



A dry path of Indus River in Jamshoro and Kotri district in Hyderabad in Pakistan on May 6. Pakistan almost entirely depends on the Indus river system. *Photographer: Jan Ali L*  
*Images*

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# Why This River in India and Pakistan

The suspension of a water-sharing agreement in place for 65 years sig

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A major river system that flows through both India and Pakistan has been a source of ongoing tensions between the two countries for decades. But India's unilateral suspension of a water-sharing agreement in April, that's been in place with Pakistan for 65 years,





signals a new low point in relations.

India paused the Indus Waters Treaty within 24 hours of an attack in the disputed region of Kashmir on April 22 that killed mostly Indian tourists, for which India blames Pakistan. Pakistan has denied the allegations. The move by India to pause the treaty came as a surprise, especially as the pact – signed in 1960 – had previously managed to withstand multiple conflicts. However, India's dissatisfaction over some of its clauses, which it says are outdated, as well as Pakistan's frustration over India's hydropower buildout on the rivers, have been brewing for the past decade.

In early May, Syed Ali Murtaza, secretary for Pakistan's Ministry of Water Resources, wrote to his Indian counterpart asking to restart talks over the pact, according to The Hindu. However, on May 22, India's Prime Minister Narendra Modi said: "Pakistan will not be given the water which is rightfully India's".

The suspension could have a wide-ranging impact on Pakistan's economy and comes as climate change and consumption patterns exacerbate water stress in both countries.

Amit Ranjan, an academic at the NUS Institute of South Asian Studies whose expertise is water disputes, says that a deterioration in political ties, and pressures from population growth and more unpredictable water availability, will make the treaty tough to revive.

### **What is the Indus river system?**

The Indus basin, which nurtured one of the earliest civilizations in human history, spans four countries: China, India, Pakistan and Afghanistan. The basin supports nearly 300 million people, and the irrigation system around it is the largest in the world.

The eponymous 3,180-kilometer-long river originates in southwest Tibet, and is fed by melting snow and glaciers from the Hindu Kush, Himalaya and Karakoram mountain ranges as well as by monsoon rains.







A bridge over the Indus river connects with the Zaskar Highway in Ladakh in India. *Photographer: Sumit Dayal/Bloomberg*

The Indus river starts in the mountains and is fed by five separate tributaries. It flows into Ladakh, and passes through disputed territory between India and Pakistan. The three eastern tributaries - Ravi, Beas and Sutlej - either originate at or pass through India's Jammu and Kashmir and the Indian states of Himachal Pradesh and Punjab before entering Pakistan. The tributaries merge when they reach the plains of Pakistan before the single river flows into the Arabian Sea.

### **Why is the Indus river so important to India and Pakistan?**

Both India and Pakistan are water-scarce countries. Pakistan almost entirely depends on the Indus river system. Nine in every 10 Pakistanis live in the Indus basin and it houses all of its 21 hydroelectric plants, which generate a fifth of the country's electricity.

The rivers are used to water more than 90% of Pakistan's crops including wheat, rice and cotton. Agriculture represents about 23% of Pakistan's Gross Domestic Product, employs more than 37% of its labor force, and accounts for a quarter of the country's exports.

Despite this reliance, Pakistan's storage capabilities account for less than 10% of the Indus's annual flow, making ongoing access to the river crucial.

India's dependence on the Indus river is limited to its northern region. This includes states and territories such as Rajasthan, Haryana, Himachal Pradesh and Delhi, all of which are facing water shortages. Punjab, which means "the land of five waters" because of the Indus river system, is also heavily reliant on it for agriculture and textile production, which are the state's main economic drivers.



The Chenab river near Sainth, the last village near the Line of Control in Jammu district in India on May 2. Photographer: Punit Paranjpe/AFP/Getty Images

The size and geography of India mean that other cities and towns have their own regional water sources, with river systems running throughout the south and west, rainfall in the northeast, perennial rivers in the north and groundwater in arid areas.



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Yet, India's need for more water resources has never been more acute. India is home to about 17% of the world's population but has only 4% of the world's freshwater resources. Niti Aayog, a government-backed think tank, has warned that demand will be twice that of supply by the end of the decade, citing McKinsey & Co. and Water Resources Group data. Annual per capita availability will shrink close to the official water scarcity threshold of 1,000 cubic meters by 2050, Niti Aayog said. Government estimates put it at



1,486 cubic meters in 2021.

### **How do Pakistan and India share water from the Indus river?**

When British India was separated into two independent countries – India and Pakistan – in 1947, the irrigation system was divided without consideration of the new boundaries. In April 1948, India withheld water from canals that flowed into Pakistan, sparking an international water dispute.

In 1960, with mediation by the World Bank, India and Pakistan signed a water-sharing pact known as the Indus Waters Treaty, which outlined how both countries could use water from the river system.

