

# **Saving Sundarbans from unplanned development**

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Padma Bridge is the most challenging construction project in the history of Bangladesh. With its progress and impending completion, it will open up huge prospects for local economy. But there is a downside, it also poses an increasing threat to an imperilled ecosystem – Sundarbans – the world's largest mangrove forest stretching over 10,000 square kilometres area in Bangladesh and India. The 6.15 km long bridge, costing nearly US\$4 billion, will connect the capital Dhaka, northern and eastern part of the country to the south-west Khulna division where Sundarbans is located (1). The bridge, when commissioned, is expected to boost country's GDP by as much as 1.2 percent (2).

Economic development often comes at a cost to the environment in Bangladesh. The country has already lost the Chakaria Sundarbans, one of the oldest mangrove forests in South and Southeast Asia within a very short period due to the rise of commercially profitable shrimp farming (3). In Khulna division, land prices have already increased with other development projects taking place around real estate, fisheries, tourism, and resorts nearing the Sundarbans. The bridge will also facilitate greater access and use of the nearby Mongla Port, the second largest seaport in the country, and likely to accelerate forest clearing and land grabbing in the area.

Sundarbans is the world's largest remaining habitat of Bengal Tiger, a UNESCO World Heritage Site, a Ramsar site, and a Class 3 tiger conservation landscape of global priority (4). At least 355 species of birds, 49 species of mammals including the flagship species – globally endangered Bengal Tiger, 87 species of reptiles, 14 amphibians, 291 species of fish, and 334 species of plants have been recorded from the area (5). Geologically Sundarbans is also important as it is situated on the lower Ganges-Brahmaputra delta, world's second-largest watershed system, making it a dynamic delta (6). More than 3.5 million people dependent on Sundarbans for their livelihood and income. The world-renowned mangrove forest regularly protects human lives and habitation from cyclones and tidal surges (7). One-third of the Sundarbans comprises of rivers and streams, thus acting as a nursery for fish and other aquatic life including Asia's last two remaining freshwater dolphin species – the Ganges River Dolphin and Irrawaddy Dolphin. Sundarbans also plays an important role in regulating key ecological processes, including carbon sequestration, storage and cycling (8). The Sundarbans forest already facing many challenges, including sea-level rise, salinity intrusion, habitat degradation, biodiversity loss etc. (9). Government's plan of establishing a coal-based power plant has also created controversies in the area followed by a major oil spill on 2014 (10).

Although economic development is of prime importance, ecological and environmental issues must be considered in the long-term development plan. Bangladesh is considered a leader in climate adaptation and could also be a leader in terms of meeting its forest and biodiversity goals and developing economically without losing valuable ecosystems. Completion of this long-awaited bridge is indeed a great achievement which government can expand by showing its commitment towards environmental leadership. Government, from now on, must scrutinize all development projects around Sundarbans with proper policy and legislation. Any development in the region

should comply with local ecosystem, traditional ecological knowledge, and livelihoods. A clear guideline for development in the region including a list of good development and bad development, strict regulations on land clearing, landfilling, waste disposal and wastewater discharge is also crucial.

## References

1. J.J. Hamre *et al.*, “Padma Bridge (Construction)” (2020); <https://reconnectingasia.csis.org/database/projects/padma-multipurpose-bridge-project/48aa6db1-148c-4731-b3d3-679a51132377/>
2. J. Islam, “Padma Bridge will up GDP by 1.2 percent”(2015); [www.observerbd.com/2015/02/22/74074.php](http://www.observerbd.com/2015/02/22/74074.php)
3. S.R. Biswas *et al.*, *Wetlands Ecol. Manage.* **17**, 365 (2009).
4. E. Dinerstein *et al.*, Setting priorities for the conservation and recovery of wild tigers: 2005–2015 (2016), WWF, WCS, and Smithsonian, Washington, D.C.
5. A. Aziz *et al.*, *Diversity* **7**, 242 (2015).
6. J.P.M. Syvitski *et al.*, *Nat. Geosci.* **2**, 681 (2009).
7. P. Schwartzstein, “This vanishing forest protects the coasts—and lives—of two countries” (2019); [www.nationalgeographic.com/magazine/2019/07/sundarbans-mangrove-forest-in-bangladesh-india-threatened-by-rising-waters-illegal-logging/](http://www.nationalgeographic.com/magazine/2019/07/sundarbans-mangrove-forest-in-bangladesh-india-threatened-by-rising-waters-illegal-logging/)
8. D.C. Donato *et al.*, *Nat. Geosci.* **4**, 293 (2011).
9. S.A. Mukul *et al.*, *Sci. Total Environ.* **663**, 830 (2019).
10. C. Alexander, “After oil spill in Bangladesh's unique mangrove forest, fears about rare animals” (2014); [www.nationalgeographic.com/news/2014/12/141216-sundarbans-oil-spill-bangladesh-tigers-dolphins-conservation/](http://www.nationalgeographic.com/news/2014/12/141216-sundarbans-oil-spill-bangladesh-tigers-dolphins-conservation/)



Sundarbans is the largest natural habitat of globally endangered Bengal Tiger.  
(Photo credit: Rakesh Narala)



Padma Bridge will make Sundarbans more accessible and likely to make this critical ecosystem vulnerable.  
(Photo credit: Azim Khan Ronnie)





Spotted deer, one of the most abundant wildlife and major prey species of Bengal tiger in Sundarbans. (Photo credit: Choton Haque)



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More than 3.5 million people dependent on Sundarbans for their livelihoods and income in Bangladesh.

(Photo credit: Sharif A. Mukul)



Oriental small-clawed otter, a globally vulnerable species and is possibly found only in Sundarbans.

(Photo credit: Sayam U. Chowdhury)