

An Analysis of Pakistan's Potential Water Shortage Issues

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Abstract

How climate change has contributed to certain rivers that have already dried up and glaciers that are melting, in addition to many other factors that are to blame for the lack of irrigation on the land and for the frequent flooding that results in great destruction. It also takes into account the key element, which is the population's ongoing growth, which raises the need for water even higher. The paper also discusses potential remedies that can aid in halting the country's growing water crisis. The necessity for increased water storage is explored as a potential solution to Pakistan's growing water demand now and in the future.

Key Words: Water Crisis, Pakistan, Glaciers melting, Irrigation, Population, Agricultural resource

1. INTRODUCTION

According to the World Economic Forum, the most significant threat to society long-term is the water crisis, which will have terrible effects.¹ It is the most important component of Pakistan's agricultural resources' production.² Less than 1000 cubic metres of water are accessible each year. By 2025, the amount of water needed will be around 274 million acre-feet, whereas the amount available will be about 191 million acre-feet.³ Since gaining its independence, Pakistan has been the focus of numerous debates. But the lack of water is the most important and one of the main issues the nation is hiding. If the appropriate steps are not taken to preserve the water, Pakistan would be completely dry and barren by 2025, according to the

¹ Durrani, Zahra Khan (2020). Water Scarcity and Social Vulnerabilities: A Multi-Dimensional Perspective of Water Challenges in Pakistan, Journal of Sustainability Education, March 11.

² Asim, M., et al. "Socio Economic Impact of Water Crisis on Agrarian Community in District Faisalabad, Pakistan," *Mediterranean Journal of Social Sciences* 3, no. 11 (2012): 235.

³ Meribole, Joshua. "The Water Crisis In Pakistan." *Borgen Magazine*, April 29, 2020.

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International Monetary Fund (IMF).⁴ Since water is the primary source of life everywhere, people cannot exist without it anywhere in the globe, including Pakistan. Past water problems in Pakistan ranged from dam situations to waterline problems all around the nation. Due to the continuing problems, Security Paradigm is also changing. Pakistan has experienced severe water shortages, flooding, and deteriorating water quality recently. If the nation is ever to experience stability and progress, the growing water dilemma must be overcome.⁵ Additionally, Pakistan has experienced prolonged forced power outages over the past ten years that have ranged from 8 to 12 hours per day in urban areas to up to 18 hours per day in rural regions due to severe electricity supply shortages.⁶ In terms of temperature rise, changes in precipitation patterns, greater glacier melt, higher evaporation, and increased irrigation water needs, these are the main implications of climate change.⁷ Water shortage has spread across the nation as a result of climate change and population growth, and the area is now at risk of becoming arid and uninhabitable for an extended length of time. Water shortages affect the entire world, not just Pakistan. The world is likewise being impacted similarly by a number of things. The worldwide water crisis has been made possible by local climates, pollution, and global warming. The other developing nations are likewise on the verge of sharing Pakistan's fate.⁸

2. FACTORS FOR WATER SHORTAGE:

We may currently be experiencing a drought-like scenario as a result of several factors. Sewerage issues, poor water quality, dams, and canal systems—all of these have led to the current water crisis Pakistan is

⁴ Baloch, Shah Meer. "Water crisis: How is Pakistan running dry?" *DW*, June 7, 2018.

⁵ Faruqi, N. I. "Responding to the water crisis in Pakistan," *International Journal of Water Resources Development* 20, no. 2 (2004): 177-192.

⁶ Valasai, G. D., et al. "Overcoming electricity crisis in Pakistan: A review of sustainable electricity options," *Renewable and Sustainable Energy Reviews* 72 (2017): 734-745.

⁷ Asif, M. "Climatic change, irrigation water crisis and food security in Pakistan," Master Thesis, Uppsala University, 2013.

⁸ Hadid, Dina. "Maybe It will destroy everything!: Pakistan's Melting Glacier Causes Alarm." *NPR*, November 21, 2019.

experiencing. Climate and weather issues are yet another contributing reason to the current state of affairs.⁹

3. A SUBSTANTIAL QUANTITY OF WATER IS LOST

This problem has existed for a long time. Water waste is the first problem. Residents in areas with sufficient water supplies frequently waste a lot of water because, instead of storing and turning off the water at the valves, they let it run freely on the streets after filling up their tanks. People commonly act as though there is enough water in the state by letting the water run freely on the streets. Some excess wastewater from washing a car with a quick water house. There have been several movements on social media. Some also launched campaigns to stop more water from being wasted. We are unsure if they have resulted in any satisfactory outcomes. In Pakistan, there is frequently no water accessible for anyone to use, not even for drinking. On the one hand, individuals in some places waste more water than others.

