Pakistan's Dependence on Indus Water Treaty

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Introduction

The Indian subcontinent had been a monolithic geographical entity from time immemorial. Post-independence, while the political boundary between India and Pakistan was delineated, it was found to be a tall order to divide natural resources, particularly water resources in the Indus River Basin (IRB). It appeared that with the signing of the Indus Water Treaty (IWT) in 1960, the issue had reached a closure but it was not to be. Both countries thought that it was unfair to them. Pakistan not only got most of the waters from the western rivers (Indus, Jhelum and Chenab) which was more than 80 percent of the total resources in the IRB but also money to build infrastructure on the western rivers, but it continued, to complain, basing its rights on the eastern rivers (Beas, Sutlej and Ravi) on legacy. On the contrary, the Indian argument was based on water rights and India accepted the treaty in a gesture of generosity to Pakistan. However, keeping in view new realities, particularly in view of the recent support of Pakistan to cross-border terrorism, there is a demand in India to abrogate the treaty.

State of Pakistan's Water Assets

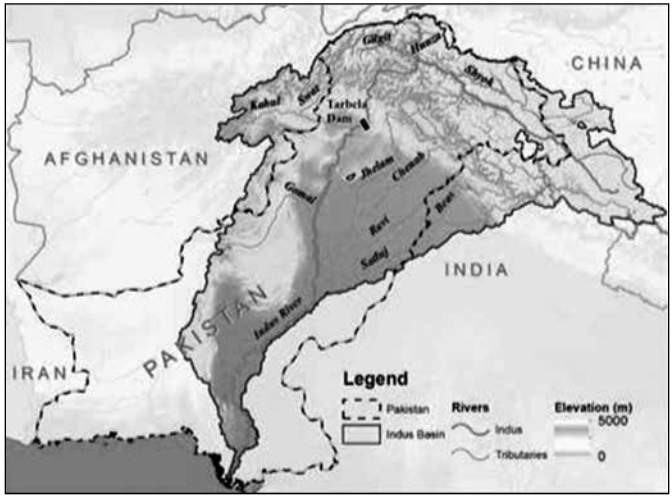
Recently, the Pakistan Council of Research in Water Resources (PCRWR) delivered a grave warning that if the government did not take action, the country would *run out of water by 2025*. Severe water scarcity is already having a negative impact on the country's public health and economy. Over 80 percent of water supplied is

considered unsafe, and water scarcity and water-borne diseases are resulting in a loss of up to 1.44 percent of the Gross Domestic Product (GDP).[1]

There is a centrality of water in Pakistan's economy because of the following reasons:

- **Hydrology of IRB:** The basin's hydrology is determined by the combined influence of three distinct regimes and their responses to climatic conditions: the glacial regime, the snowmelt regime, and the rainfall regime. The glacial regime generates about 25 to 35 percent of water flow in the Indus river.[2,3] The snowmelt regime generates about 35 to 40 percent of total water flow in the Indus basin (Immerzeel et al., 2010; Mukhopadhyay & Dutta, 2010; Savoskul & Smakhtin, 2013), which arises from the melting of snow during the preceding winter plus spring precipitation. In contrast to the glacial regime, a consistently negative relationship between runoff and temperature has been reported for the rainfall regime. The rainfall regime is largely dependent on variations in the timing and intensity of the Indian monsoon, which is the primary factor influencing runoff in the southern foothills of the Himalayas and the Indus plains.[4,5] The rainfall regime is the main cause of lowland flooding as it produces more intense runoff.

Fig. 1



Source: Report on "The Vulnerability of Pakistan's Water Sector to the Impacts of Climate Change: Identification of Gaps and Recommendations for Action" compiled by Jo-Ellen Parry, Dr. Hisham Osman and Anika Terton of the International Institute for Sustainable Development, Canada (www.iisd.org)

- Approximately 95 percent of Pakistan's water is used for agriculture, with 60 percent of its population directly involved in agriculture and livestock, and 80 percent of its exports are based on these sectors. Despite having the world's largest glaciers, Pakistan is among the world's 36 most water-stressed countries. As the population rapidly increases, water demand is projected to far outstrip supply. By one estimate, the total requirement of water is likely to become 335 Billion Cubic Metres (BCM) and supply is likely to reduce to 236 BCM.[6] As this happens, coupled with strained relations with the country's neighbours over trans-boundary water resources, the water crisis is likely to pose a threat to the country's future security, stability, and sustainability. Immediate coordinated planning and Implementation is required to avert a disaster in the future.[7]

Pakistan has water storage capacity of only 30 days as compared to Indian capacity of 190 days.

