

Sustaining energy and food security in trans-boundary riversystem: case of Indus basin.

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Introduction

Growing scarcity of water resources, increasing population and poor water management in developing countries has resulted in an increasing demand for water resources. The increasing scarcity of water leads to the desire for control of water resources, which in turn becomes a ground for breeding conflicts. These conflicts are manifested at interstate and intra-state levels. The conflicts over the use of water between the states become more severe when they are typically agrarian based economies. However, the scarcity of water resources in some cases has been instrumental in developing cooperation among states. The Indus Water Treaty (1960) between India and Pakistan is one of the few examples in South Asia, of the settlement of a major, international river basin conflict.

At the time of independence (1947), the boundary line between the two newly created independent countries i.e. India and Pakistan was drawn right across the Indus Basin, leaving Pakistan as the lower riparian. Moreover, two important irrigation head works, one at Madhopur on Ravi river and the other at Ferozepur on Sutlej river, on which the irrigation canal supplies in Pakistan Punjab had been completely dependent, were left in the Indian territory. A dispute thus arose between two countries regarding the utilization of irrigation water from existing facilities. Negotiations held under the good offices of International Bank for Reconstruction and Development (World Bank), culminated in the signing of Indus Waters Treaty in 1960. The Treaty fixed and delimited the rights and obligations of India and Pakistan in relation to each other, concerning the use of the waters of the Indus System of Rivers.

Indus international river basin is the largest, contiguous irrigation system in the world, with a command area of about 20 million hectares and annual irrigation capacity of over 12 million hectares. The Indus system of rivers comprises three eastern rivers (Sutlej, Beas and Ravi) and three western rivers (Indus, Jhelum and Chenab). Under the Indus

Water Treaty, the waters of the eastern rivers stand allocated to India and those of western rivers largely to Pakistan. The treaty which was carried out in the best interest of nation has, however, deprived the Jammu and Kashmir (J&K) state to use its own water resources and thereby severely affected the development process of the state.

IWT Vs a Vs J&K state

The recent Punjab Termination of Agreement Act 2004 passed a bill canceling all the agreements of water sharing by which entire nation was shocked and Prime Minister had to intervene. And when it comes to J&K state, nobody cares for this forgotten land. The state government also does not appear to be conscious of its water related issues. The fact is that the controversy over the Sutlej Yamuna Link, popularly called SYL, has for once afforded the J&K a rare opportunity to introspect the grave injustices the state has suffered in terms of its rights over the use of waters from its own rivers. If Punjab could unilaterally terminate its agreement with Harayana and Rajasthan over the sharing of waters from Ravi and Beas and thus, in a way, focus the attention of whole country on its water problems, why Jammu and Kashmir with a far more genuine grievance has never been able to make it an issue. More so, when doing so had far lesser chances of inviting the accusations of politicization of water as in case of Punjab. At the same time, there was little chance of its opposition within the state itself and that too among the three regions of the state (Jammu, Ladakh and Kashmir) which otherwise find little common ground on most of the issues.

Besides, if Punjab could do it for the agricultural requirements of its farmers in the southern districts of the state, why J&K has accepted, even though grudgingly, the unenviable state of affairs when the Indus Water Treaty puts the state behind by an estimated Rs 6500 crore annually. The losses are not there in agricultural sector only but on a much higher scale in the generation of hydropower which has an otherwise legendary estimated potential of 20,000 MW.

Over the years, the fallout has been debilitating for the state's economy. The treaty while giving exclusive rights to Punjab over the use of waters from the eastern rivers of Indus system Ravi, Beas and Satluj for power generation and irrigation purposes, the scope of Jammu and Kashmir has been permanently restricted in case of western rivers Indus, Jhelum and Chenab, flowing through its territory. The state's rightful riparian rights have been snatched in the so-called national interest and to benefit Punjab and that too without the state being consulted at the time of treaty or even compensated for the consequent consistent loss.

Under the treaty, the J&K can use only limited waters of the Indus, Chenab and Jhelum for power generation and lift irrigation. It can't build reservoirs or dams on these rivers to store water for irrigation and power without the prior approval of Pakistan. Nor can it construct any barrage for irrigation. The treaty imposes the limits on the storage capacity that the state can create. That is it can only store 0.40 million acre feet (MAF) on Indus in Ladakh, 1.50 MAF on Jhelum in Kashmir and 1.70 MAF on Chenab in Jammu.

