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Water Scarcity in Pakistan: Need for Effective Water Diplomacy and Development

Talha Tufail Bhatti*

Geographical Introduction to the Indus Basin

One of the longest rivers in the world, the Mighty Indus, originates from Tibetan plateau with its waters stretching along China, India, Afghanistan and through to the bank of the Arabian Sea.[1] According to Intergovernmental Panel on Climate Change (IPCC,) the upper Indus Basin is known as the 'Third Pole' or 'water tower', solely because the region holds 19,000-20,000 km^2 of permanent icecaps.[2] Indus basin is a consortium of diverse geographical morphologies, and covers around 518,000 km^2 including glaciers, hilly mountains, forest, rivers, cultivable plains. Most of the Indus Basin has fertile land because of rich mineral input, collectively one of the world's biggest frozen freshwaters in the north to the 7th largest mangrove forest in the south. The Indus holds rich ecological zones, and geographically 80 per cent of basin lies in Pakistan.

Pakistan's 90 per cent irrigation demand is fulfilled by the Indus and its tributaries. However, the IPCC estimated high confidence of likelihood on abrupt and irreversible changes in cryosphere.* The probability and rate of ice mass melting is directly proportional to higher global surface temperature, making it all the more significant as this is referred to as the 'tipping point' for the South Asia (specifically for Pakistan and India).[3] Due to global warming (i.e., rapid rise in temperature), the Indus basin is mostly fed by melting permanent glaciers and monsoon rains. Glacier and snow melted water are responsible for irrigating our primary cash crops.[4] Global warming is increasing the melting of glaciers, causing excessive water flow in the Indus Basin, which could lead into flood that could surpass the rivers holding capacity (commonly known as Floods).

The Indus Waters Treaty - 1960

The Indus has a trans-boundary nature which has been a source of tension between India and Pakistan.[5] To resolve the issue, World Bank facilitated both states for development of a framework resulting in the 'Indus Waters Treaty' that was signed between Pakistan and India on September 19, 1960. The treaty essentially accorded three western rivers (i.e., Indus, Chenab, and Jhelum) to Pakistan with full jurisdiction of its freshwater, while three eastern rivers (i.e., Ravi, Sutlej, and Beas) were placed under the exclusive domain of India.[6]

The treaty inaugurated a chain reaction for regional developments in surface water pathways (i.e., canal systems which leaded to the development of one of the most contiguous irrigation networks that is both integrated and fragmented. The establishment of complex and diverse water management systems for water sustainability has contributed to a significant increase in the agricultural sector's economic capacity and its share in the country GDP. It took ten years (i.e., 1960-1970) for Pakistan to develop colossal methodologies of permanent water works, i.e., 'The Indus Basin Irrigation System (IBIS)'. In order to transport water from the western rivers to the productive lands of Punjab, Sindh, and Balochistan, which were originally watered by the eastern rivers, a system was established The aforementioned methodology included construction of two (water-storage) dams with hydropower capacity, eight board link canals and two barrages within a decade, a Herculean civil input by civil servants. All the funds were mobilised through grant [7] by the United States at the request of World bank.[8]

However, as per the IPCC's estimated projected increments in temperature for the South

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* Mr. Talha Tufail Bhatti is an Environmental Scholar, an independent researcher with core expertise on Climate Change, Renewable Energy and Smart Cities, published two articles into reputable journals of Fuel and Environmental Management. Taught in multiple universities like Quaid-i-Azam University and Bahria University to more than 100 undergraduate

* Cryosphere: The cryosphere is the part of the Earth's climate system that includes solid precipitation, snow, sea ice, lake and river ice, icebergs, glaciers and ice caps, ice sheets, ice shelves, permafrost, and seasonally frozen ground.