- The National Disaster Management Authority (NDMA) of Pakistan, in October 2016, had informed the 13th annual meeting of the Regional Consultative Committee (RCC) on Disaster Management that Pakistan had water storage capacity of only 30 days as compared to the standard capacity of 100 days.[8] Even that capacity is getting reduced due to the sedimentation of dams. It was further flagged that the per capita water availability in Pakistan has drastically reduced from 5,300 Cubic Metres (CuM) in 1947 to less than 1,000 CuM in 2016.[9] This reduction in per capita availability of water brings the country perilously close to becoming a water scarce country. As per a MIT Technology Review, the new normal in Karachi is that for drinking water either it is required to stand in a queue in front of a tanker for just a bucket load of water or buy additional gallons of unbranded filtered water from a nearby shop at a rate of PKR 70. The situation is no better in rural Sindh where water often does not reach the land of small farmers at the tail end of the canal, and what does reach them is sea water, rendering their arable land unproductive. As against Sindh, where surface water is the main source, in Punjab, it is ground water. A study by the National Aeronautics and Space Administration (NASA) for the period 2003-13 reveals that while extraction in Lahore alone is 50-55 Million Acre Feet (MAF), the recharge is only 40-45 MAF. It further adds that while there were 20,000 tube wells in Punjab in 1960, they number over a million now, with the water table receding further and further. As per a study published in *Science Advances* in 2015, this gap, besides

increasing the demand of energy for pumping, is also putting almost 60 million people at the risk of arsenic poisoning.[10]

- A misinformation campaign in Pakistan is being carried out that India is stealing Pakistan's water, as authorised under the provisions of the IWT of 1960.[11] Is that fact or a fiction? To answer that, there is a need to examine the facts. As per IWT Article III, water from the western rivers (Indus, Jhelum and Chenab) of the Indus River Basin (IRB) is meant for Pakistan less 3.6 MAF which is meant to be used by India for various purposes.[12] As on date, India has not fully utilised its share due to lack of adequate water retaining infrastructure on the western rivers. India has also not fully utilised the water share from the eastern rivers (Beas, Sutlej and Ravi) too, which is fully meant for India less 45,400 acres from four nullahs (Bein, Basantar, Tarnah and Ujh) located downstream of Madhopur as per Article II, read in conjunction with Annexure C of the IWT[13] and, as such, the water to the tune of 3 MAF is going to Pakistan which is not authorised to it. It indicates that Pakistan is getting much more water than it is authorised to as per the treaty provisions. Therefore, if India decides to channelise the water up to the limit as specified in the IWT, is Pakistan justified in protesting about India's efforts to create infrastructure to retain what is legally its own?

An examination of the reasons for the problems faced by Pakistan indicates a grim reality. The major issues are discussed below.

- **Rise in the Population of Pakistan:** The population of West Pakistan as per the 1951 census was 33.7 million.[14] Currently, the population is 207.7 million, which will cross the 395 million mark on the 100th anniversary of Pakistan in 2047.[15] According to the International Monetary Fund (IMF) Report of 2015, the demand for water will increase exponentially from 225 MAF to 274 MAF whereas the supply will stagnate at 191 MAF.[16] This means that Pakistan needs to either improve its policies and infrastructure to conserve the available water or use technology to increase the availability of water.
- **Overall Reduction in Availability of Water in the Western Rivers** (Impact of Global Warming): Based on data collected at the Tarbela dam, the Pakistan Water and Power Development Authority (WAPDA) suggests that between 1962 and 2012, water flows declined during the kharif season (April to August) while increasing slightly during the rabi season (October to December). Overall, the results suggest that there has been a decline in river flow between 1962 and 2014.[17]