Table 1 Average annual flow of the rivers of Indus system.

Eastern Rivers	Western Rivers	Total
41 BCM (33 MAF)	166 BCM (135 MAF)	207 BCM (168 MAF)

Source: IWT draft

Table 2 Agricultural use permitted to India from western rivers.

Name of river	The Indus	The Jhelum	The Chenab	Total
Irrigated Cropped Area (ICA) in acres	70,000	4,00,000	2,31,000	7,01,000

Source: IWT draft

Table 3 Storage permitted to India on Western rivers

River System		Conservation Storage Capacity		Flood Storage Capacity (MAF)
		General Storage Capacity (MAF)	Power Storage Capacity (MAF)	
1	The Indus	0.25	0.15	Nil
2	The Jhelum (excluding the Jhelum main)	0.50	0.25	0.75
3	The Jhelum Main	Nil	Nil	As provided in Paragraph 9 of Annexure E to the Treaty
4	The Chenab (excluding the Chenab Main)	0.50	0.60	Nil
5	The Chenab Main	Nil	0.60	Nil

Source: IWT draft

The state's agricultural potential has also been worst hit. While in 1950-51, the state could irrigate 1.56 lakh hectares under rice cultivation, today after more than half a century, the irrigation potential has risen by an unremarkable 74 thousand hectare to 2.20 lakh hectares. Similarly, the irrigation for the area under other crops which was about 0.07 hectare in 1950-51 has come down to 0.01 hectare. There has been only a marginal increase in the irrigation infrastructure. In 1950-51, the state could irrigate 244 thousand hectare through canals, 3000 hectare by

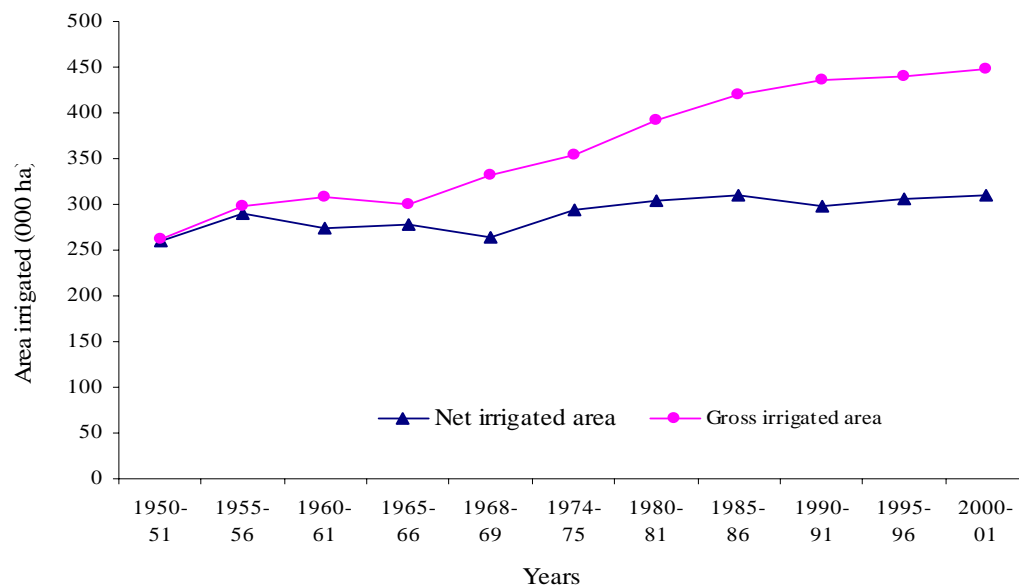


Figure 1 Net and gross irrigated area in J&K state.

tanks, 3000 be wells and 11,000 hectares by other sources. But in 2000-01, the state irrigates only 284.25 thousand hectare by canals, 2.57 thousand by tanks, 1.42 thousand by wells and 17.73 thousand hectares by other sources. As a result, the state has now rationed population of 86.14 lakh people dependant on the supply by the consumer affairs and public distribution department which procures the rice from outside the state. Besides this, a good percentage of population also purchases rice from private dealers, which forms the staple food of the region.

