[**Disrupted rhythms of the Indus**](https://www.dawn.com/news/1630024/disrupted-rhythms-of-the-indus)

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IN their natural state, the rivers of the Indus basin have four distinct mechanisms of water supply — snowmelt, glacial melt, rains and groundwater seepage. Snowmelt starts adding water to the tributaries of the Indus in March and April. By the time the snowmelt wanes, glacial melt kicks in in late April, reaching its apogee by late June. When the glacial melt is at its peak, the monsoon sets in too.

Between July and early September, the rivers flow to their brim and spread out wide in the floodplains, recharging the aquifers adjacent to the rivers. October through December, the rainfall is negligible and there’s no snowmelt/glacial melt feeding the river, but the groundwater recharged into the aquifers starts seeping into the river. Winter rains from January to March, along with groundwater seepage, continue to feed the river system until the cycle of snowmelt begins again. The glaciers, the monsoon, the snowmelt and the aquifers evolved over millions of years and created one of the most reliable and consistent hydrological miracles of nature.

**Read**: [*The river story*](https://www.dawn.com/in-depth/the-river-story/)

Alexander Burnes, in his book Travels into Bokhara, describes the Sutlej river at its confluence with the Beas in the dry month of December 1831 thus: “These united rivers form a beautiful stream which is … 275 yards wide [and up to 12 feet deep]… the water was running at the rate of two miles and a quarter an hour, and was at this season perfectly clear, and free from … muddy waters [as in] the mountains. The … river had retired to its summer bed, and the melting snow had ceased to feed it.”

Conservatively, the river was carrying more than 20,000 cusecs of water when Burnes saw it. The Sutlej, Ravi, Jhelum, Chenab and Indus, at their confluence in Mithankot, used to have well over 100,000 cusecs even at a minimum. The perennial nature of the lower Indus is also evident from the Report of the Indian Irrigation Commission, 1901-03, which stated: “The Indus in Sind contains the combined waters of all the Punjab rivers, and is naturally a much less uncertain source of supply for inundation canals than any of its tributaries. The difference between a bad and a good year are much less marked; and many of the most important canals in Sind — the Sukkur, the Eastern Nara systems, and the Fuleli — have moderate perennial supplies, which are generally sufficient.”

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The agronomy and culture of Sindh evolved with the rhythms of the river. Aloys Michel, in his 1966 book The Indus Rivers describes this rhythm as: “This practice in the subcontinent … refers to a Rabi, or … crop sown early in the fall after water levels have begun to fall … cropping works in most years because evapotranspiration rates fall at the same time and because the crop is ready for harvest before the warm spring winds desiccate it.”

The Indus basin irrigation system, as developed and envisaged by the earlier British planners, was primarily a run-of-the-river system. It was fed by monsoon rains and was naturally regulated by glacial and aquifer storages. Ideas of building dams to supplement irrigation supplies were always defeated due to the perennial nature of the river already in harmony with irrigation needs.

After independence, however, India rudely demonstrated its intentions to cut off the water supply of the Ravi, Sutlej and Beas to Pakistan, which was not possible without building dams. If that was not enough of a disruption in the natural rhythm of the Indus, Pakistan insisted on building its own dams as part of replacement works, despite technical assessments suggesting that Pakistan’s irrigation system could effectively work as a run-of-the-river system, without the need for dams.

In its natural state, snowmelt and glacial-melt waters were always available in the river in the early hot and dry months of summer. However, since the plugging of five large dams in the system, dam managers today have to follow their dam manuals which mandate them to fill the reservoirs as early as possible when the summer flows start. Consequently, every year in early summer, when farmers are yearning for water for summer sowing, the dam managers are blocking the snowmelt/glacial melt in their reservoirs, creating artificial water shortages downstream.

Since 1974-75, Wapda’s data on the inflow and outflow from the Tarbela reservoir shows that the dam has never been able to transfer waters collected in a wetter year over to the next year. The data shows that the dam has released an average of just over 5.5 MAF of water in winters which was collected in summers. Given 10 per cent ecological consumption in the riverbed, and the irrigation system’s conveyance losses of 50pc, a little over 2 MAF of water released from Tarbela reaches the farm gate. In other words, out of a total of 104 MAF of water diverted for irrigation, Tarbela’s effective contribution remains under 3pc. Such a meagre contribution is statistically insignificant as it is well within the natural variability of the system. The data from Wapda, therefore, clearly demonstrates that, one, our irrigation system is sustained by run-of-the-river systems and not dams, and two, that the earlier analysis that dams are not required in the system is validated. The story of Mangla is no different.

Politically, those dams may be touted as ‘monumental achievements’; scientifically, however, they are massive plugs choking nature. Economically, they drown us in debts; and socially, they are an engine of discord among the denizens of the basin.

The society and agronomy of the Indus basin evolved in harmony with the rhythms of the river. The disrupted rhythm of the river has disrupted society. The disputes over water between the inhabitants of the upper and lower basin will continue as long as the rhythms of the rivers are not allowed to be in sync. Treating the symptoms with accords, treaties or telemetries will never resolve the Sindh-Punjab or Pakistan-India disputes. Let’s address the cause. Let’s restore the river’s rhythms, and thus of the people around it.

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