

## Case Study of Transboundary Dispute Resolution: the Indus Water Treaty

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### 1. Case summary

<i>River basin:</i>	Indus River and tributaries (figure 1 and table 1)
<i>Dates of negotiation:</i>	1951-1960
<i>Relevant parties:</i>	India, Pakistan
<i>Flashpoint:</i>	Lack of water-sharing agreement leads India to stem flow of tributaries to Pakistan on 1 April 1948
<i>Issues:</i>	Stated Objectives: negotiate an equitable allocation of the flow of the Indus River and its tributaries between the riparian states; develop a rational plan for integrated watershed development
<i>Additional issues:</i>	Water-related: financing for development plans, whether storage facilities are "replacement" or "development" (tied to who is financially responsible); <i>Non-water:</i> General India-Pakistan relations
<i>Excluded issues:</i>	Future opportunities for regional management; Issues concerning drainage
<i>Criteria for water allocations:</i>	Historic and planned use (for Pakistan) plus geographic allocations (western rivers vs. eastern rivers)
<i>Incentives/linkage:</i>	Financial: World Bank organized International Fund Agreement; Political: None
<i>Breakthroughs:</i>	Bank put own proposal forward after 1953 deadlock; International funding raised for final agreement
<i>Status:</i>	Ratified in 1960, with provisions for ongoing conflict resolution. Some suggest that recent meetings have been lukewarm. Physical separation of tributaries may preclude efficient integrated basin management. Renewed attempts to resolve Wuller Barrage and Baglihar dam conflicts begin to take place in July 2004.

### 2. Background

Irrigation in the Indus River basin dates back centuries; by the late 1940s the irrigation works along the river were the most extensive in the world. These irrigation projects had been developed over the years under one political authority, that of British India, and any water conflict could be resolved by executive order. The Government of India Act of 1935, however, put water under provincial jurisdiction, and some disputes did begin to crop up at the sites of the more-extensive works, notably between the provinces of Punjab and Sind.

In 1942, a judicial commission was appointed by the British government to study Sind's concern over planned Punjabi development. The Commission recognized the claims of Sind, and called for the integrated management of the basin as a whole. The Commission's report was found unacceptable by both sides, and the chief engineers of the two sides met informally between 1943 and 1945 to try to reconcile their differences. Although a draft agreement was produced, neither of the two provinces accepted the terms and the dispute was referred to London for a final decision in 1947.

Before a decision could be reached, however, the Indian Independence Act of August 15, 1947 internationalized the dispute between the new states of India and Pakistan. Partition was to be carried out in 73 days, and the full implications of dividing the Indus basin seem not to have been fully considered, although Sir Cyril Radcliffe, who was responsible for the boundary delineation, did express his hope that, "some joint control and management of the irrigation system may be found" (Mehta 1986, p. 4). Heightened political tensions, population displacements, and unresolved territorial issues, all served to exacerbate

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*Table 1: Features of the Indus watershed.*

Name	Riparian states (With % of national available water being utilized) b <sup>a</sup>	Riparian relations (with dates of most recent agreements)	Watershed features <sup>a</sup>			
			Average annual flow (km <sup>3</sup> /yr.) <sup>c</sup>	Size (km <sup>2</sup> )	Climate	Special features
Indus	Afghanistan (47.7), China (19.3), Chinese control, claimed by India (n/a), India (57.1), Indian control, claimed by China (n/a), Nepal (n/a), Pakistan (53.8)	Cool (1960 Indus Water Treaty between India and Pakistan)	238	1,138,800	Dry to humid sub-tropical	Scheduled as case to be "back-modeled"

*a Values for lakes under "Annual Flow" are for storage volumes.*

*b Source: Kulshreshtha (1993)*

*c Sources: Gleick ed. (1993); UN Register of International Rivers (1978).*

*The remaining data in this table is from the TFDD (2007).*



Figure 1: Map of the Indus River Basin.

hostilities over the water dispute.

As the monsoon flows receded in the fall of 1947, the chief engineers of Pakistan and India met and agreed to a "Standstill Agreement," which froze water allocations at two points on the river until March 31, 1948, allowing discharges from headworks in India to continue to flow into Pakistan.

On April 1, 1948, the day that the "Standstill Agreement" expired, in the absence of a new agreement, India discontinued the delivery of water to the Dipalpur Canal and the main branches of the Upper Bari Daab Canal. Several motives have been suggested for India's actions. The first is legalistic—that of an upper riparian establishing its sovereign water rights. Others include an Indian maneuver to pressure Pakistan on the volatile Kashmir issue, to demonstrate Pakistan's dependence on India in the hope of forcing reconciliation, or to retaliate against a Pakistani levy of an export duty on raw jute leaving East Bengal. Another interpretation is that the action was taken by the provincial government of East Punjab, without the approval of the central government.