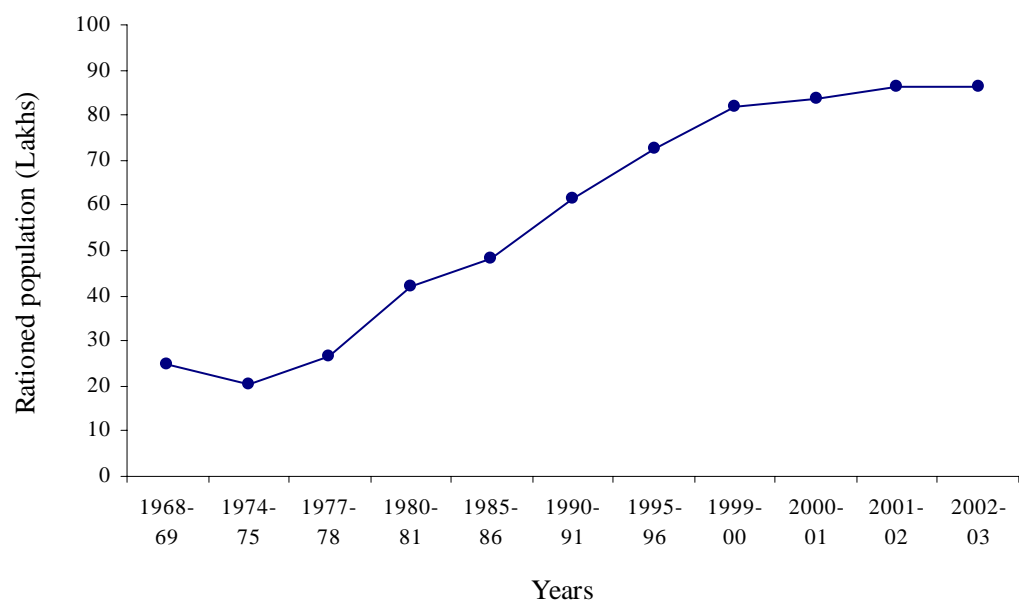


Figure 2 Growing rationed population of J&K State

The J&K, according to an estimate, could have increased its area under irrigation by one lakh acres had the state had a freedom to harness its available water resources. In case of valley, only 0.5 MAF could be stored under general storage on Jhelum basin and that too not directly on the waters of river but on various

Table 4 Maximum permissible limit for irrigation on Western rivers as per IWT.

Basin	ICA as on the effective date (1-4-1960) (Acre)	Additional ICA permissible (Acre)	Net ICA permissible (Acre)	Total ICA achieved in 1999-2000 (Acre)
Indus	42,179	70,000	1,12,179	50,949
Jhelum	5,17,909	1,50,000	6,67,909	6,39,177
Chenab	82,389	50,000	1,32,389	1,15,745
Total			9,12,477	8,05,745

Source: IWT draft

streams that form its tributaries. And for every new irrigation scheme, the state has to seek permission from Indus Commission. The Irrigation and Flood Control Department of the state has proposed 12 new irrigation schemes for Baramulla, Kupwara, Anantnag and Budgam districts on the various streams which are pending approval.

As such the productivity of the agriculture is predominantly at the mercy of rain gods. The fragility of agriculture in the state could be gauged from the fact that a spell of dryness wreaks havoc with the production. For instance, the yield of saffron, the major and exclusive cash crop of the state, that was 2.8 to 3 kg per hectare in early nineties dipped to as low as 500 gm over the past five years. Due to the consequent non-availability of the commodity, it was the cheaper Iranian saffron which claimed the market. Besides, the absence of precipitation also brought pests and diseases to the cultivated fields. As a result, the government has had to shell out Rs 40 crore a month to make purchases under public distribution system from Food Corporation of India (FCI). The foodgrain imports graph of J&K state shows a sharp increase in the overall imports.

