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Water Shortage  
in Pakistan

Global Climate Change  
Impact on Pakistan's  
Political Economy

A Crisis around  
the Corner

Strategic Communication



Peace Talks Between Pakistan and India

Operation Rah-E-Rasat

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Institute for Strategic Studies, Research & Analysis

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ISLAMABAD, PAKISTAN

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عَلَّمَ الْإِنْسَانَ مَا لَمْ يَعْلَم  
TAUGHT MAN THAT WHICH HE KNEW NOT

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# **WATER SHORTAGE IN PAKISTAN – A CRISIS AROUND THE CORNER**

*Abdul Rauf Iqbal*

## **Abstract**

Water issues between Pakistan and India were settled through Indus Water Treaty – often regarded as a remarkable example of conflict resolution. But the recent Indian intentions of building “chain of dams” on Pakistani (western) rivers have once again posed a serious challenge for Pakistan. Further, UN reports are suggesting that Pakistan is going to become a water scarce country in near future. Forgoing in view, this essay highlights the reasons of water shortage in Pakistan, its implications and a proposed way out. After discussing the availability of water and its emerging challenges, the paper narrates the Indian role in water crisis and its implications for Pakistan.

## **Introduction**

Pakistan, one of the world’s most arid countries, with an average rainfall of under 240 mm a year,<sup>1</sup> is heavily dependent on an annual influx into the Indus River system. About 180 billion cubic meters<sup>2</sup> of water of the system emanates from the neighboring country and is mostly derived from snow-melt in the Himalayas. This hydraulic economy of Pakistan faced massive challenges right from the independence of country in 1947. The first challenge arose at the time of partition of the Indo-Pak subcontinent which detached the irrigated heartland of Punjab from the life-giving waters of the

Ravi, Beas, and Sutlej rivers which had become part of India. The situation became worst when India stopped the water flow of Pakistan in April 1948. Then, water diplomacy started and both states under the mediation of the World Bank negotiated the Indus Waters Treaty (IWT) in 1960, giving Pakistan rights in perpetuity to the waters of the three western rivers; Indus, Jhelum, and Chenab rivers. While the three eastern rivers (Beas, Sutluj and Ravi) came under total jurisdiction of India. This arrangement resulted in a new challenge that was of a mismatch between the location of Pakistan's water (in the western rivers) and the major irrigated area in the east. Again Pakistan's water engineers were up to the task, building the world's largest earth fill dam, the Tarbela on the Indus, and link canals, which ran for hundreds of miles and carried flows ten times the flow of the river.

Water problems was settled and IWT was regarded as a remarkable example of conflict resolution yet the recent Indian intentions of building "chain of dams" on Pakistani (western) rivers have once again posed a serious challenge for Pakistan. Further, UN reports are suggesting that Pakistan is going to become a water scarce country in near future. In this premise, this essay intends to highlight the reasons of water shortage in Pakistan, its implications and a proposed way out. The paper will first highlight the availability of water and emerging challenges and then evaluate the Indian role in water crisis and its implications for Pakistan.

### **Availability of Water in Pakistan**

According to the World Bank, Pakistan became a water-stressed country (1,700 cubic meters per capita per year) around the year 2000.<sup>3</sup> According to a government source, Pakistan reached 1,700 m<sup>3</sup> in 1992 and became a water-short country, and then declined further to 1,500 m<sup>3</sup> in 2002.<sup>4</sup> Water scarcity (1,000 m<sup>3</sup> per capita per year of renewable supply) is expected in about 2035.<sup>5</sup> However, a United Nations Development Programme source gives Pakistan's current water availability as 1,090 m<sup>3</sup> per capita per year.<sup>6</sup> This is because the terms “water shortage” and “water scarcity” are often used interchangeably— while both use the 1,000 m<sup>3</sup> per capita measurement as a benchmark, “shortage” is an absolute term and scarcity is a relative concept.