4. INADEQUATE AVAILABILITY OF WATER

Due to their inadequate water supply, rural communities experience more severe problems than metropolitan ones. Some people live in dry areas where there is no chance of finding water. The majority of people in rural areas rely on the wells they have dug to meet their water needs, but the sad fact is that the wells are also drying up in many areas due to the recent decrease in rainfall. As a result, the rural areas can hardly store water for themselves at this time due to the lack of a proper government reservoir in those areas. One of the biggest causes of water shortages nationwide is outdated water pipelines. Since many years ago, the water supply system has not been modernized. It is thought to be somewhere between 30 and 50 years old and has corroded as a result. The municipal committee and the residents had not taken any measures to replace the outdated pipelines.¹⁰ This worsens Pakistan's water scarcity and raises the possibility of a decreased water supply since if the blocked lines are not fixed, they won't be able to supply water for very long. The Water Mafia in Pakistan, which is attempting to seize control of the waters, is the only significant offender to come forward in recent times. They are in charge of stealing water, cutting off supplies to the populace by sabotaging water supply pipelines installed by the government, and forcing the populace to purchase water tankers from the

⁹ Toppa, Sabrina. "Dry dams, leaky pipes and tanker mafias-Karachi's Water Crisis," *The Guardian*, 2016.

¹⁰ *ibid*

mafia.¹¹ According to Karachi Water and Sewerage Board Chief Engineer Jawed Shamim, water theft and leaks have cost the city of Karachi 30% of its water supply. The situation is getting worse for the people, and they might soon lose it all.

5. PAKISTAN'S IRRIGATION SYSTEM

However, Pakistan's canal system, which is thought to be under-utilized, is also largely used by its agricultural areas. Additionally, ineffective and inadequate are the operating mechanism and upkeep. It also contributes to Pakistan's historically low crop productivity per acre. The current circumstance is a result of the stiff system and insufficient drainage. Yet another factor is groundwater overuse and water logging. People in many locations are being denied access to clean water because of these behaviors. The irrigation system is ill-managed and has become antiquated as a result of lack of routine maintenance. If this problem is not fixed, it could cause the production of agricultural goods in general and food items in particular to come to a long standstill. Pure water is not provided to crops and fields, which prevents them from growing or causes them to perish, slowing down the country's agricultural development. Without it, the economy will also be more negatively impacted because the production of cereals, fruits, and vegetables will soon decline. Pakistan is mostly an agricultural nation, and this is the foundation of its economy. So, without water, there can be no agriculture or harvest. The government hasn't taken any concrete steps to stop Pakistan from deteriorating further than it already is, bringing its abundant water resources and water-rich areas to an unavoidable end. These concerns have not been resolved for many years due to the full disregard of the former governments towards them.

6. DAMS' STORAGE CAPACITY IN PAKISTAN

The water crisis has gotten out of hand as we go into this phase. Due to the fact that the dams are not holding as much water as they could. The Tarbela and Mangla dams, Pakistan's two main reservoirs, recently experienced a record low. The Indus River System Authority (IRSA) spokesperson, Muhammad Khalid Rana, asserted, "The Country receives 145 million acre-feet of water annually, but can only conserve 13.7 million-acre feet. Pakistan need 40 million-acre feet of water, but only has a few dams, so 29 million-acre feet of our floodwater is lost. New Delhi brought up this matter before international organizations, stating that it ought to be granted access to use

¹¹ Kunbhar, Zulfiqar. "Bribes and Shortages: Karachi's Burgeoning water mafia," *Dawn*, November 10, 2016.

the western rivers due to Pakistan's improper exploitation of them.¹² India is not carrying out the obligations placed on both countries under the Indus Water Treaty. Additionally, India exhibits a feeling of selfishness by providing Pakistan with water through its rivers.¹³ Pakistan's water availability per person has decreased to just 1017 cubic metres, which is a significant decrease from the 1500 cubic metres in 2009. Additionally, new dams like the Diamer Basha and Mohmand dams are currently being built. The Pakistani people were urged by the government to make donations for the building project. The Pakistani government has asked for assistance from both domestic and foreign Pakistanis in financing \$14 billion to build dams. Although the response from people all throughout the nation has been good, more funding is still needed for the development. They have not yet reached their full potential. Pakistan's geography makes it impossible to avoid floods from destroying property, so it is yet unknown whether a dam will be built to avert this catastrophe.

