

Padma Bridge in Bangladesh Is Longest Spanning the Ganges

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The 6-km-long steel-built Padma Bridge is a game-changer for Bangladesh, connecting 21 southwestern districts to the capital of Dhaka and boosting the country's economy.

The Padma River is a sprawling major tributary of the Ganges, which originates in the Gangotri glacier in the Himalayas before flowing through India into Bangladesh and emptying into the Bay of Bengal.

One of the most frequented waterways in the world, the Padma has a wide riverbed which splits into multiple channels dotted with shifting islands and sand banks. While traversable all year round, the rainy season makes it difficult for river vessels to navigate.

During heavy downpours this could isolate Bangladesh's entire southwest from the nearby capital and the rest of the country for all but the bravest and most skilled of travelers.

With this in mind, the Bangladeshi government embarked on a massive infrastructure drive to ensure safe, year-round crossing, as well as connecting road and rail networks to improve access to and from the southwest.

Making Connections With Steel

Constructed at a cost of US\$3.6 billion, the Padma Bridge is 22 m wide and 6.15 km long, making it the longest spanning the Ganges. It comprises a two-level steel truss bridge that supports a four-lane highway on its upper level and a single-track railway on its lower.

The bridge doesn't just provide rail and road connections, it also carries vital utilities, with telecommunications lines and stainless steel high-pressure gas pipes fitted along its length. There are even plans for the bridge to house seven 400-kv steel-latticed interconnector towers to carry electricity.

The bridge's structure is made up of 41 connecting spans of 150 m in length. These are supported on 42 piers whose foundations are formed of 262 high-strength steel piles. These 3-m-diameter steel tubes are driven up to 100 m into the earth so that they can support the bridge's massive length as well as the weight of road and rail traffic.

This steel core means that the piers and their foundations are able to resist every conceivable strain, from liquefaction of the riverbed to impacts from river vessels, all the way up to earthquakes — a vital aspect in seismically active Bangladesh, which sits at the meeting point of multiple active tectonic plate boundaries.

Representing a sea change for Bangladesh's infrastructure, the awe-inspiring Padma Bridge is a triumph of steel-built engineering that is expected to add 1–2% to the country's GDP and sets a high watermark for investment.

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