### 3. The problem

Even before the partition of India and Pakistan, the Indus posed problems between the states of British India. The problem became international only after partition, though, and the attendant increased hostility and lack of supra-legal authority only exacerbated the issue. Pakistani territory, which had relied on Indus water for centuries, now found the water sources originating in another country, one with whom geopolitical relations were increasing in hostility.

The question over the flow of the Indus is a classic case of the conflicting claims of up- and down-stream riparians. The conflict can be exemplified in the terms for the resumption of water delivery to Pakistan from the Indian headworks, worked out at an Inter-Dominion conference held in Delhi on 3-4 May

1948. India agreed to the resumption of flow, but maintained that Pakistan could not claim any share of those waters as a matter of right (Caponera, 1987, p. 511). This position was reinforced by the Indian claim that, since Pakistan had agreed to pay for water under the Standstill Agreement of 1947, Pakistan had recognized India's water rights. Pakistan countered that they had the rights of prior appropriation, and that payments to India were only to cover operation and maintenance costs (Biswas, 1992, p. 204).

While these conflicting claims were not resolved, an agreement was signed, later referred to as the Delhi Agreement, in which India assured Pakistan that India would not withdraw water delivery without allowing time for Pakistan to develop alternate sources. Pakistan later expressed its displeasure with the agreement in a note dated 16 June 1949, calling for the "equitable apportionment of all common waters," and suggesting turning jurisdiction of the case over to the World Court. India suggested rather that a commission of judges from each side try to resolve their differences before turning the problem over to a third party. This stalemate lasted through 1950.

#### **4. Attempts at conflict management**

In 1951, Indian Prime Minister Nehru, whose interest in integrated river management along the lines of the Tennessee Valley Authority had been piqued, invited David Lilienthal, former chairman of the TVA, to visit India. Lilienthal also visited Pakistan and, on his return to the US, wrote an article outlining his impressions and recommendations (the trip had been commissioned by Collier's Magazine—international water was not the initial aim of the visit). These included steps from the psychological—a call to allay Pakistani suspicions of Indian intentions for the Indus headwaters, to the practical—a proposal for greater storage facilities and cooperative management. Lilienthal also suggests that international financing be arranged, perhaps by the World Bank, to fund the workings and findings of an "Indus Engineering Corporation," to include representatives from both states, as well as from the World Bank.

The article was read by Lilienthal's friend, David Black, president of the World Bank, who contacted Lilienthal for recommendations on helping to resolve the dispute. As a result, Black contacted the prime ministers of Pakistan and India, inviting both countries to accept the Bank's good offices. In a subsequent letter, Black outlined "essential principles" that might be followed for conflict resolution. These principles included the following: that water resources of the Indus basin should be managed cooperatively; and that problems of the basin should be solved on a functional and not on a political plane, without relation to past negotiations and past claims. Black suggested that India and Pakistan each appoint a senior engineer to work on a plan for development of the Indus basin. A Bank engineer would be made available as an ongoing consultant.

Both sides accepted Black's initiative. The first meeting of the Working Party included Indian and Pakistani engineers, along with a team from the Bank, as envisioned by Black, and met for the first time in Washington in May 1952. The stated agenda was to prepare an outline for a program, including a list of possible technical measures to increase the available supplies of Indus water for economic development. After three weeks of discussions, an outline was agreed to, whose points included

- determination of total water supplies, divided by catchment and use;
- determination of the water requirements of cultivable irrigable areas in each country;
- calculation of data and surveys necessary, as requested by either side;
- preparation of cost estimates and a construction schedule of new engineering works which might be included in a comprehensive plan.

In a creative avoidance of a potential and common conflict, the parties agreed that any data requested by either side would be collected and verified when possible, but that the acceptance of the data, or the inclusion of any topic for study, would not commit either side to its "relevance or materiality."

When the two sides were unable to agree on a common development plan for the basin in subsequent

meetings in Karachi, November 1952, and Delhi, January 1953, the Bank suggested that each side submit its own plan. Both sides did submit plans on October 6, 1953, each of which mostly agreed on the supplies available for irrigation, but varied extremely on how these supplies should be allocated (Table 2). The Indian proposal allocated 29 million acre-feet (MAF) per year to India and 90 MAF to Pakistan, totaling 119 MAF (MAF = 1233.48 million cubic meters; since all negotiations were in English units, that is what is reported here). The Pakistani proposal, in contrast, allocated India 15.5 MAF and Pakistan 102.5 MAF, for a total of 118 MAF.

