Pakistan had presented its case to the World Bank but that alone could not help. It is high time that the government can take it very seriously and approach international forums as soon as possible before the situation becomes worse and the whole country dries out.

Management of Water Resources:

Another strategy that can be made is water resources management. Water pollution should be controlled. Recently the pollutants have risen in the water which flows in the canals, rivers and surface water. In 2018, Jawed Nawab, Assistant Professor of Abdul Wali Khan University, gathered samples of different types of contaminants like arsenic, lead, zinc, nickel, cobalt, etc. which were beyond the safe limits. He collected these samples from the three major rivers i.e. Indus, Chenab, and Kabul (Major Rivers in Pakistan, 2018). These impurities are harmful to animals and as these rivers supply water all around the country they will also be harmful to humans. To reduce water pollution there should be proper monitoring of the rivers and freshwater resource, the industries which produce the most waste and release into the rivers should be identified and closed or slowed down or at least a proper mechanism for the waste management should be devised.

Government should improve the distribution infrastructure and the quality of supplied water. It should be divided properly because every sector requires a different quantity of water. There should be a proper law in the country for the conservation of water like other countries have made. Government should educate the people to stop the excessive use of water so that others can also have an equal amount of drinking water, institutionalize the installation of meters, and reduction of the usage of water in the agricultural areas.

Another great source of water which needs to be managed is the underground source. Pakistan is the third-largest user of groundwater for irrigation purposes. The total groundwater extraction in Pakistan happens to be 60 billion m³. This source has been most beneficial to the farmers to secure food for the rapidly increasing population (Nabeel, 2020). But the excessive exploitation of the groundwater has created a severe problem. People have started digging underground to get water for their use and this is resulting in the drying of land which is increasing year by year. Different reports have identified that that Pakistan's groundwater reserve, The Indus Basin Aquifer, has become the second most overstressed aquifer in the world. In these circumstances, the authorities must take control of those areas to protect them from being depleted.

Another source that can help in increasing water production is by building Desalination Plants in the arid regions. It is a plant that converts seawater into drinking water and also treats the water from natural and unnatural contaminants.

Conclusion:

The water crisis is amongst the most feared threat in Pakistan right now. The rivers are drying up and many have already dried. Dams do not have sufficient capacity to store enough water that can be utilized for decades. The poor water supply and unsanitary drainage have given rise to

dirty water in the country. The climate and population are putting the water usage of Pakistan at risk.

Systems of water storage and production have either not been updated or further developed. Even they are in dire need of an upgrade right now. The situation in rural and urban areas has been severe. The government has not taken any measures to avoid the crisis it will face till 2025. Climate is yet another factor that is dragging the country towards the water crisis. Extreme hot weather and melting glaciers have contributed to what is today. The farming lands are not getting clean water for the growth of crops and fields. Many of these factors have put several sectors of Pakistan at severe risk. The health and economic sector will suffer a tremendous setback due to the shortage of water in the country. People will suffer from dehydration and thirst as well as from hunger since the crops cannot be grown without watering them. The shortage of water is also shaking the social fabric of the society because it is leading towards health, economic and food security on one hand and raising the conflict over water resources on the other hand.

Even the Industrial sector is deprived of water. As more people work in factories and warehouses, the demand for water increases furthermore. It is also a factor of population growth that also contributes to the ongoing water crisis in Pakistan. With canal operation having a poor response and the population control policy being virtually missing, there is no denying fact that the water crisis is a result of these factors. As explained earlier, there are several issues that have not been resolved in recent years by the successive governments. If the government is unable to tackle the issue of water scarcity, Pakistan will become the land of scorching deserts in near future.

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