

# HUNGRY TIDES OF THE SUNDARBANS: HOW THE RISING SEAS CREATE ENVIRONMENTAL MIGRANTS

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

"The rapid erosion of Ghoramara island , located at the mouth of the Bay of Bengal, has grabbed the attention of all those attempting to understand how rising sea levels and climate change are impacting lives and migration patterns." Residents onboard a ferry heading to Ghoramara. | Photo Credit: [Rajeev Bhatt](#)

"How many times have you rebuilt your house?" Sujit Mondal does not answer at first; he just gazes at the deceptive calm of the river he has to cross by boat to reach his home in Ghoramara. The 44-year-old resident of the sinking island of the Sundarbans archipelago has clearly been asked this question more times than he can count. Finally he answers: "At least four".

Tucked under Mondal's arm are several metres of neatly rolled net tarpaulin. He has bought it for 1,800 to cover the betel leaf trees he had planted a few weeks ago. He places it in his old mechanised boat. During the half-hour journey to his house, Mondal speaks of storms, particularly Cyclone Aila that wreaked havoc in the region in 2009. Tourists, journalists, researchers and climate watchers have all told him that the next cyclone will have a devastating impact on the quickly eroding island, Mondal says.

The ravages of monsoon are visible as the boat reaches Ghoramara. On a thatched hut hangs a green board that reads 'Ghoramara Ferry Ghat'. The board is the only constant on the island; everything else is always changing. In fact, every year, with houses and acres of land being swallowed by a hungry sea, the topography of the island alters. The total area of Ghoramara was 8.51 sq km in 1975; it reduced to 4.43 sq km in 2012. The rapid erosion of the island, located at the mouth of the Bay of Bengal, has grabbed the attention of all those attempting to understand how rising sea levels and climate change are impacting lives and migration patterns.

Ghoramara is unique in other ways too. When Prime Minister Narendra Modi demonetised all 500 and 1,000 banknotes in 2016, [Ghoramara, which had no bank or ATM facility, survived on credit](#) as there was no way of exchanging cash. Three years later, there is still no bank on the island. People make do with a post office. The last boat from the island departs for mainland West Bengal long before sunset, leaving the islanders cut off from the rest of the country at night. There is no grid-connected electricity and no din of modern life; only the sound of waves lapping the shores.

West Bengal, where erosion leads to land loss

Mondal shows me his betel leaf plantation, situated a few hundred metres from the sea. He says his neighbour Nantu Das's crops were destroyed after the embankments were breached by seawater. The precariousness of their lives and livelihoods is obvious, but when asked what it is like to be living on a sinking island, the residents show annoyance. "What is the point of asking us if the state does not care?" they retort. Sanjib Sagar, the gram pradhan of the island, has maintained that issues like sea level rise cannot be dealt with at his level.

There is no proper healthcare either. Rituparna Ghati, an auxiliary midwife, says in her eight years of work, doctors set foot on the island only once, to attend a vaccination camp to prevent an outbreak of Japanese Encephalitis. Ghati is perhaps the only health worker in the entire State

whose target population has reduced from 5,623 in 2011 to 4,696 now. There is no infrastructure for institutional deliveries on the island. Her job is to ensure that pregnant women are admitted to a state-run facility on the mainland days before the baby is due. Once her work is over, Ghati heads back to the mainland.

Given the state of affairs, it is natural that the rate of migration from Ghoramara is high. There are more women than men on every boat ride. In every other household, the men have left the island in search of jobs. They work as labourers in Kerala or Tamil Nadu, returning only during festivals or when the rising waters destroy their homes forcing them to rebuild yet again.

Visiting Ghoramara for the first time, Pranabesh Maity, a resident of a nearby island, Ganga Sagar, drops in at a primary school to find out the drop-out rate of students. Sabyasachi Pradhan, the teacher in-charge of Mandirtala Free Primary School, is prompt with figures. "This year we have 126 children. Last year there were 136, and the year before there were 144. People know that they will have to move out and are getting their children admitted at different places," he says.

Many villagers, like Mondal, are planning to earn some money and relocate to Ganga Sagar. But Maity, who has a Masters in Linguistics from Calcutta University, points out that parts of Ganga Sagar too are eroding. And so he has a mission at hand: he plans to plant mangroves and educate children about environmental events and their impact on the Sundarbans.