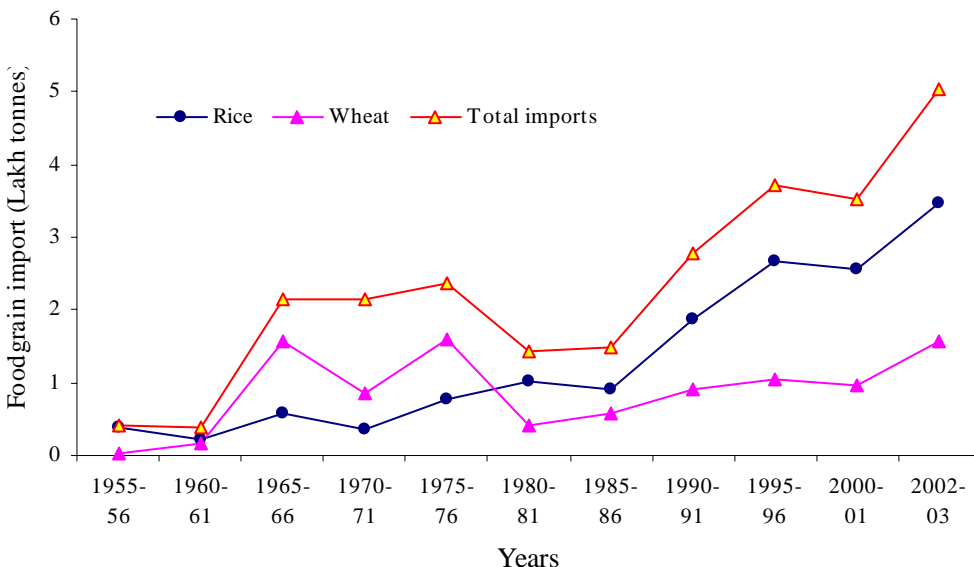


Figure 3 Food-grain imports by J&K state

Existing canal network is very limited in its extent and dates back to pre-treaty period. This has, in a way, permanently stunted the growth of agriculture and made the J&K dependant on the food imports – rice being the major commodity – from other states, particularly Punjab. Interestingly, the productivity level of paddy, at about 40 quintals per hectare in Kashmir valley is the highest in the country.

With agricultural land area remaining fixed and not growing due to lack of irrigation there has also been a steady reduction in the size of landholdings since

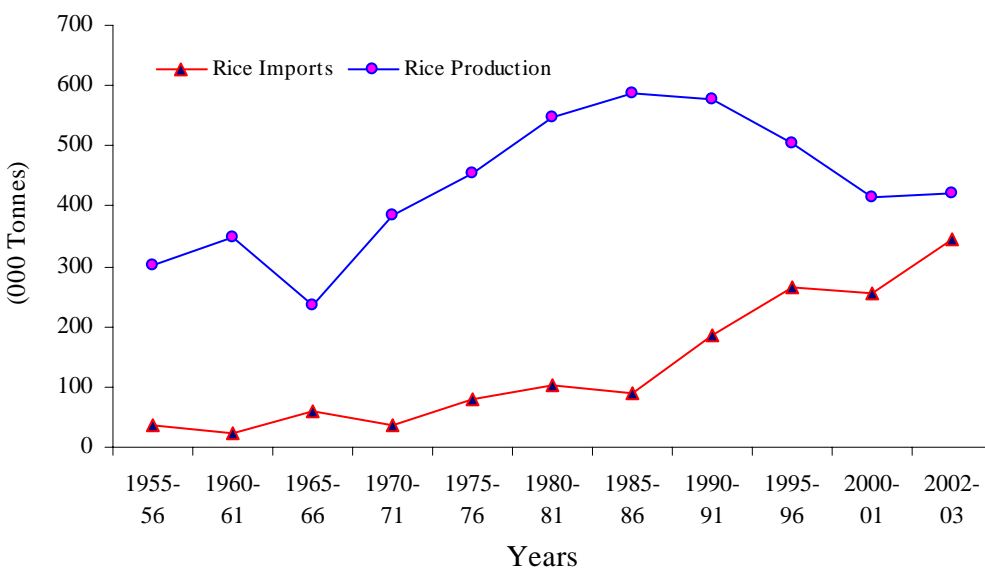


Figure 4 Rice production and imports by J&K state

the time Big Landed Estates Abolition Act was enacted in 1949-50. The Act was a radical land redistribution measure which abolished as many as nine *Jagirs* and

Muafis and gave these into the ownership of tenants and landless. However, most arable land today is economically unviable. The average size of land holdings has dwindled from 1.7 hectares in 1950 to 0.5 hectares in 1997-98. Almost ninety per cent of arable land, according to a survey, constitutes marginal and sub marginal holdings. This has reduced the productivity from agriculture to a mere subsistence level.

The existing cultivable land is being further shrunk by the ongoing construction boom in the valley. In the past decade alone, Srinagar has witnessed the growth of as many as five new residential colonies, almost all on what was previously the prime agricultural land dominated by paddy cultivation. Likewise, similar trend is observed of the conversion of paddy lands into housing colonies and apple orchards in towns and rural areas, respectively.