### **Major Challenges for Pakistan**

Now a days, major challenges emanating from the availability of water in Pakistan are:-

- **Water Scarcity.** Pakistan is one of the most water-stressed countries in the world. The situation is going towards the worst water scarcity due to Indian obstruction of western rivers water.
- **A high risk water environment.**<sup>7</sup> Pakistan is dependent on a single river basin i.e. Indus River. This dependence on a single river system means it has little of the strength that most countries enjoy by virtue of having a multiplicity of river basins and diversity of water resources.



### **Indus Basin – A Source of Livelihood**

The northwestern part of the subcontinent is dominated by the Indus Basin. The Indus River originates near Mount Kailash Range in Tibet and thereafter it flows to the West, eventually running into Arabian Sea<sup>8</sup>. The total area of Indus basin, the area draining the Himalayan water into the Arabian Sea, is about 365,000 square miles which is more than the total area of Pakistan<sup>9</sup>.

Indus basin involves two countries- Pakistan and India. In Pakistan, the alluvial plains of the Indus basin cover approximately 25 percent of the land area of Pakistan, with Punjab and Sind the most agriculturally important provinces<sup>10</sup>. In India, the basin includes only 9.8 percent of the total geographical area of the country. On the Indian side, the upper part of basin involves Jammu & Kashmir and Himachel Pradesh, while the lower part covers the area of Punjab, Haryana and Rajasthan<sup>11</sup>.

Given the importance of this basin, it is unsurprising that divide of this basin has become a source of significant controversy. The dispute over Indus waters started in the form of inter-state differences before the partition. But after the independence in 1947, the dispute became an international issue between Pakistan and India. In this sense, the region's defining event was 'hasty, unimaginative and surgical partition' of British India<sup>12</sup>. After the partition, political boundary between two states was drawn right across the Indus Basin. It left Pakistan as the lower riparian while making India as an upper riparian. Adding insult to injury most of the headwaters went to Indian side and thus leaving Pakistan as

more vulnerable state. India was therefore given the physical capacity to cut off vital irrigation water from large and valuable tracts of agriculture land in Pakistan<sup>13</sup>.

### **Pakistan – India Water Crisis: A Historical background**

The water dispute between the newly born states surfaced in April 1948, when India closed the canals on the eastern rivers of Ravi and Sutlej, only agreeing to reopen them after the Inter Dominion Agreement of May 1948, where it claimed the entire water of eastern rivers<sup>14</sup>. This was only a provisional agreement and the Indus Water Treaty (IWT) was finally negotiated between India and Pakistan in 1960 under the mediation of World Bank. This gave Pakistan the western rivers (Chenab, Jhelum and Indus) and India, the eastern rivers (Beas, Sutlej and Ravi). Some restrictions were also imposed on Indian capacity to modify the flow of western rivers as she was the upper riparian for even these rivers.

### **Indus Water Treaty**

The signing of Indus Water Treaty (IWT) in 1960 was no doubt a ‘remarkable achievement’<sup>15</sup>. It brought to an end the long standing dispute between India and Pakistan. This treaty was culminated through a long period of negotiation under the mediation of World Bank. The primary objective of IWT was to fix and delimit the rights and obligations of each country’s use of waters in relation to other.<sup>16</sup> The water sharing under this treaty (ignoring the details given in the Annexes and Appendices) was quite simple:-

- The three western rivers (Chenab, Jhelum and Indus) were allocated to Pakistan, and the three eastern rivers (Beas, Sutlej and Ravi) were allocated to India.
- India was not allowed to build storages on the western rivers except to a very limited extent.
- Restrictions were also imposed on the extension of irrigation development in India.
- There were also provisions regarding the exchange of data on project operation, extent of irrigated agriculture, and so on.