- **Role of China on Availability of Water in the Indus:** China has constructed a medium scale dam on the Indus river, a few miles eastward of Ali which is the capital of Ngari prefecture of the Tibet Autonomous Region (TAR). This place is quite close to Demchok, Ladakh. Initially it will generate 11 Mega Watt (MW) of power which will be upscaled to double its original capacity in due course of time.[18] It will stop practically most of the flow downstream of the dam, besides causing water shortage for mega hydroelectric projects at Tarbela in Pakistan. It needs to be noted that China built this dam without any pre-warning to India and Pakistan. Pakistan is not raising the issue because of the financial support it expects from China as part of the China-Pakistan Economic Corridor (CPEC) and the Belt and Road Initiative (BRI). However, in this case, India needs to make it clear to Pakistan that shortage of water in the Indus downstream of this dam is affecting not only India but also the Gilgit-Baltistan region of Pakistan Occupied Kashmir (POK) for both irrigation and power generation.
- **Role of Afghanistan on Availability of Water in Indus:** Afghanistan is experiencing 60 percent drop in rainfall and also snowfall which together are needed for good agricultural production and to ensure water availability for the crops round the year. A feasibility study has been done to build 12 dams on the main river as well as its tributaries. One of those dams, named the Shahtoot dam is coming up on the Maidan river, a tributary of the Kabul river in Chahar Asaib district of Kabul. The dam will hold 146 million CuM of water. This dam is causing tension in Pakistan as it will alter the flow of the Kabul river into Pakistan and as per reports in the *Dawn* newspaper, there could be 16-17 percent drop in water flow. The Kabul river joins the Indus river from the west at Attock and is a major source of water into the Indus river. Any reduction in the quantity of water from the Kabul into the Indus will adversely affect the water availability in the lower reaches of the Indus, with serious implications for the food security of Pakistan. Besides reducing water flow to Pakistan, the Shahtoot dam is a cause of tension because of its funding from India. Pakistan feels that the dam is part of the Indian design to strangle Pakistan's limited water supply. Its apprehension is based on the fact that India has assisted Afghanistan with the studies on the feasibility of a total of 12 dams on the Kabul river, which would generate 1,177 MW and will further reduce the flow of water into Pakistan.[19] It is significant to note that there is no agreement between Afghanistan and Pakistan on water sharing

and, as such, Pakistan has no case to urge Afghanistan not to build these dams.

- **Surface Water as Primary Source of Water in Pakistan:** Out of 180 BCM which Pakistan gets every year, almost 75 percent of the surface water is diverted to the canal head and only 30 percent reaches the crops due to seepage and evaporation.[20] In addition, 38 MAF of water gets wasted annually due to getting drained into the sea.[21]
- **State of Water Storage Capacity:** Pakistan has only 30 days' of storage capacity as against India which has a capacity of 190 days.[22]
- **Impact of Pollution on Surface Water:** Northern Pakistan has micro-biological contamination of 64 percent (diagnostic survey, 2007), and the central part of Pakistan has both micro-biological and chemical contamination.[23] The most prominent contaminants comprise dyes, chromium, fluorides and iron which not only pollute the surface water but also have potential to contaminate ground water resources. In addition to the above mentioned contaminants, the central and southern parts of the country also have the prevalence of heavy concentration of arsenic and nitrates in the soil, which have rendered the ground water substantially contaminated. It is estimated that only 79 percent of the area of Punjab and 28 percent of the area of Sindh is suitable for ground water-based irrigation.[24]
- **Effect of Inter-State Problems within Pakistan:** Because of water diversion into the canal system in the upper reaches of the Indus river, the velocity of water in the portion close to the estuary becomes so slow that sea water starts intruding into the lower reaches through the estuary. In recent times, the sea water has intruded up to as much as 87 km upstream from the mouth of the river.[25] Inter-state problems for equitable sharing of highly precious but insufficient resources is making a number of planned water storage and hydroelectric projects becoming non-starters, due to resentment among the locals. Some of these include the Kalabagh, Bhasha Diamar and Chilas dams that are being resisted by the locals. Similarly, raising of the height of the Mangla dam is being resisted by the people of POK. While considering the demands for water for POK, the Indus River System Authority (IRSA) has refused the release of water on the grounds that POK is neither a signatory to the IWT nor the Water Appropriation Accord (WAA) of 1991.[26] In this context, an assessment by the Public Health Engineering Department (PHED) of the POK government is significant. It said in 2017, "Since the WAPDA is to initiate the process for filling of

India must complete all hydel projects to exploit water of rivers assigned to it.