7. CHANGES IN PAKISTAN'S CLIMATE

The current predicament has also been impacted by climate change. The water situation has been exacerbated by the extreme heat, melting glaciers, and gas emissions. Due to the harsh weather, the rivers and seas are getting wetter every year. Only in Karachi in May 2018 did heatstroke cause the deaths of 65 people. However, in 2015, around 1200 people lost their lives as a result of the intense heat. Water scarcity is a common occurrence due to the intense heat and harsh environment. The rivers and the seas are soaking up a lot of water, which could soon turn the area into a hot desert. In recent years, the monsoon season has been unpredictable. The timing of the monsoon is impossible to forecast, according to weather specialists. The winter and monsoon seasons appear to have gotten shorter as a result of climate change. Year after year, their duration has been reduced. The length of winters has also looked to shorten recently. In most regions of the country, the winter season now only lasts for around two months instead of the nearly four months it used to last throughout the year. Social change also has an impact on greenhouse gas emissions and exceptionally hot weather.¹⁴ Some of Pakistan's glaciers, most notably the Ultar Glacier, have suffered as a result of environmental pollution and global warming. The glacier has provided fresh water and helped the nearby valley residents cultivate food. However, they are currently denied it in a similar way to rural and urban

¹² Baloch, Shah Meer. "Water crisis: How is Pakistan running dry?" *DW*, June 7, 2018.

¹³ Meribole, Joshua. "The Water Crisis In Pakistan." *Borgen Magazine*, April 29, 2020.

¹⁴ *ibid*

cultures.¹⁵ In several places of the country, severe floods are destroying numerous farms and homes due to glacier melting and excessive rains in hilly terrain. Additionally, it causes water to be wasted.

8. POPULATION GROWTH

Another factor in Pakistan's continuous water shortage is population expansion. With a population of almost 220 million, it is the sixth-largest nation in the world. It now uses more water than nations like Saudi Arabia and the United Arab Emirates. In Pakistan, a potential water catastrophe is even more likely as the population continues to grow. The need for water rises as the population does. People from rural areas frequently move to cities in order to pursue better education, find jobs, and live better lives with the greater amenities that cities have to offer. Some of them return to their homes once they've stocked up on the materials they'll need for the coming season. Over time, the availability of water has also started to decrease as a result of population growth and migration. More water is needed as more people move into urban areas and large cities. Because so many people live in one building, it might be challenging to use the water supply, especially in apartments.

9. PAKISTAN'S RIVERS WILL RUN DRY

Due to Pakistan's climatic conditions, its rivers are also drying up. The most badly afflicted region is Punjab, which is made up of five major rivers that contribute to the nation's water supply. The Sutlej and Beas rivers have already dried up and transformed into sweltering deserts.¹⁶ In recent history, several civilizations were founded around legendary rivers. By providing fresh water and crops, it has also benefited the locals who live close to the river. The Sutlej River's fate has likewise befallen the Ravi River. Every year, the Indus River, which is also famed for being the birthplace of numerous civilizations, continues to dry up. The other rivers are likewise in danger if these rivers have already dried up. They are constantly drying out because of the intense heat, which will eventually result in them having no access to any fresh water. Even the smallest villages and tribes lack access to water as a result of pollution and climate change.¹⁷ India has been clear

¹⁵ Hadid, Diaa. "Maybe It will destroy everything': Pakistan's Melting Glacier Causes Alarm." *NPR*, November 21, 2019.

¹⁶ Khalid, Haroon. "With Pakistan's rivers dying, are its ancient cities running out of time?" *Dawn*, February 12, 2018.