*Table 2: Water allocations from Indus negotiations, in MAF/year<sup>1</sup>*

Plan	India	Pakistan
Initial Indian	29.0	90.0
Initial Pakistani	15.5	102.5
Revised Indian	All of the eastern rivers and 7% of the western rivers	None of the eastern rivers and 93% of the western rivers
Revised Pakistani	30% of the eastern rivers and none of the western rivers	70% of the eastern rivers and all of the western rivers
World Bank Proposal	Entire flow of the eastern rivers <sup>2</sup>	Entire flow of the western rivers <sup>3</sup>

<sup>1</sup> *Initial estimates of supplies available differed only slightly, with the Indian Plan totaling 119 MAF and the Pakistani Plan arriving at 118 MAF. The "eastern rivers" consist of the Ravi, Beas, and Sutlej tributaries; the "western rivers" refer to the Indus, Jhelum, and Chenab.*

<sup>2</sup> *India would agree to continue to supply Pakistan with its historic withdrawals from these rivers for a transition period to be agreed upon, which would be based on the time necessary to complete Pakistani link canals to replace supplies from India.*

<sup>3</sup> *The only exception would be an "insignificant" amount of flow from the Jhelum, used at the time in Kashmir.*

The two sides were persuaded to adjust somewhat their initial proposals, but the modified proposals of each side still left too much difference to overcome. The modified Indian plan called for all of the eastern rivers (Ravi, Beas, and Sutlej) and 7% of the western rivers (Indus, Jhelum and Chenab) to be allocated to India, while Pakistan would be allocated the remainder, or 93% of the western rivers. The modified Pakistani plan called for 30% of the eastern rivers to be allocated to India, while 70% of the eastern rivers and all of the western rivers would go to Pakistan.

The Bank concluded that not only was the stalemate likely to continue, but that the ideal goal of integrated watershed development for the benefit of both riparians was probably too elusive a goal at this stage of political relations. On February 5, 1954, the Bank issued its own proposal, abandoning the strategy of integrated development in favor of one of separation. The Bank proposal called for the entire flow of the eastern rivers to be allocated to India, and all of the western rivers, with the exception of a small amount from the Jhelum, to be allocated to Pakistan. According to the proposal, the two sides would agree to a transition period while Pakistan would complete link canals dividing the watershed, during which India

would continue to allow Pakistan's historic use to continue to flow from the eastern rivers.

The Bank proposal was given to both parties simultaneously. On March 25, 1954, India accepted the proposal as the basis for agreement. Pakistan viewed the proposal with more trepidation, and gave only qualified acceptance on July 28, 1954; they considered the flow of the western rivers to be insufficient to replace their existing supplies from the eastern rivers, particularly given limited available storage capacity. To help facilitate an agreement, the Bank issued an aide memoir, calling for more storage on the western rivers, and suggesting India's financial liability for "replacement facilities"—increased storage facilities and enlarged link canals in Pakistan which could be recognized as the cost replacement of pre-partition canals.

Little progress was made until representatives from the two countries met in May 1958. Main points in contention included whether the main replacement storage facility ought to be on the Jhelum or Indus rivers—Pakistan preferred the latter but the Bank argued that the former was more cost-effective; and what the total cost of new development would be and who would pay for it—India's position was that it would only pay for "replacement" and not "development" facilities.

In 1958, Pakistan proposed a plan including two major storage facilities: one each on the Jhelum and the Indus; three smaller dams on both tributaries; and expanded link canals. India, objecting both to the extent and the cost of the Pakistani proposal, approximately \$1.12 billion, proposed an alternative plan which was smaller in scale, but which Pakistan rejected because it necessitated continued reliance on Indian water deliveries.

By 1959, the Bank evaluated the principal issue to be resolved as follows: which works would be considered "replacement" and which "development," in other words, for which works would India be financially responsible. To circumvent the question, Black suggested an alternative approach in a visit to India and Pakistan in May. Perhaps one might settle on a specific amount for which India is responsible, rather than arguing over individual works. The Bank might then help raise additional funds among the international community development for watershed development. India was offered help with construction of its Beas Dam, and Pakistan's plan, including both the proposed dams would be looked at favorably. With these conditions, both sides agreed to a fixed payment settlement, and to a ten-year transition period during which India would continue to provide Pakistan's historic flows to continue.

In August 1959, Black organized a consortium of donors to support development in the Indus basin, which raised close to \$900 million, in addition to India's commitment of \$174 million. The Indus Water Treaty was signed in Karachi on September 19, 1960 and government ratifications were exchanged in Delhi in January 1961.