The treaty allocates the unrestricted use of the three western tributaries, which account for about 80% of the Indus system's water, to Pakistan and the three eastern tributaries to India. However, the treaty stipulates that India is allowed to use the western rivers while they are in its territory for “non-consumptive use” such as hydropower and irrigation, with certain limitations.





People fish along the confluence of Neelum and Jhelum rivers in Pakistan-administered Kashmir on May 4. Photographer: Farooq Naeem/AFP/Getty Images

The treaty permits very limited storage of water from the western rivers, which has allowed India to construct run-of-the-river hydropower projects that don't change the course of the rivers or deplete downstream levels. The two countries are also required to share hydrological, flood and discharge data.

In the last few years, Pakistan has invoked the treaty's dispute settlement provisions saying that the construction of two Indian dams – Kishanganga and Ratle – flouted the rules.

Since 2023, India has sent letters to Pakistan to renegotiate the treaty citing population, climate and technological changes, which it says have been ignored.

### **How might climate change affect the river system?**

India's goal to reduce emissions by building 500 gigawatts of renewable energy capacity by 2030 means it is under pressure to ramp up its hydropower projects. Now that the treaty has been halted, Pakistan's main worry is that India will fast-track such projects that will drastically alter flows.

Climate change has been identified as one of the biggest challenges to the ecosystem of the basin.

Earlier this year, the Hindu Kush Himalaya region, which feeds the Indus river system with its glacial melt, experienced three straight years of below-normal snow, according to the International Center for Integrated Mountain Development.

The Indus basin's snow persistence – the amount of time snow stays on the ground – reduced by a quarter last year, according to the data. Some projections show that the basin will face a water deficit of 50% by 2030, exacerbating water stress in both India and Pakistan.

By 2050, temperatures across the region stretching from Afghanistan to northern Myanmar are expected to rise by some 1 to



2 degrees Celsius – in some places by as much as 4 to 5 degrees – causing more snow and glacier melt. Fast-melting glaciers and less ice would exacerbate floods, droughts and landslides in both countries.

### **Could either country block each other's access to the river?**

The river only reaches Pakistan after it has flowed downstream through India, so it would not be able to block access or divert water away from India. India, meanwhile, doesn't currently have the infrastructure that would be necessary – like reservoirs, dams and canals – to turn off the taps in Pakistan, according to the Center for Strategic and International Studies.





The Baglihar Hydroelectric Power Project on the river Chenab in Kashmir in India on May 15. *Photographer: Sajjad Hussain/AFP/Getty Images*

Despite this, India threatened to cut off water access during a spike in tensions in 2016, and in May this year did briefly stop the flow of water from the Chenab.

On May 16, Reuters reported that New Delhi was planning to double the length of the 60-kilometer Ranbir canal on the Chenab as a part of its response to the Pahalgam attack. Expanding this canal could divert 150 cubic meters of water per second in India, a major increase from the current 40 cubic meters.

But considering India's current capabilities, and its previous projects, experts say it would take a decade or more to build such infrastructure. For instance, the recently opened Baglihar dam, which holds about 428 million cubic meters took around 15 years and at least \$1 billion to build.

### **What would be the consequences of blocking water?**

Pakistan is almost entirely dependent on the Indus river, and India's commitment to the treaty. This dependence is why Jakob Steiner, a hydrologist at the University of Graz in Austria and fellow at the Himalayan University Consortium said the treaty had held up, until now. "It was acknowledged from both sides that Pakistan would not have survived," Steiner says.



A dry path of Indus River in Jamshoro district in Hyderabad, Pakistan, on May 6. *Photographer: Jan Ali Laghari/Middle East Images/AFP/Getty Images*

Since the treaty was suspended, officials in Pakistan have said that any attempt to prevent the flow of water would be considered an act of war. "If the water issue is not solved, then we are looking at another war in six to ten years," Khurram Dastgir Khan, a member of a delegation being sent by Pakistan to European capitals and the



US, said earlier in May.

A major reduction in water flow would also have major ecological consequences along the river, and beyond. The Indus basin supports several ecosystems like mangrove forests, which improve biodiversity and combat the effects of climate change. The river is home to 22 endemic fish species and the endangered Indus river dolphin.

Blocking water access could also damage India's goodwill with other neighbors it shares rivers with, such as Nepal, Bangladesh and China. India has a water treaty with Bangladesh, which stipulates how they share water from the Ganges River. That treaty is due to expire in 2026 and will be up for renewal.

Suspending the Indus river treaty could also displease China, which has invested significantly in Pakistan's hydroelectric system as part of its Belt and Road Initiative. China has access to the upper section of the Brahmaputra river, which flows down into India, and where it's been building dams and hydropower projects for the past decade – activity that's already drawn criticism from Indian officials.

– *With assistance from Yasufumi Saito*

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