the dam at Nauseri from October 16, it runs the risk of affecting water supply within the Muzzafarabad city. Although the PHED will try to control the situation with its full capacity, yet the urban population should be informed to avoid being wasteful with water and instead use it judiciously". Although the Neelum-Jhelum Hydroelectric Project (NJHP) tried to ally the fears, a state of uncertainty prevails among the public.[27]

- **Impact of Climate Change:** There is growing concern about the potential impacts of climate change on Pakistan's water resources, particularly those within the Indus basin. Rising temperatures spurring higher evaporation rates, rising seas leading to greater salt water intrusion in coastal areas, more glacial melt increasing the threat of glacier lake outbursts and the potential for more intense rainfall (the experience of the floods in 2010 and 2011) bear testimony to these observations; and changes in the monsoon pattern are some of the visible impacts of climate change which are being experienced by Pakistan's hydrologic resources. These changes are likely to adversely affect agriculture production and energy generation. Global warming is also resulting in an enhanced need for the additional quantum of energy to sustain growth. Other related areas which would be adversely affected are the health sector and manufacturing; and, finally, a steady reduction in the availability of potable water to meet the demands for domestic and municipal water usage.
- **Missing Water Governance in Pakistan:** Currently, water governance is totally missing and there is a large number of issues for which the Government of Pakistan and its elements are responsible. There is a need to look inward for necessary action.[28] Pakistan needs to appreciate that it is the lack of a major policy and its implementation strategy which is substantially responsible for its water woes, and not India, which has not, so far, violated the IWT in any way.

Actions that India Can Take

Since 2010, when the treaty completed 50 years, there had been a demand for reviewing the IWT. Initially, the saner voices in India continued to recommend that a *status quo ante* be maintained; however, post Uri incident, the demand for a review became louder. The Government of India constituted a Task Force under the chairmanship of Shri Nripendra Mishra to review the IWT.

Although, final recommendations have still not been declassified, India has decided to go ahead with all the pending projects which have been planned to exploit the water resources as authorised within the provisions of the IWT. Projects like Pakal Dul (1000 MW); Ratle (330 MW); Kishan Ganga (330 MW), Lower Kalnai (48 MW), all in Jammu and Kashmir (J&K), and Miyar Nallah (120 MW) in Himachal Pradesh[29] are being progressed, notwithstanding the objections of Pakistan.

In fact, there is a need to highlight that the water issue was accepted by Pakistan as a bilateral issue which *de-facto* amounts to accepting that the accession of J&K was legal and J&K is a part of India, in line with the Indian Independence Act 1947, and what Pakistan is doing in J&K amounts to interference in India's internal matters. Also Pakistan's efforts to exploit the Indus at Bhasa Diamar and the Neelum waters upstream of Muzzafarabad without taking into account, aspiration and needs of POK need to be highlighted. Similarly, completion of the Kalabagh project will amount to a large portion of Khyber Pakhtunkwa coming in the inundation area, and a lot of the much needed water by Sindh would be denied to it. This puts Sindh and Khyber Phaktunkhwa against Punjab which would be beneficiary of the project. This difference in perception needs to be exploited.

Finally, the latest stand-off between India and Pakistan post Pulwama terror attack has brought forward a need for a review of the Indus Water Treaty which is quite generous to Pakistan. There is a definite case for India to review it with a view to align it with the national aspirations and use it as a strategic asset. In this connection, the latest statement of February 21, 2019 by Sri Nitin Gadkari about exploiting the waters of the eastern rivers which are part of the Indian entitlement, as per the IWT, to augment the water supply in the Yamuna, is significant as it would be in line with India's original demand for need-based distribution. However, it may also be noted that stopping these waters will be possible only if the Shahpur Kandi dam is completed at the earliest and the infrastructure to harness the waters of four nullahs, namely, Bein Basantar Tarnah and Ujh downstream of Madhopur will have to be built. In terms of time, it will not be before another five years.

Conclusion

The discussion brings out that Pakistan has a lot of work to do to improve its water availability and its long-term sustainability, most of which is within its own domain of action. It needs to stop blaming India for its water woes and improve

its own water management infrastructure, systems and procedures to make optimal utilisation of available resources, leverage technology for economising and conserving the resources that it has.

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Notes

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