Being a state with a dearth of plain agricultural land, the state would be enormously benefited by a proper irrigation infrastructure as it would help bring large acres of *Karewa* land (highlands specific to the uneven terrains like that of J&K) across the countryside under cultivation. This has, over the years, given rise to groundswell against the “unjust treaty” which though has made Punjab prosperous by letting the state use freely the water of its rivers for irrigation and power production, has on the other hand stagnated these very sectors of J&K. What is regarded as more galling is that though New Delhi did duly compensate Pakistan for the loss of pre-partition canal network of central Bari Doab and Dipalpur, the J&K received nothing. The Nehru dispensation gave financial aid of Rs 83.3 crore to Pakistan to undertake development works like building storage reservoirs, link canals, tube wells, drainage and hydroelectric installations. Pakistan, in addition, received over Rs 300 crore at the time from United States, Britain, West Germany, Australia, Canada, New Zealand and World Bank as aid for the same.

Other way to compensate the J&K state for the losses could be a favorable sharing ratio from the power generated from centrally funded projects in the state. However, so far the approach of New Delhi on the score has not been encouraging. For example, in case of Salal Project, the experts assert, the central government has recovered its capital cost way back in 1982 but the power sharing continues to be on the existing ratio. That is, the J&K gets a royalty of only 12 per cent from the project which is the same as in case of Uri-Power project. This is despite the fact that against the capital investment of central government, the state has provided all important water and land resources for the projects. Moreover in case of Salal project, one of the provisions agreed upon is that when capital cost of the project has been recovered, it will be handed over to the state.

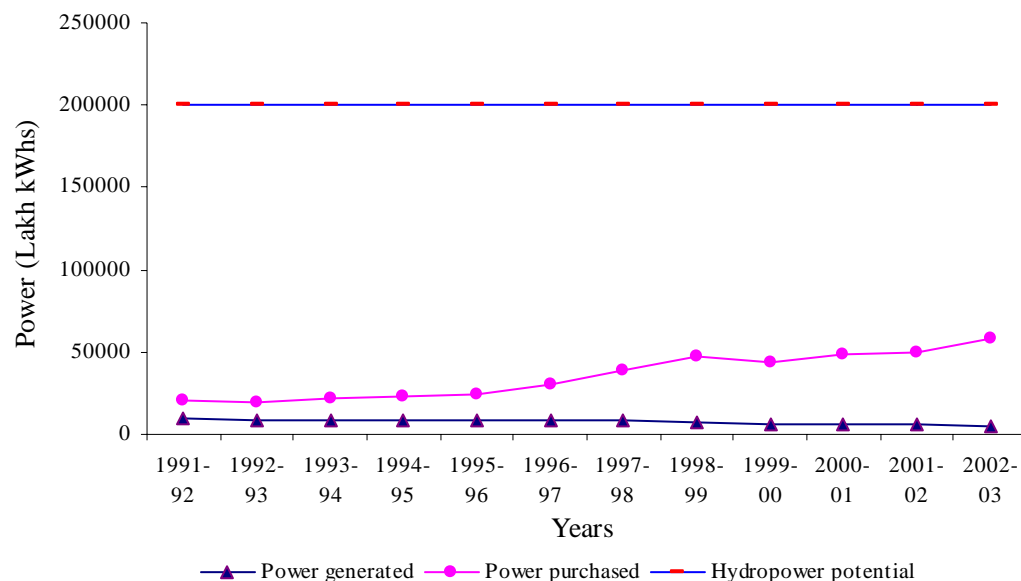


Figure 2 Power generated, purchased and hydropower potential of J&K state

So there is a case for the transfer of centrally funded power projects, not only on the principle of complete recovery of capital investment but more so as a compensation for the losses incurred by the state as a result of IWT.

Wullar Barrage Issue

Jammu and Kashmir's attempts to use the water of Wullar Lake for irrigation by building the Tulbul Navigation project, also called Wullar Barrage soon after the signing of treaty was frustrated. As a result the project is stuck up for the past thirty years. The project, according to experts, would in no way have caused the damage to Islamabad but, on the contrary, helped regulate water storage system in Mangla dam. On the other hand, the project would have benefited agriculture in J&K besides stabilizing the power generation from the 450 MW Uri project which otherwise slumps to as low as under 100 MW in winter. India and Pakistan are once again discussing a fresh Wullar Barrage or Tulbal Navigation Lock Project. The project on which construction had started in 1980 now stands locked and virtually destroyed. Nothing exists on the ground barring a few shallow waterways and skeleton of a two storey building. The project was estimated to cost Rs 30 crore, but has already devoured Rs 36 crore.

