

## A reality check on Bhakra

By Himanshu Thakkar

For decades the success of the Bhakra dam has been cited to silence all those who questioned large dams. A new report that assesses the real impact of India's iconic Bhakra dam that's been credited with ushering in the Green Revolution has shaken up policymakers. What is the truth behind the hype?

Ever since April 18, 2005, when 'Unravelling Bhakra: Assessing the Temple of Resurgent India' -- a report by Manthan Adhyayan Kendra, Madhya Pradesh -- was released to a packed audience at the India International Centre in Delhi, the pillars of the pro-large structures establishment in India have been shaken. The various institutions that make up this establishment -- the Bhakra Beas Management Board, the Indian Water Resources Society and the Central Water Commission, among others -- have reacted strongly to the report. The ministry of water resources, Central Bureau of Irrigation and Power, Yamuna River Board, WAPCOS and the World Bank have all bought copies of the report; it was even mentioned in parliament on April 20, 2005, two days after its release.

What is it about a report on Bhakra that warrants such reactions? In essence, all that it attempts is a reality check on the contributions of the Sutlej valley dam.

One reason is that since the early-1980s, India's water resources establishment, including the politicians, has used the Bhakra project to silence those who raised questions about the need for large dams. Under increasing pressure to answer difficult questions about real costs, benefits, impact and options for large dams, and not finding enough convincing answers, the government and engineers have used the example of Bhakra and its alleged contribution to silence critics. In their support they have often quoted the words of India's first Prime Minister Jawaharlal Nehru spoken at the inauguration of the Bhakra project, at the dam site, on October 22, 1963. He said: "Bhakra, the new temple of resurgent India, is the symbol of India's progress."

In the process, the establishment has created a myth about the true contribution of the Bhakra dam, a myth that even it has begun believing. Proponents of such projects from the World Bank have used the Bhakra myth to avoid answering difficult questions surrounding the issue of large dams.

The Bhakra myth continues even today. On April 20, 2005, while initiating a debate in the Rajya Sabha on the workings of the water resources ministry, BJP MP and former chief minister of Gujarat Keshubhai Patel said: "If we did not have Bhakra even today we would have been standing in queues at fair price shops. Big dams have been built in India, dams like Bhakra Nangal have been built, and today the queues before fair price shops have reduced."

### Findings

'Unravelling Bhakra: Assessing the Temple of Resurgent India', a study spread over three years and led by Shripad Dharmadhikary, attempts to assess the real contribution of the Bhakra project. Some of the main findings include:

- Bhakra did not lead to India's Green Revolution, food self-sufficiency or agricultural growth in Punjab and Haryana. Bhakra played a relatively small role in all this, compared to what is made out

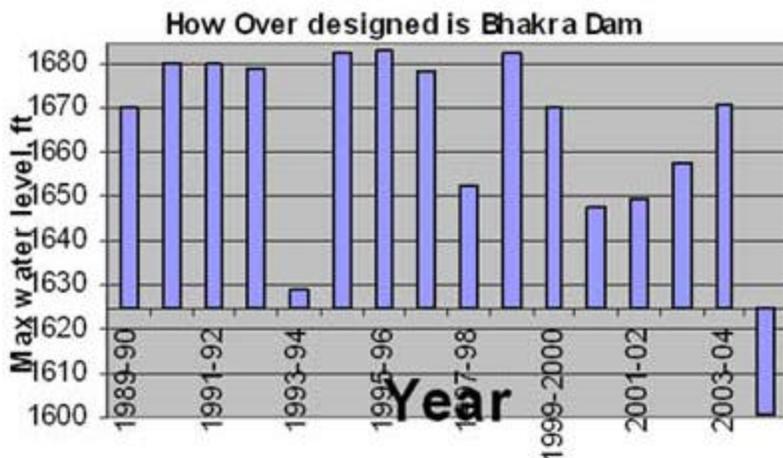
to be. Other factors, namely high-yielding crop varieties, chemical fertilisers, pesticides and groundwater-based irrigation played a much larger role.

- Bhakra did not add any new areas under irrigation; it transferred or shifted irrigation from one area to another -- from areas that were already irrigated to dryer areas. The only additional dry areas that Bhakra served were the Hissar tracts in Haryana and a small part of Rajasthan.
- The Bhakra project did not have any dramatic impact on the country's foodgrain production.
- A controversial and somewhat arguable contention of the report is that the reasons for advocating the Bhakra project had more to do with the inter-state disputes of the (then British) provinces of Sind and Punjab, later India-Pakistan, than the need to take water to dry areas.
- The figures put forward for areas irrigated by the Bhakra project were highly exaggerated.
- The government knew of credible options to the Bhakra project while it was being planned. These were neglected in favour of Bhakra.
- Bhakra was an over-designed dam.
- The assertion by the large dam lobby that groundwater-based irrigation is made possible because of recharge from canal irrigation is incorrect. A very large part of the water used by tubewells in Punjab and Haryana is mined groundwater, not recharged groundwater. The contribution of canal-recharged groundwater is marginal. Moreover, projects like Bhakra are not the best option for recharging groundwater. Better options exist.

Bhakra could have been smaller: It has rarely filled up to capacity

Bhakra was basically built to harvest water from the Sutlej river. When it was found that water from the Sutlej was insufficient to fill up Bhakra, water from the Beas was diverted to Bhakra through the Pandoh dam and the Beas Sutlej Link Project. Even after this diversion, in July 1977, the Bhakra dam has rarely filled to capacity, despite lowering the designated full reservoir level (FRL).