¹⁷ *ibid*

for some time that they will restrict water from their side going to Pakistan because they need to build a reservoir to solve their water crisis. Pakistan has also lost the supply it received from one of the world's major rivers. The current Indian plans to construct a "chain of dams" on rivers in western Pakistan have also presented Pakistan with a significant hurdle.¹⁸ However, India is equally to blame for the inefficient use of the river's water. According to UN assessments, Pakistan is likely to have a water shortage in the near future. In addition, Pakistan is listed third among the states with a water scarcity according to the IMF. It is experiencing the same problems as Pakistan and other nations throughout the world. Both nations will struggle to survive if these rivers continue to vanish.

10. POTENTIAL REMEDIES

Pakistan is fortunate to have an abundance of water resources. It has abundant natural water resources, such as the Hindu Kush Himalayan mountain range, which supplies the nation with about 8.6 million cubic meters of water per year.¹⁹ In spite of Pakistan having the largest irrigation system in the world, which irrigates 16 million hectares of arable land, there is a severe water shortage that prevents the system from being fully functioning. It is necessary to develop and put into action an efficient plan to address the growing water problem. The following actions can be made to fulfill Pakistan's water needs.

11. BUILDING OF DAMS

The first thing that needs to be done right away is to build dams like the Kalabagh Dam, which was intended to be built on the Indus River at Kalabagh in the Punjabi district of Mianwali. If built, it will be able to produce 3600 MW of power in addition to solving water shortages and flooding issues. However, it has been in contention between the regions and pending for almost 40 years for a number of reasons.²⁰ The Diamer Bhasha dam's construction will also aid in addressing the water shortage. On the

¹⁸ Iqbal, A. R. "Water Shortage in Pakistan-A Crisis around the Corner," *ISSRA Papers* 2, no. 2 (2010): 1-13.

¹⁹ Asim, M., et al. "Socio Economic Impact of Water Crisis on Agrarian Community in District Faisalabad, Pakistan," *Mediterranean Journal of Social Sciences* 3, no. 11 (2012): 235.

²⁰ Valasai, G. D., et al. "Overcoming electricity crisis in Pakistan: A review of sustainable electricity options," *Renewable and Sustainable Energy Reviews* 72 (2017): 734-745.

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Indus River, the Daimer Bhasha dam will supply water for drinking and irrigation purposes. Once finished, it will be able to store 8,500,000 acres feet of water. It will also be utilised to protect the Terbela Dam by assisting in halting the flow of silt that is reducing the dam's capacity to store water.²¹ To save the water that is brought by rainfall during the short monsoon season, new dams and reservoirs of different sizes should be built, especially close to the locations where India releases water from its rivers, causing flash flooding throughout the country. The high rainfall in 2019 forced the Indian government to release more water than usual, according to the administration. 10,000 cusecs of water were released by India into Pakistan through several barrages, all of which wasted away and caused floods. Water canals, small reservoirs, and large dams can be built to use this water. In recent years, India has also begun two new dam construction projects, one of which is the Rattle Dam, which is located close to the disputed territory of Indian Occupied Kashmir (IOK) district Kishtwar, and the other of which is the Kishanganga Dam, which has already been built over the Jhelum River. This is done in violation of the Indus Water Treaty agreement between India and Pakistan, which was mediated by the World Bank.²² Pakistan petitioned India to halt these developments because it receives an equal portion of water from the IOK rivers, but India refused. Pakistan has made its case to the World Bank, but that was insufficient on its own. Before the situation worsens and the entire country dries up, the administration ought to take it very seriously and approach international forums as soon as feasible.

12. CONCLUSION

The water crisis is currently Pakistan's most feared threat. Numerous rivers are drying up, and many have already dried up. Water that can be used for decades cannot be stored in dams due to a lack of room. The nation's drainage system is unsanitary, and its water supply is insufficient. Pakistan's population and climate pose a threat to the country's water supply. Systems for producing and storing water have not been upgraded or have not been developed further. Right now, even they are in dire need of an upgrade. The situation in both urban and rural areas is severe. The administration has made no attempt to solve the catastrophe that the country will face until 2025. The climate is another factor that is driving the country towards a water crisis. Extreme heat and the melting of glaciers have shaped what is now. Crops and fields cannot grow on agricultural land without clean water. Numerous industries in Pakistan are in grave danger as a result of these issues. The

²¹ Qureshi, Asad Sarwar(2020).Ground water Governance in Pakistan: From Colossal Development to Neglected Management, Water, Vol. 12(11), 3017.