## 5. Outcome

The Indus Water Treaty addressed both the technical and financial concerns of each side, and included a timeline for transition. The main points of the treaty included (Alam, 2002):

- an agreement that Pakistan would receive unrestricted use of the western rivers, which India would allow to flow unimpeded, with minor exceptions
- provisions for three dams, eight link canals, three barrages, and 2500 tube wells to be built in Pakistan
- a ten-year transition period, from April 1, 1960 to March 31, 1970, during which water would continue to be supplied to Pakistan according to a detailed schedule
- a schedule for India to provide its fixed financial contribution of \$62 million, in ten annual installments during the transition period
- additional provisions for data exchange and future cooperation

The treaty also established the Permanent Indus Commission, made up of one Commissioner of Indus Waters from each country. The two Commissioners would meet annually in order to establish and promote

cooperative arrangements for the treaty implementation; promote cooperation between the Parties in the development of the waters of the Indus system; examine and resolve by agreement any question that may arise between the Parties concerning interpretation or implementation of the Treaty; submit an annual report to the two governments.

In case of a dispute, provisions were made to appoint a "neutral expert." If the neutral expert fails to resolve the dispute, negotiators can be appointed by each side to meet with one or more mutually agreed-upon mediators. If either side (or the mediator) views mediated agreement as unlikely, provisions are included for the convening of a Court of Arbitration. In addition, the treaty calls for either party, if it undertakes any engineering works on any of the tributaries, to notify the other of its plans and to provide any data which may be requested.

Since 1960, no projects have been submitted under the provisions for "future cooperation," nor have any issues of water quality been submitted at all. Other disputes have arisen, and been handled in a variety of ways. The first issues arose from Indian non-delivery of some waters during 1965-66, but became instead a question of procedure and the legality of commission decisions. Negotiators resolved that each commissioner acted as government representatives and that their decisions were legally binding.

One controversy surrounding the design and construction of the Salal Dam was resolved through bilateral negotiations between the two governments. Other disputes, over new hydroelectric projects and the Wuller Barrage on the Jhelum tributary and the Baglihar dam on the Chenab River in Kashmir, have yet to be resolved.

## 6. Lessons learned (Alam, 2002)

- *Shifting political boundaries can turn intra-national disputes into international conflicts, exacerbating tensions over existing issues.*  
Shifting borders and partition exacerbated what was, initially, an intra-national Indian issue. After partition, political tensions, particularly over Kashmir territory, contributed to tensions of this newly international conflict.
- *Power inequities may delay the pace of negotiations.*  
Power inequities may have delayed pace of negotiations. India had both a superior riparian position, as well as a relatively stronger central government, than Pakistan. The combination may have acted as disincentive to reach agreement.
- *Positive, active, and continuous involvement of a third party is vital in helping to overcome conflict.*  
The active participation of Eugene Black and the World Bank were crucial to the success of the Indus Water Treaty. The Bank offered not only their good offices, but a strong leadership role as well. The Bank provided support staff, funding, and, perhaps most important, its own proposals when negotiations reached a stalemate.
- *Coming to the table with financial assistance can provide sufficient incentive for a breakthrough in agreement.*  
The Bank helped raise almost \$900 million from the international community, allowing for Pakistan's final objections to be addressed.
- *Some points may be agreed to more quickly, if it is explicitly agreed that a precedent is not being set.*  
In the 1948 agreement, Pakistan agreed to pay India for water deliveries. This point was later used by India to argue that, by paying for the water, Pakistan recognized India's water rights. Pakistan, in contrast, argued that they were paying only for operation and maintenance. In an early meeting (May 1952), both sides agreed that any data may be used *without* committing either side to its "relevance or materiality," thereby precluding delays over data discrepancies.
- *Sensitivity to each party's particular hydrologic concerns is crucial in determining the bargaining mix.*

Early negotiations focused on quantity allocations, while one of Pakistan's main concerns was storage—the timing of the delivery was seen to be as crucial as the amount.

- *In particularly hot conflicts, when political concerns override, a sub-optimal solution may be the best one can achieve.*

The plan pointedly disregards the principle of integrated water management, recognizing that between these particular riparians, the most important issue was control by each state of its own resource.

Structural division of the basin, while crucial for political reasons, effectively precludes the possibility of increased integrated management.

## 7. Creative outcomes resulting from resolution process

In a creative avoidance of a potential and common conflict, the parties agreed that any data requested by either side would be collected and verified when possible, but that the acceptance of the data, or the inclusion of any topic for study, would not commit either side to its "relevance or materiality."