Asian region, surely global warming will impact regional water supply and demands. Additionally, ever increasing demography further pressurises water resources for irrigation and hydropower (storage), Regrettably, Pakistan has had a strained relationship with its neighbouring country India, which has been further complicated by various global developments such as the US-led war on terror and the Russian invasion of Afghan soil.[9]

The dispute of fresh water

For the past 50 years, Pakistan and India have been engaged in a continuous struggle, particularly in the form of a marathon competition to build hydropower plants. India built around 30 electric power plants and most of the projects do not even follow the provisions of IWT, to mention a few "exchanges of data" (as postulated in Article 6) and "future cooperation" (as postulated in Article 7).[10] Subsequently, a trend can be observed in the disputes based on the timeline provided in the literature, as evidenced by the following examples:

- In 1970, India started building the "Salal Dam" on the Chenab River (Western River), which was resolved through dialogue between the foreign secretaries of both countries from 1976 to 1978.
- In 1984, India initiated the construction of the "Wullar Barrage Project" or "Tulbul Navigation Project" on the Jhelum River (Western River), which led to multiple meetings between the water resource secretaries of the two nations, but no solution was reached. Eventually, India suspended the project work.
- In 1999, a 450 MW project was constructed on Baglihar, which is geographically located slightly upstream from the Salal Dam. Pakistan objectified the project and referred the matter to a neutral expert who rejected Pakistan's claim of manipulation of water flows by India.
- Pakistan has also opposed India's plans to construct two hydropower projects over the past 34 years. The first project, the 850 MW "Ratle project," is planned on the Chenab River. The second project, the 330 MW "Kishanganga project," is planned on the Jhelum River. The Kishanganga project involves diverting the flow of the Kishanganga River through a 24-km-long tunnel called "Madymati Nulah" before rerouting it back to the Jhelum River through the Wullar Lake.

Historically, the Court of Arbitration only passed two judgments on Indus Water Treaty (IWT), and both were in favours India's hydropower projects, first of which was in1978 and second in 2013. The argument used for justification in 2013 verdict was that between 2004 and 2006, India aggressively pursued Kishanganga project infrastructure, and at that moment Pakistan had not started working on Neelam Jhelum Power Plant (NJP). It is hence unfair to halt the construction of Kishanganga Project because of Pakistan's negligence.

Indian officials bluntly commented

"The Kishanganga project plan pre-dates the Neelum Jhelum plan, so Pakistan should not have planned its project at that spot in the first place. Anyway, we are not channelling all the water for the Kishanganga project, and there is enough water flowing freely down the river. And of course, all the water we are channelling for the kishanganga project is ultimately flowing downstream to Pakistan anyway, since kishanganga is run of the river project".

Uncertainty in water levels and flows from kishanganga to Neelam catchments are due to Kishanganga Hydroelectric Project-(KHEP) making quite impossible to maintain enough water levels for hydroelectric activities of Neelam Jhelum power plant (900 MW). According to senior officials of Water and Power Development Authority (WAPDA):

"The Kishanganga project is going to make it impossible for us to run NJP. The NJP is just downstream of the Indian project and India is diverting most of the water so that it falls back into the river well below the level of NJP. So how are we going to get water for NJP?"

It is logically unsustainable for Neelam Basin because diverted water of kishanganga does not fall back into the Neelam catchment, entailing some serious ecological disturbances for flora and fauna. A senior official of WAPDA quoted:

"For years and years, every Pakistani has been paying his electricity bill including tax for NJP, now how can we tell the country we cannot build the NJP?".[11]

The Role of the World Bank

World Bank as a guarantor of the IWT holds a very critical administrative position. The tension between the Indo-Pak relations often puts the treaty

under a threat of violations. The WBG in 2016 delayed this crisis by extensive and transparent negotiations, but now India is trying to limit the third-party role in any 'difference' and 'dispute' and is rejecting World Bank's interference.

India wants bilateral communications for Indus Waters Treaty and Pakistan solely would not be capable of leveraging in the dialogue because of its inability to negotiate due to weak regional development and lack of forecasting. The World Bank remains committed to act in good faith and with complete impartiality and transparency.

As spokesperson of World Bank Group expressed:

"It is unprecedented in the history of the treaty that India and Pakistan are initiating separate processes", while continued to assist the countries and fulfilling its responsibilities under the treaty.[12]

Examining potential conflict risk between India and Pakistan

On 9 February,2023, the Geological Survey of India announced a discovery of 5.9 million tons lithium in Jammu and Kashmir state, Salal. A prime mineral in renewable energy industry, specifically in batteries and other low-carbon energy technologies, the world is starving for lithium, Although the findings are still preliminary, they are promising, and suggest that India has the potential to become one of the world's top holders of this mineral resource. An economic prize in a disputed territory, Lithium ores are roughly worth of $ 300 billion simultaneously serve as a gift, and a burden at a dangerous time. Lithium mining uses and deposes excessive water, is a cause of pollution, and could disturb Chenab water sediments.