It was in 1912 that the then Punjab government had approached the Maharaja of Kashmir seeking permission to construct a major barrage on Wullar Lake. In 1924, the Punjab government renewed the proposal, offering a yearly sum of Rs 1.85 lakh as royalty. The princely state, however, rejected the proposal, apprehending that it might lead water logging of most of north Kashmir, particularly Sopore and Baramulla.

In 1980, the project was revived and work started at Tulbal, a village at the western tip of Sopore town. However, after a visit by Pakistan Indus Water Commission authorities, the

project was relocated at Ningli, at the eastern tip of Sopore town nearer the Wullar Lake - the site where from river Jhelum outflows from the Wullar Lake. To date, eight rounds of talks have been held on this issue. The two sides almost reached an agreement in October 1991, whereby India would keep 6.2 metres of barrage ungated with a crest level of 1,574.90 metre (5,167 ft), and would forgo the storage capacity of 300,000 acre feet. In return, the water level in barrage would be allowed to rise to the full operational level of 5,177.90 ft. However, in February 1992, Pakistan added another condition that India should not construct the Kishanganga (390 MW) hydro-power generating unit to which India refused to accept and the negotiations were stalled. Till date nine rounds of talks were held between the two nations on the Wullar Barrage but no major breakthrough was achieved.

According to the Indian Government, the purpose of the Wullar Barrage was to construct a control structure, with a view to improving the navigation in the River Jhelum during winters, in order to connect Srinagar with Baramulla¹ for transportation of fruits and timber as well as to maintain the water supply during lean periods for hydropower generation from the existing plants and future units proposed downstream. Furthermore, the project would serve to restore the lake ecology. The power generation from the plants banked on the waters of river Jhelum (the Uri-I, Mohra and Lower Jhelum Hydrel projects) falls to mere 30 to 40 MW during four months of winter against their installed capacity of 515 MW. In the autumn, the daily generation from the projects does not exceed 100 to 150 MW. Similarly, the Salal project on river Chenab, which has an installed capacity of 600 MW, has not been able to generate power to its optimum capacity for six months resulting in the rapid fall in the generation thereby affecting drastically power availability. The state government has to bank on more power imports from the Northern Grid and till date the arrears have touched over Rs 1600 crore. And whenever the state is in a position to meet at least 80 per cent of the demand during spring season when the rivers remain gushing, it exports power to reduce the size of the arrears. This question has assumed significance following enormous difficulties being faced by one crore people and several thousand industrialists in the state owing to acute electricity crisis. The power shortage has been an old phenomenon, but during the past four years the state government has been forced to resort to 11 to 14 hour power shedding.

India claims that 90 percent of the Wullar Barrage project would be beneficial to Pakistan, as it would regulate the supply to Mangla Dam, which would increase Pakistan's capacity of power generation at Mangla, as well as regulate the irrigation network in the Pakistan Punjab through the triple canal system². India further suggested that Pakistan should bear the greater share of constructing the Barrage, as it would be more beneficial to Pakistan, and would be especially effective in reducing the flow of water during the flood season.

Pakistan, on the other hand, argues that India had violated Article I (11) of the Indus Waters Treaty, which prohibits both parties from undertaking any 'man-made obstruction' that may cause 'change in the volume of the daily flow of waters'. Further that, Article III (4) specifically barred India, from 'storing any water of, or construct any storage works on, the Western Rivers'. According to sub-paragraph 8(h) of the Indus

Waters Treaty, India is entitled to construct an 'incidental storage work' on Western rivers on its side:

- a. only after the design has been scrutinised and approved by Pakistan; and
- b. its storage capacity should not exceed 10,000 acres feet of water.

Whereas the Wular Barrage's capacity is 300,000 acres feet, which is thirty times more than the permitted capacity. Regarding the building of a hydro electric plant, according to the treaty, India is only allowed to construct a small run-off water plant with a maximum discharge of 300 cusecs through the turbines which is insufficient to generate 960 Megawatts of electricity as planned by India.