Ganga Sagar, which appears like a drop of water on a satellite map, is the largest island in the Sundarbans archipelago. Every year, pilgrims flock to the island during Makar Sankranti. Home to 2.16 lakh people and covering an area of 280 sq km, it had a high decadal population growth of 20.38% between 2001 and 2011. One of the reasons could be that people from smaller sinking islands are moving to Ganga Sagar, says Tuhin Ghosh of the School of Oceanographic Studies, Jadavpur University.

Mondal wants to relocate to Bamkinagar locality on Ganga Sagar island after his fourth house too was claimed by the rising waters in Ghoramara. But life there is no better. One afternoon in August, the kutchra road that separates the localities of Bamkinagar and Sumatinagar, on the eastern side of Ganga Sagar island, is muddy. People wade through knee-deep sludge to go from one house to another. The last house, which is exposed to the sea, belongs to Tumpa Mondal. She and her two daughters, one aged three years and the other six months, wait inside their hut. The tide water has receded but it has left its mark on the house. There is dampness in the air and the walls are mossy. "The house floods twice a day," she says. "We just sit on our bed waiting for the water to recede. I have added bricks under the legs of the bed. So now the bed is at a higher level." The family has no other place to go. Sometimes they share the bed with goats when the water rises.

#### A daily battle with the sea at Sundarbans

Some areas of Ganga Sagar —Dhablat Shibpur, for instance, located on the southeastern side — have particularly suffered a lot of erosion in the past few years. Almost hundreds of acres are covered by mud. In the middle of this vast expanse still stand a few houses. One of them belongs to Abhijit Mondal. The 26-year-old repairs an old boat and narrates a tale that is no different from the stories of the residents of Ghoramara. They are all dependent on the sea for their livelihood, the same sea that sometimes destroys their homes. In the neighbouring village, Beguakhali, after a stormy night, locals venture out to sea to collect fish spawns. They get 150 for collecting 1,000 spawns.

Bamkim Hazra, the MLA of Ganga Sagar, under whose constituency the islands of Ghoramara

and Mousuni also fall, has no solution to the problem. Though he was recently appointed chairman of the Gangasagar Bakkhali Development Authority, set up to accelerate development in the region, the MLA responds in the same way that the gram pradhan of Ghoramara did. "Local bodies can do nothing in this case. Only the State and the Centre can do something," he says during an interaction with journalists at a climate change workshop.

The MLA spoke at length about the Gangasagar Mela, which has been declared a national festival like the Kumbh Mela. Then he spoke about saving the Kapil Muni Temple, which is the seat of an annual pilgrimage. "The sea is advancing at a rate of 15 feet a year and soon the temple will go under," he pointed out. He said a 77 crore sea walling project was the only solution.

According to Hazra, over the past few years, about 1,120 families have relocated to Ganga Sagar from Ghoramara. These families have been given about six bighas of land on the island. Some have settled in a locality called Jibantala. Going from one house to another in the locality is a challenge because of the mud. There is no trace of a road.

The last hut at the end of the stretch belongs to Sheikh Safi. He came from Ghoramara to Ganga Sagar with his wife and two children in 2017. A daily wage labourer, Safi says his grandfather had 60 bighas of land in Ghoramara. While the family insists that they had not got any land from the government, the government responded that many people have settled in the land of the forest department, and will have to wait till the land records are changed.

Studies over the decades have recorded that the sea level in the area rose from 2.26 mm a year in 2002 to 12 mm in 2014 and by another 2.9 mm in 2019. All these figures are higher than the sea-level rise along the Indian coast (average increase of 1.7 mm a year). It's a well documented fact that islands have already begun disappearing: Lohachara went under in 2006 and the uninhabited island of New Moore was claimed by the sea in 2011.

### Sunderbans island shrinks by half

At a presentation, Tuhin Ghosh points out that Ganga Sagar, Ghoramara, and Mousuni islands are part of the Hooghly River estuarine system where there has been maximum human intervention. The Farraka Barrage, for instance, changed the sediment circulation pattern. Ghosh says reduced sediment supply in the region has led to changes in river hydrodynamics and coastal erosion. "The rate of erosion here is more than the rate of accretion which is due to sediment starvation," he adds.

A report by the National Centre for Coastal Research in 2018 pointed out that West Bengal lost maximum land due to coastal erosion in the country (99 sq km between 1990 and 2016). However, the land gain in the State, due to accretion, has been only 16 sq km. An analysis of the entire Sundarbans points out that between 1969 and 2009, about 210 sq km of landmass has eroded in the region.