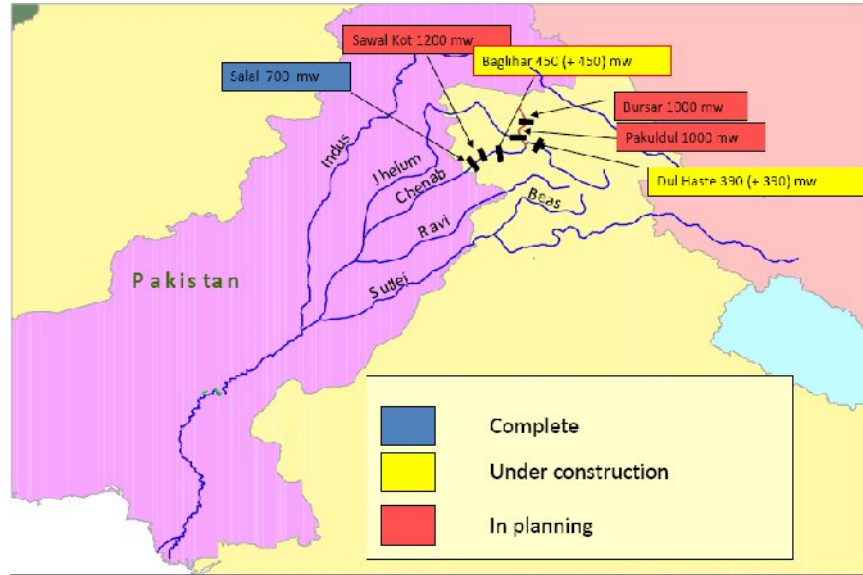
The treaty further mandated certain institutional arrangements:-

- There was to be a permanent Indus Commission consisting of a commissioner each for Pakistan and for India, and there were to be periodical meetings and exchanges of visits.
- Provisions were included for the resolution of the differences that might arise<sup>17</sup>.
- The treaty also included the provision of international financial assistance to Pakistan for the development of irrigation works for utilizing the waters of western rivers.

### **Recent Stress & Strain in Observance of IWT**

IWT survived in the midst of wars and border clashes. But at present Pakistan is very much concerned with the Indian projects on western rivers which would enable India either to reduce water flows to Pakistan or to release store waters and cause floods.

Therefore, Pakistani objections are water and security related but Indian position is different to that of Pakistan. Further, recent stress and strain in the observance of IWT have had many analysts believe that water sharing will take a politically charged dynamic in the relations of two nuclear rival states<sup>18</sup>.



**Source:** John Briscoe, *Water and Security in South Asia*, Regional Network of Strategic Studies Network, New Delhi, November 2009.

### Indian Violations of IWT

India is building chains of dams on Pakistani rivers in clear violation of the treaty and her exploitation of western rivers is creating water shortage in the country. The recent projects provide India the leverage to hold Pakistani waters which can seriously affect water inflow at Marala Head Works/ Mangla Dam causing acute shortage of water for winter crops. This, besides causing electricity shortage, can greatly affect wheat crop in Punjab. Low inflow at Marala Head Works can greatly undermine the defence

value of BRB Link Canal during campaigning season. Some of Indian violations of the treaty are as below:-

- India started almost every project without informing Pakistan which is in violation of IWT.
- There is a restriction of aggregate storage allowed to India over western rives via Annexure E of the treaty. India, however, is manipulating this provision by building a series of storages on western rivers, increasing storage and water regulation capabilities manifold.
- India has recently awarded a tender for construction of 330 MW Kshanganga hydro-electric project (HEP), which will be built on Indian tributary (Kishanganga) of Jhelum River. Pakistan has announced a similar project on Pakistani side of River Jhelum. According to IWT, the country that completes the project first will win the rights to the river. Hence, despite costing 68% more than estimated, India is endeavouring to finish the project first.
- India has plans to construct 62 dams and hydro-electric units on Rivers Chenab and Jhelum thus enabling it to render these rivers dry by 2014.<sup>19</sup>

#### **Implications for Pakistan**

- India's future energy and water demands, which are enormous, can compel her to undertake projects in violation of IWT. Certain quarters in India are already

saying that IWT is more of a binding for India and should therefore be abrogated.