Bilateral Negotiations

Pakistan referred the Wullar Barrage case to the Indus Waters Commission in 1986, which, in 1987, recorded its failure to resolve it. When India suspended the construction work, Pakistan did not take the case in the International Arbitral Court. To date, eight rounds of talks have been held. In 1989, Pakistan agreed to build a barrage conditional to Pakistan's inspection, which India rejected. The two sides almost reached an agreement in October 1991, whereby India would keep 6.2 meters of the barrage ungated with a crest level of 1574.90m (5167 ft), and would forego the storage capacity of 300,000 acre feet. In return, the water level in the Barrage would be allowed to attain the full operational level of 5177.90 ft. However, in February 1992, Pakistan added another condition that India should not construct the Kishenganga (390 MW) hydropower-generating unit. India refused to accept this condition. According to Pakistan, the Kishenganga project on River Neelum affected its own Neelum-Jhelum power-generating project, located in its Punjab province³. The issue of Wullar Barrage was one of the disputes on the agenda highlighted for the Indo-Pak talks, both at the Lahore meeting in February 1999, and at the Agra Summit of July 2001.

Pakistan's apprehensions over Wullar Barrage

The control of the River Jhelum by India through a storage work would mean:

- a serious threat to Pakistan should India decide to withhold the water over an extended period, especially during the dry season. It would also multiply and magnify the risks of floods and droughts in Pakistan. The Mangla Dam on River Jhelum, which is a source of irrigation and electricity for Punjab would be adversely affected.
- provide India a strategic edge, during a military confrontation, enabling it to control the mobility and retreat of Pakistani troops and enhancing the maneuverability of Indian troops. Closing the Barrage gates would render the

Pakistani canal system dry and easy to cross. During the 1965 war, the Indian Army failed to cross the BRB Link Canal, due to its full swing flow. India is already in control of the Chenab River through Salal Dam constructed in 1976. Many Pakistanis criticise the conceding of the Salal Dam to India.

Present scenario and future confrontations

While the new found bonhomie between India and Pakistan has successfully put political issues on the backburner, the fight on water rights is set to become acute in the coming years in its gravity. It might even surpass the political disputes between the two neighbors. The main reason for this is the growing industrialization in both countries, coupled with depleting water levels and mounting power scarcities.

According to a study report on water and security in South Asian region, “the water situation in Pakistan is already serious, when compared with other South Asian countries. Although until recently the Indus Water Treaty allowed both India and Pakistan to act independently in safeguarding issues concerning their water security, they cannot continue to do so in the future. This is because Pakistan is already a water-stressed country and requires utilising the full potential of the Indus river system in an integrated basin approach. This cannot take place without further co-operation between India and Pakistan. It is therefore necessary to think ahead and conceptualise a follow-up agreement to the 1960 Indus Water Treaty. One can, for example, envisage storage on the upper Indus, Jhelum and Chenab, over and above what is presently permitted under the current Treaty. Due to the hostility between the two countries, the idea may appear remote at the present time. But the very exercise of looking ahead would reveal the opportunity costs of non-cooperation and confrontation ⁴.”

During the recent secretary level talks in Islamabad between India and Pakistan on the controversial Wullar Barrage or Tulbal navigation project, political leaders from Pakistan Punjab province have demanded that the government should buy water from India to meet the requirements of province. They also demanded that the government should scrap the 1960 Indus Water Treaty. On the other side, there is a growing consensus among the political parties of J&K state, particularly National Conference and People’s Democratic Party to either scrap or abrogate the Indus Water Treaty as it has over the period sounded a death kneel to state’s economy and main impediment to development. During a recent state assembly session, Ruling People’s Democratic Party (PDP) held a convention and passed a resolution demanding setting up the barrage and sought compensation from the Centre for the losses it suffered by the Indus water treaty. The PDP president also lashed out at Pakistan in the state assembly session for strangulating Kashmiri’s by sticking to the Indus Water Treaty which has taken heavy tool of J&K’s economy. She also asked the Centre to compensate for the losses it suffered due to the treaty.