²² Zaafir, Muhammad Saleh (2019). Violating IWT India starts Ratle Dam's construction.

The News, Dec. 15.

nation's economy and health would suffer greatly as a result of the water shortage. Together with the pain caused by the crops' incapacity to flourish without watering, people will also suffer from hunger, thirst, and dehydration. The scarcity of water is also ripping apart society because it has an impact on food, health, and economic security while also heightening conflict over scarce water supplies. The industrial sector is not even able to access water. As more people work in warehouses and industries, the demand for water only increases. The population growth factor is another factor contributing to Pakistan's continuous water crisis. There is no doubting that the inadequate response of canal operations is the cause of the water issue and that the population control programme is essentially nonexistent. As mentioned earlier, there are certain issues that current administrations have not attempted to resolve. If the government does not deal with the shortage of water, Pakistan can quickly become a land of scorching deserts.

REFERENCES

Asif, M. (2013). Climatic change, irrigation water crisis and food security in Pakistan, Master Thesis, Uppsala University.

Asim, M., Vains, A. H., Yousaf, H., & Ramzan, M. A. (2012). Socio Economic Impact of Water Crisis on Agrarian Community in District Faisalabad, Pakistan. *Mediterranean Journal of Social Sciences*, 3(11), 235-235.

Baloch, Shah Meer. (2018). Water crisis: How is Pakistan running dry.? June, 07, DW, available at <https://www.dw.com/en/water-crisis-why-is-pakistan-running-dry/a-44110280#:~:text=%22Pakistan%20receives%20around%20145%20million, because%20 we%20have%20few%20dams>, accessed on July 11, 2022.

Dry dams, leaking pipes and tanker mafias main reason for water crisis (2020), June 20, The Nation.

Durrani, Zahra Khan (2020). Water Scarcity and Social Vulnerabilities: A Multi-Dimensional Perspective of Water Challenges in Pakistan, *Journal of Sustainability Education*, March 11,

Faruqui, N. I. (2004). Responding to the water crisis in Pakistan. *International Journal of Water Resources Development*, 20(2), 177-192.

Hadid, Daa. (2019). Maybe It will destroy everything': Pakistan's Melting Glacier Causes Alarm. NPR, Nov. 21, <https://www.npr.org/2019/11/21/779412377/maybe-it-will-destroy-everything-pakistan-s-melting-glaciers-cause-alarm>, accessed on June. 19, 2022.

Iqbal, A. R. (2010). Water Shortage in Pakistan-A Crisis around the Corner. *ISSRA Papers*, 2(2), 1-13.

Khalid, Haroon (2018) With Pakistan's rivers dying, are its ancient cities running out of time?, Feb. 12, Dawn.

Khan, Asim (2019). Here's why India is releasing more water to Pakistan than before. *National Herald*.

Kunbhar, Zulfiqar(2016). Bribes and Shortages: Karachi's Burgeoning water mafia, Nov. 10, Dawn.

Major Rivers in Pakistan Contaminated by Substantial Water Pollution, (2018), *WATER & WASTES DIGEST*, July 05, available at <https://www.wwdmag.com/pollution-control/major-rivers-pakistan-contaminated-substantial-water-pollution>, accessed on March 18, 2022.

Meribole, Joshua (2020). The Water Crisis In Pakistan. *Borgen Magazine*, April, 29. <https://www.borgenmagazine.com/water-crisis-in-pakistan/>, accessed on March. 18, 2022.

Nabeel, Fazilda (2020). Who owns the groundwater in water-stressed Pakistan. The Third Pole.

Qureshi, Asad Sarwar (2020). Groundwater Governance in Pakistan: From Colossal Development to Neglected Management, Water, Vol. 12(11), 3017.

Toppa, Sabrina (2016). Dry dams, leaky pipes and tanker mafias-Karachi's Water Crisis. The Guardian.

Valasai, G. D., Uqaili, M. A., Memon, H. R., Samoo, S. R., Mirjat, N. H., & Harijan, K. (2017). Overcoming electricity crisis in Pakistan: A review of sustainable electricity options. *Renewable and Sustainable Energy Reviews*, 72, 734-745.

Zaafir, Muhammad Saleh (2019). Violating IWT India starts Ratle Dam's construction. The News, Dec. 15.