In his book *Rivers of the Ganga-Brahmaputra-Meghna Delta: A Fluvial Account of Bengal*, river expert Kalyan Rudra quotes data from the India Meteorological Department to say that the Sundarbans experienced 367 depressions, 68 storms, and 77 cyclones between 1901 and 2012. The most disastrous was Aila in May 2009, which claimed more than 300 lives.

Rudra says Ghoramara, Sagar and Mousuni are located in the western part of the Sundarbans. Mangroves in these areas have been cleared for human habitation, he says, making these islands more vulnerable. He describes the Bengal Delta as a "subsiding delta", which means that in the western part of the Sunderbans, land has been lost to the sea and there has been no

new addition of land. He also warns that cyclones in the Sundarbans will increase because sea surface temperature is rising at 0.5°C per decade in the region and the global average is 0.05°C per decade. And since the western part of the Sundarbans has no mangrove protection, it remains most vulnerable.

Mousuni, which lies a few km south of Ghoramara and Ganga Sagar, is similarly exposed to the sea. Some believe that the unique sea horse shape of the island is most likely due to erosion.

At the southernmost tip of the island, where the remnants of vegetation and houses destroyed by the rising seas are still visible, a number of small resorts and backpackers' destinations have come up in suicidal defiance of the sea and its erratic ways.

Suresh Bhandari has grand plans of building another resort similar to the one he already has at the edge of the sea. The locals who moved away from here after sea waters rose have allowed Bhandari to use what was left of the land to construct a resort. In the Sundarbans, people eke out a living by fishing, collecting prawn seeds, and betel leaf farming. But people at Mousuni have forayed into the tourism business. The number of home stays in the island are only proliferating.

“Suresh babu has taken up a difficult job. It might take him years to build it. Ours is complete,” says Chittaranjan Dolui of Chittaranjan Royal Rest House and Hut. Dolui has taken a loan of 15 lakh to set up his hotel. “Please tell people in Kolkata about our facility,” he says.

Dolui believes that tourists will flock to the island in the winter season. It is not clear what prompted these investors to suddenly think of these islands, 130 km from Kolkata, as potential tourist destinations. As in Ghoramara, not even basic healthcare is available here. The health centre, spread over a few acres, is shut on a Friday and looks as if it hasn't been visited by a doctor in many months.

Climate change impact: Sunderbans steadily losing its famed mangroves

Mousuni now has a 2 km concrete embankment, something which people in Ghoramara and Ganga Sagar believe will solve their problem. The embankment constructed on the western part of the island in Baliara is almost 60 feet high and built at an angle to prevent flooding. It was built at a cost of 33 crore. However, when the tide is high, sea water flows into the island.

By the end of October, people living on the three islands felt that the worst of the monsoons and the season's biggest storms were over. But their hopes crashed when Cyclone Bulbul made landfall near Ganga Sagar on November 9. Rudra was monitoring the movement of the cyclone and was surprised that it remained over the Sundarbans from 7 p.m. to 1 a.m. “The locals say that it was the longest cyclone they have witnessed,” he says. The islanders were saved as there was low tide and the seawater did not breach the embankments when the cyclone made landfall, experts say. The damage caused by Cyclone Aila, which made landfall during high tide, was worse as the seawater submerged large parts of the island. The sea level during high tide and low tide can vary as much as four metres, Rudra says. Cyclone Bulbul caused widespread damage to the Sundarbans. According to the State government, 5 lakh houses were destroyed and 35 lakh people in the coastal regions were affected.

When the cyclone struck Mousuni, Chittaranjan Dolui stayed indoors. His son Tapan Dolui was at the lodge built for tourists. “Of the 12 rooms we built for tourists, four have been destroyed. Of the 30 lodges on the island, barring one or two all have suffered damage,” he says. On Ghoramara, the cyclone brought many changes to the landscape including destruction of Sujit Mondal's betel leaf plantation.

After Cyclone Bulbul, Pranabesh Maity, who has planted 30,000 mangrove saplings this year, returned to his home in Ganga Sagar to interact with students. "I want to tell them how unstable these islands are," he says. "It is the sea and the rivers that have given us everything — land, fish and all that the people of the Sundarbans need to survive. And someday when the rivers and sea come to reclaim everything, you have to be prepared."

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