While Pakistan plans to go ahead with a Hydel project in Pakistan-occupied Kashmir (PoK), besides starting construction of the multi billion dollar Kalabagh dam and increasing the height of the Mangla dam, India plans to construct at least 35 power

plants over the next decade on the Indus basin. All these factors have led to an increasing desire to do away with the Indus Water Treaty (IWT) that has distributed six rivers in the Indus basin between India and Pakistan, with the latter getting the three western rivers, Indus, Jhelum and Chenab and India retained rights to the three eastern rivers, Ravi, Beas and Sutlej.

The Baghliar and Wullar Barrage issues currently being discussed at the expert level are, therefore, just a tip of iceberg. Islamabad fears the dam could interfere with the flow of water from the Chenab river and deprive it of vital irrigation in Pakistan's wheat growing Punjab province, however, New Delhi says the fears are groundless. The first phase of Baghliar dam was due to be completed in 2004 but has been delayed by the dispute. Pakistan has now plans to approach World Bank for the appointment of neutral expert to resolve the Baghliar hydro-electric project issue as it did not conform to Indus Water Treaty due to various reasons like design and height of dam. So far, various government agencies in India have identified 25 medium projects ranging from a one megawatt project in Puga in Leh to a 200 MW project in Naiaguh in Doda district, to be taken up for construction in the coming years. In addition, 10 power projects have been either finalized or are under various stages of construction, including the Bursar project, with an installed capacity of 1020 MW and a dam height of 252 metres.

Recently, the Central Electric Authority (CEA) also gave technical clearance to the controversial 330 MW Kishanganga hydroelectric project and the work has started. According to sources, India is in hurry to execute the project as Pakistan is also planning to construct a 969 MW hydropower plant worth US\$ 1.5 billion downstream on Kishanganga (known as Neelam in PoK) river across the Line of Control (LoC). Pakistan is also seeking political consensus to build other mega dams. According to IWT, the projects already constructed or in stages of construction shall not be disturbed by the other country. Therefore, India will be bound to release water for the Pakistan projects if they start construction ahead of the Indian ventures.

The Kishanganga project has been stalled since 1996 due to objections filled by Ministry of Defence and environmentalists and a lack of funds. Currently, the Kishanganga (Neelam) and Jhelum join each other at Muzaffarabad, the capital of PoK. Through the proposed Wullar Barrage project, India plans to maintain a constant water flow in the Jhelum all year round. The total distance by which the river will be diverted is around 100 Km.

Rejecting Pakistan's opposition to the project, Indian officials say as per IWT, India has been allowed to build specified storage limited to 3.6 million acre feet (MAF) on the western rivers. They explain that annual water flow in the western rivers of the Indus, Jhelum and Chenab have been estimated at 135.6 MAF. Discounting that the proposed Kishanganga project will affect the river Neelam's flow, officials believe that the stream will be maintained at any cost to Pakistan, since these rivers have been allocated to that country. "We are only diverting Kishanganga (Neelam) to join the Jhelum at Bandipore near Wullar lake rather in Muzaffarabad⁵", an official said, adding that the water will ultimately reach Pakistan through the river Jhelum, though not in the shape of the Neelam river.

Conclusion

With water sharing promising to be the new international quarrel area of 21st century, India and Pakistan have already got a readymade point of friction. Due to the growing population, industrial growth and mounting water problems accompanied by the over all fall in the waters of the Indus basin due to climatic change, there is a need for the revision of the old treaty particularly looking to the current political and economic situation in Jammu and Kashmir state which calls for a major review of the Indus Water Treaty, 1960. The times has come for a fresh look on all the water sharing issues between the two nations for the common benefit and put behind bars all the political issues and do justice to each and every area / region of the Indus basin in terms of its equity in the water resources of Indus basin. The principle of sharing the costs and benefits of the whole Indus system of rivers may be envisaged rather than simple division of rivers.

Ibid

1. India claims to have devised the project to solve the problem of navigation over a distance of 22km between Lake Wular and Baramula.
2. Triple canal system consists of Upper Jhelum canal, Upper Chenab canal and the lower Bari Doab canal.
3. Mallika Joseph, 'Delhi round of Indo-Pak talks-II; Tulbul navigation project/Wular Barrage', www.ipcs.org/issues/articles/162-ip-mallika.htm.
4. Study report on "Water and security in South Asian Region", by Carnegie Corporation of Advanced International Studies, Washington, www.expressindia.com/budget04/index.php.
5. Kishenganga controversy, News article in 'Greater Kashmir', page 7, dated: 5-07-04.

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