If one considers the figures for the past 15 years (see graph), from 1989-90 to 2004-05, we see that Bhakra did not achieve storage up to the lowered designated FRL even once, where 1,685 feet is the FRL. (All figures are from the Bhakra Beas Management Board website.) In over half these years, India experienced more than average rainfall.



This means that some of the costs (social, environmental and financial), in terms of building the Bhakra dam to its FRL of 1,690 feet, could have been avoided. Marginal costs (social, environmental and financial) go up for each additional foot increase in the dam's FRL, as the height goes up. This implies that there was

little rigorous assessment of the need for the dam and its various parameters, as has been suggested by eminent economist K N Raj.

## **Limitations**

The study does have its limitations. For example, it does not go deep into the issue of political economy in decision making and some of the claimed benefits of the Bhakra project like flood control and fisheries. The report accepts this. It is hampered, not surprisingly, by lack of data on the exact area irrigated each year by the Bhakra, production from such lands, amount of water used, and so on. Official agencies like the BBMB and governments were unwilling to part with data; in some cases they simply did not have the required information.

According to the report, the principal reason for advocating the project had more to do with inter-state disputes of Sind and Punjab provinces, later India-Pakistan. But there are reasons to believe that there were other strong reasons too. If we look at the history of decision-making surrounding the Bhakra we see that certain individuals like A N Khosla and Kanwar Sain, royal states like Bikaner and international organisations like the United States Bureau of Reclamation also played a significant role in the decision-making process.

## **Agriculture in Punjab and Haryana won't survive without the support of the foodgrain procurement system**

The report discusses the strategy and cost of market surplus food production through islands like Bhakra, in place of the more widespread strategy of local water systems. The report could have made its case stronger by also pointing out that the Bhakra, in particular, and agriculture in Punjab and Haryana in general could be sustained only because of the foodgrain procurement system that used up the lion's share of scarce public resources to support agriculture in these parts.

The government spends huge amounts to create and sustain the foodgrain procurement system, and one would expect farmers from all over India to benefit from this system. Unfortunately that is not the case. As large dam lobbyist B G Verghese argues, a huge share of foodgrain procured and used in the Public Distribution System (PDS) comes from the northwest Indian states of Punjab and Haryana. While Verghese would like to see it as a virtue of Bhakra, the situation is exactly the opposite. Agriculture in Punjab and Haryana in fact is being supported by the foodgrain procurement system and would fall flat on its face if that support were withdrawn.

This is not to argue that the foodgrain procurement system is unnecessary. On the contrary the support provided to Punjab through the system should be made available to farmers all over India . Farmers need such a support system and it is unfair on the part of the government to use scarce public resources to support agriculture in one region of the country while neglecting other equally or more needy parts. Poor areas in Orissa, Bihar and Madhya Pradesh are in urgent need of such support and they have a right to receive it.

As B N Yugandhar, member, Planning Commission, so strongly argued at a public meeting recently, areas like those served by big dams like Bhakra received wave after wave of intense public support, which was not extended to other needy areas. The point being argued here is that agriculture in areas served by Bhakra depended on such favours that were not available to other areas.

## **Scepticism about the big dam agenda from high-ranking officials**

We began with a quote from Nehru that is often used by the establishment to support big projects like Bhakra. But the quote gives us only part of the picture. The same Nehru, on November 17, 1958, at the 29th annual meeting of the Central Board of Irrigation and Power said: “For some time past, however, I have been beginning to think that we are suffering from what we may call, ‘disease of gigantism’... We have to realise that we can also meet our problems much more rapidly and efficiently by taking up a large number of small schemes, especially when the time involved in a small scheme is much less and the results obtained are rapid. Further, in those small schemes you can get a good deal of what is called public co-operation...”

Nehru was not the only sceptic of the wisdom of building large dams. Stronger words came from Sudhir Sen, the first chief executive officer of the Damodar Valley Corporation -- India's attempt at copying the United States' Tennessee Valley Authority. In 1974, in *A Richer Harvest: New Horizons for Developing Countries*, Sen noted: “During this TVA phase of India's economic development, a well-known Indian engineer used to proclaim off and on that he was going to build the highest dam in the world, suggesting implicitly a new yardstick for measuring national greatness -- the height of a dam and the millions of cubic yards of concrete poured. Yet such flamboyance used to flatter many egos and invited surprisingly few frowns. That many engineers in India, if left to themselves, like to build monuments to themselves regardless of the time and cost involved is commonplace in history.”

Sen chooses not to name the person he is referring to when he says “a well-known Indian engineer” in his book. But we know that man was Ayodhya Nath Khosla, senior of the two designers of the Bhakra dam (Kanwar Sain being the other). The significance of these words is that they came from one of the highest placed people in India's water establishment in the 1940s and 1950s.

**Significance** It should come as a shock to all concerned to know that no credible, independent, comprehensive post-facto evaluation of any large dam project has ever been conducted in India. Large dams have taken up the lion's share of India's water resources sector budget, and they continue to do so. A report by the World Commission on Dams ([www.dams.org](http://www.dams.org)) and an India country study done for the WCD both state that large dams have delivered far less benefits than have been projected. According to ‘India Irrigation Options Study’, done for the WCD, the total gross contribution of lands irrigated by *all* large dams in India comes to only around 10%. The net contribution (net of lands lost to dams, net of potential contribution of these projects without large dams, etc) would be much less. Unfortunately, the government has never bothered to assess the performance of its own large projects.

There can be no plausible reason for not carrying out a credible independent assessment of the performance of large dams. The most important significance of this study is that it attempts to do this at least for the Bhakra project.

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