Water was separated out from other contentious issues between India and Pakistan. This allowed negotiations to continue, even in light of tensions over other topics. Water problems were to be viewed as "functional" rather than political.

When both sides were unable to agree on a common development plan in 1953, the Bank suggested that each prepare its own plan, which the Bank would then inspect for commonalities. This active strategy to breaking impasses is currently being attempted with the riparians of the Jordan River watershed in conjunction with the multilateral working group on water.

## 8. Timeline

- Pre-1935 British India has authority to resolve interstate water conflicts by executive order.
- 1935 Government of India Act makes water a subject of provincial jurisdiction, unless asked to intervene by states.
- Oct 1939 Province of Sind formally requests Governor-General to review new Punjabi irrigation project and potential detriment to Sind.
- Sep 1941 Indus Commission established.
- July 1942 Commission submits its report suggesting that withdrawals by Punjab would cause "material injury" to inundation canals in Sind, particularly during the month of September. Incidentally called for management of the river system as a whole. Report found unacceptable to both sides.
- 1943-5 Chief engineers of both states meet informally, finally producing a draft agreement—provinces refuse to sign. Dispute referred to secretary of state for India in London early 1947.
- 15 Aug 1947 Independent states of India and Pakistan established. Eastern Punjab becomes part of India, western Punjab and Sind become part of Pakistan. Conflict becomes international, British role now irrelevant. Chair of Punjab Boundary Commission suggests that Punjab water system be run as joint venture—declined by both sides.
- 10 Dec 1947 "Standstill Agreement" negotiated by chief engineers of west and east Punjab, freezing allocations at two points until 31 Mar 1948.
- 1 Apr 1948 Without new agreement, India discontinues delivery of water to Dipalpur Canal and main branches of Upper Bari Daab Canal.
- 30 Apr 1948 India resumes water delivery as negotiations undertaken.
- 3-4 May 1948 Inter-Dominion conference, and an agreement is signed. India assures Pakistan that India will not withdraw water delivery without allowing time for Pakistan to develop alternate sources. Other issues remain unresolved.
- 16 June 1949 Pakistan sends a note to India expressing displeasure with agreement. The note calls for a

conference to resolve the "equitable apportionment of all common waters," and suggesting giving the World Court jurisdiction on the application of either party. India objects to third party involvement, suggests judges from each side might narrow dispute first. Stalemate results through 1950.

- 1951 David Lilienthal, past chairman of the Tennessee Valley Authority, invited to India as Prime Minister Nehru's guest. He later publishes an article with his suggestions, which captures the attention of Eugene Black, president of the World Bank.
- Aug 1951 Black invites both prime ministers to meeting in Washington. Both accept, agree on outline of essential principles.
- Jan-Feb 1952 Meetings continue, Black finds "common understanding," at least that neither side will diminish supplies for existing uses.
- May 1952 First meeting of working party in Washington of engineers from India, Pakistan, and Bank engineers. Agreement to: determine future supply and demand; calculate available and desired data; prepare cost estimates and construction schedule of necessary infrastructure.
- Nov 1952 and Jan 1953 Meetings continue in Karachi and Delhi without agreement. Bank suggests each side submit its own plan.
- 6 Oct 1953 Plans submitted with proposed allocations and sources for each state. Agreement on available supplies, not on allocations.
- 5 Feb 1954 Bank puts forth own proposal, essentially suggesting dividing the western tributaries to Pakistan, and the eastern tributaries to India. The proposal also provided for continued deliveries to Pakistan during transition period.
- 25 Mar 1954 India accepts proposal. Pakistan is less enthusiastic—it would have to replace existing facilities.
- 28 July 1954 Pakistan delivers a qualified acceptance of proposal.
- 21 May 1956 Bank Aide Memoire suggests that replacement facilities be financed by India.
- May- Nov 1958 Disagreements over which storage facilities are "replacement," for which India would pay, and which are "development" for which Pakistan would be responsible.
- May 1959 Black visits India and Pakistan. Suggests that India's share be a fixed cost, rather than by facility, and that the Bank would arrange for additional financing. India agrees, and accepts a 10-year transition period.
- Sep 1960 Bank arranges an international Indus Basin Development Fund Agreement. Raises \$893.5 million.
- 19 Sep 1960 Indus Water Treaty signed in Karachi. Provisions call for an Indian and Pakistani engineer to constitute the Permanent Indus Commission, which will meet at least once a year to: establish and promote cooperative arrangements.
- 29 Jul 2004 Talks about the Wuller barrage and Baglihar dam begin in Lahore. Pakistan indicates that it might seek World Bank arbitration if the matter is not sorted out through bilateral talks.

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