- Though India does not have the capability to divert water from the western rivers at present, however, possibility of a project similar to China's Great South-North Water Transfer Project can not be ruled out.
- Any reduction in water inflow to Pakistan at this stage will cause shortage of water for irrigation and if supplemented by adverse climatic conditions and other internal water mismanagement issues, can trigger inter-provincial water conflicts of serious magnitude. If India is found violating IWT at that point in time, then it will spark serious differences between India and Pakistan and might become prelude to a major conflict.
- Most recently, water flows in Chenab has declined by 40 per cent to about 6,000 cusecs from a 10 year average of about 10,000 cusecs, mainly because of construction by India of over a dozen hydropower projects upstream, reduction in rainfall and diversion of river waters.<sup>20</sup> In case India resorts to stoppage of water as per her capability, 406 Canals and 1125 Distributaries will become dry rendering 0.35 million acres of cultivated land barren and eventually ruining a total of 7.0 million acres of fertile land.<sup>21</sup> India's decision to go ahead with Kishanganga HEP and four other dams in India

administered Kashmir is geared not so much towards meeting its own needs as impoverishing Pakistan.

- To fill Baglihar Dam, India had consistently obstructed Chenab's flow; resultantly Pakistan received only 19,351 cusecs on 9 October 2009 and 10,739 cusecs on 11 October 2009, when it should be receiving a minimum of 55,000 cusecs per day.<sup>22</sup> Total loss was approximately 321,000 MAF of water.<sup>23</sup>
- Agriculture is Pakistan's backbone and water flowing in the channels is its blood line. It contributes 21% to the GDP and employs 45% of labour force.<sup>24</sup> Adverse effects of water shortage on agriculture would have a spiraling effect on the prevailing level of poverty leading to economic and social problems.
- India has gained a water holding capacity on western rivers which can seriously affect water inflow at Marala HWs / Mangla Dam causing acute shortage of water for winter crop. Though, presently India is not capable of diverting water, possibility of a project similar to China's Great North-South Water Transfer Project cannot be ruled out.
- The growth rate of Pakistan's agriculture is already decreasing due to water shortages. In order to achieve the required growth targets in agriculture, Pakistan needs an estimated 149 MAF of water in 2000, 215 MAF in 2013 and 277 MAF in 2025.<sup>25</sup>

- The shortage of surface water will result in drought and more dependency on ground water for irrigation, hence water table will go down causing water constraints to the population.

### **Conclusion**

Pakistan is heading towards “water stress” country and has already reached to the limit of 1000 cubic meters per person per year, below which serious economic and social consequences are likely. Indian’s violations of IWT are not only a security and economic concern for Pakistan but also can pose serious implications on the region’s overall security as the both states possess nuclear arms. Even if the direct violence is avoided, inability to resolve river resource issues will undoubtedly limit the ability of both countries to manage and utilize water resources in the most efficient manner. In this backdrop, following way out is suggested:-

- Pakistan should highlight the importance of the issue on various international forums. Merely passing the political statements will not resolve the problem.
- Indian intentions and needs should be distinguished on quantitative terms to highlight the real face of India among international community.
- The treaty does not provide so many important issues like availability of water, effects of climate change and proportional increase or decrease of water in quantitative terms. Pakistan should look for proper strategic forum for



deliberative discussion and policy options for these issues.

- At present, renegotiating the treaty seems impossible and Pakistan has to relook its water policy in the given limits of treaty. Therefore, effective role of Indus Water Commissioners is the need of hour.
- Interstate conflict can be managed through internal strength and same is the case with water conflicts. Pakistani policy makers should understand the concept of conflict resolution and initiatives must be taken on capacity building as no one can compel any sovereign state (India or Pakistan) to act on morality.
- There is serious need to work on water management as the available water is being wasted and the groundwater table is going below and below.