The Indian government has reduced 'Kashmiri Muslims' in key local government public and private financing sectors. Local communities were reported "increasingly losing out on mining contracts, government jobs, and economic opportunities." This indicates a fear of Islamophobic anti-Muslim demographic engineering. Salal is the epicentre of lithium, 70 per cent of the indigenous community is associated with agriculture sector. Mining could generate economic and political barriers, which may prevent residents form actively capitalizing and benefiting from local resources.[13]

According to scientists of Divecha Center for Climate Change:

"When the Indus Treaty was signed, glacial melt or run off was not a major concern, but now the realities have changed considerably in view of climate crisis."

The Bharatiya Janata Party (BJP) bluntly argued to weaponize and block water towards Pakistan in political arena. Recently, India pitched to modify with amendments to the Indus Waters Treaty. It is a serious crime which could lead to interstate water conflicts resulting into genocidal output for both countries.

Notoriously, the "Brahmaputra Lake" which abruptly formed due to a landslide in Tibet, became a source of the most recent fist fight erupted between China and India, as both countries claim a portion of the region where the lake was formed, leading to tensions and disputes over water usage and territorial claims. Interestingly, China has acted in similar manner (i.e., increasing its water holding capacity within its territorial claims), just like what India is doing with Pakistan and Bangladesh. It is becoming a trend in the Indian political arena, to bully its neighbours to gain political upper hand in electoral polls.[14]

China and Afghanistan

The Mighty Indus originates from the Tibetan plateau which geographically falls under China's territorial claims. Similarly, the Kabul River originates from Afghanistan collectively contributing 17 per cent to Pakistan's water supply Pakistan's future water availability is at risk due to the absence of water agreements with China and Afghanistan. The urgent need for water diplomacy and development cannot be overstated, as both neighbouring countries are actively constructing their own storage and hydropower projects on the Indus River, creating a ticking time bomb of conflict of interest. If not addressed immediately, this situation could have severe and long-lasting consequences for Pakistan's water security.[15]

Conclusion

Fear of future water shortage due to the construction of dams and economic benefits form mineral mining like lithium, are causing diplomatic tensions between Pakistan and India. Divisive political narratives in both India and Pakistan are generally capable of heightening the likelihood of conflict. In India, a narrative of Pakistani-affiliated Islamic terror cells attacking civilians has been used to justify backing away from diplomacy and even threatening to reduce Pakistan's water supply. Meanwhile, nationalist media in Pakistan fears that

India will use its upstream dams to control the flow of water into Pakistan, specifically on Kishanganga and Neelam. The treaty has served as a cornerstone of stability in the region for over seven decades but now with each increment warming, regional changes are becoming more volatile and seemingly irreversible. India plans for lithium extraction in Jammu and Kashmir are a clear example of the potential security risk.

Additionally, due to global warming, abrupt changes are expected in the Himalayan Glaciers. Risks such as Glacial Lake Outburst Flood GLOF with projected impacts towards glacial masses may require both parties' attention because water availability will increase in sub-catchments in near-term and decrease after 2050. Ideally India and Pakistan need collective implementation on locally adaptive measures, collective water storage and safe mining management practices for ensuring long term sustainability in the region. South Asia is becoming a hyper arid region on a much faster pace wherein heatwaves, floods, and droughts are expected to increase manifold. These modern challenges require urgent attention because with every increment in global temperature (1.2°C), means an inch closer to crossing soft and hard adaptation limits.

Climate driven food and water security should be addressed by adding or updating the treaty in the light of latest scientific environmental understanding and risk assessments, especially with regard to water issues. Indian notice for Pakistan about revisiting the IWT is clearly an indication of the 'new normal of climate change'. This strategic step bears the potential to unclog the long-blocked diplomatic relation between two countries.

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