## Notes

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<sup>1</sup> John Briscoe and Usman Qamar, *Pakistan's Water Economy: Running Dry* (Oxford: World Bank and Oxford University Press, 2006), executive summary.

<sup>2</sup> Ibid.

<sup>3</sup> John Briscoe and Usman Qamar, *Pakistan's Water Economy: Running Dry* (Oxford: World Bank and Oxford University Press, 2006).

<sup>4</sup> "Population Stabilization, a Priority for Development," United Nations Population Fund/Ministry of Population Welfare, Government of Pakistan, undated.

<sup>5</sup> *Pakistan's Water Economy: Running Dry*.

<sup>6</sup> *Economic Survey of Pakistan, 2007-2008*, and *Global Human Development Report 2007*, quoted on UNDP website, [www.undp.org.pk](http://www.undp.org.pk).

<sup>7</sup> For Example India might be able to muddle through because it has many rivers and if something goes wrong in one place the effect is cushioned by opportunities in other places, this is a luxury which Pakistan does not have.

- <sup>8</sup> Douglas Hill, "The Politics of Water in South Asia", *Transforming Cultures e Journal*, Vol. 1 No. 2, June 2006
- <sup>9</sup> Syed Zain ul-Arifeen Shah, "The Indus Water Dispute", available at [www.chup.com](http://www.chup.com) accessed on 14 May 2010.
- <sup>10</sup> Executive Summary, World Commission on Dams, *Pakistan: The Tarbela Dam and Indus River Basin*, November 2000, available at [www.dams.org/kbase/studies/pk/pk-exec.htm](http://www.dams.org/kbase/studies/pk/pk-exec.htm) accessed on 26 May 2010.
- <sup>11</sup> Douglas Hill, "The Politics of Water in South Asia", June 2006.
- <sup>12</sup> Pervaiz Iqbal Cheema, "Pak-India Water Disputes", *The Post*, 26 February 2006.
- <sup>13</sup> Chaudhri Muhammad Ali, *The Emergence of Pakistan*, (New York: Columbia University Press, 1967) pp. 318-319
- <sup>14</sup> H. Gazdar, "Baglihar and Politics of Water", *Economic and Political Weekly*, 26 February 2005
- <sup>15</sup> Salman M.A. Salman and Kishor Uperty, *Conflict and Cooperation on South Asia's International Rivers: A legal Perspective*, (World Bank, January 2003), p. 37
- <sup>16</sup> *Ibid* p. 48
- <sup>17</sup> Questions, if any arose, were to be resolved within the commission; if agreement could not be reached at the commission level, the matter was to be referred to the two governments; if they too failed to reach an agreement, the 'question' would become a 'difference' to be referred to a Neutral Expert (NE). The NE's findings on the differences referred to him would be final and binding. If the NE decided that the matter was in fact a 'dispute', it would have to go to a Court of Arbitration.
- <sup>18</sup> Pervaiz Iqbal Cheema, "Pak-India Water Disputes", *The Post*, 26 February 2006
- <sup>19</sup> "India's illegal dams on Pakistani rivers: Kishanganga to be completed in 2016", *The Dawn*, 19 September 2009.
- <sup>20</sup> Khaleeq Kiani, "Drastic decline in Chenab water flows", *The Dawn*, 21 January 2010.
- <sup>21</sup> Majid Nizami, "The water bomb", *The Nation*, 27 May 2008.
- <sup>22</sup> Khalid Hussain, "Indus water treaty under threat", *The News*, 30 April 2010.
- <sup>23</sup> Haroon Mirani, "Race to the death over Kashmir waters", *Asia Times online*, 13 January 2009.
- <sup>24</sup> Ministry of Finance, *Economic Survey of Pakistan 2009-10*, (Islamabad: Government of Pakistan) pp. 13.
- <sup>25</sup> Dr. Muhammad Saffar Mirjat and Abdul Samad Chandio, "Water resources of Pakistan", *The Economist*, 14- 20 May, 2001.