



*Damaged house and flooded land after Cyclone Yaas. Photo by Pinaki Halder/Landesa, 2021.*

# ***Managed Retreat as a Pathway for Community Recovery and Rehabilitation in the Wake of Disasters***

**A Case Study of Community Resettlement in the  
Sinking Island of Ghoramara, West Bengal, India**

***Compiled by Jennifer Brown, Landesa***

## Key Messages

- Managed retreat is becoming increasingly necessary in a variety of coastal and delta contexts. The case study of Ghoramara Island may be used as an example of the important considerations that should be reflected as more governments begin devising plans for resettlement through managed retreat.
- Current relocation efforts are largely “one-off” and devised as needed. No systematic institutional frameworks, policies, or funding mechanisms exist to support the relocation of entire communities when needed for managed climate-related retreat.
- Governments and stakeholder groups working on resettlement plans should be guided by the following principles: (a) how beneficiaries will be identified, ensuring that women are included; (b) how the land for resettlement will be acquired, when no available land exists; (c) how much land will be allocated to each family; (d) what laws and regulations may need to be adopted to streamline, standardize, and make transparent and participatory the process of resettling communities; (e) how the process of resettlement will be kept participatory and transparent, especially as the community is concerned; (f) how can women and marginalized groups be ensured of an active voice in decision-making; (g) how can governments leverage the resettlement process to support and strengthen conservation and climate mitigation efforts; and, (h) how will the government fund the resettlement program, among others.

**G**horamara Island, which sits at the mouth of the Hooghly River roughly 92 kilometers south of Kolkata, India, had a land area of 8.4 square kilometers in 1975. Today, its land area has shrunk to 3.59 square kilometers. (See *Table 1: Changing land area of Ghoramara*)

The island continues to shrink as sea level rise and extreme changes in river flows erode the island. This process of erosion is further intensified by storm surges triggered by seasonal tropical cyclones which have increased in frequency in recent years. The area has been struck by four tropical cyclones since 2019: Fani (May 2019), Bulbul (November 2019), Amphan (May 2020) and Yaas in May 2021. Cyclone Aila, which struck the island in May 2009, was also devastating to the island.

**Table 1. Changing land area of Ghoramara**

1970	8.59 sq. km.
2000	5.26 sq. km.
2005	4.87 sq. km.
2010	4.45 sq. km.
2015	4.23 sq. km.
2020	3.59 sq. km.

*Source: Writings of Kalyan Rudra, Chairman, West Bengal Pollution Control Board and renown river scientist and Sundarbans expert.*

The population of Ghoramara Island, once around 40,000, has fallen to 5,193 (Census of India, 2011) due to out-migration. Ghoramara residents had mostly been farmers and even the marginalized sections of the community had a homestead plot and could depend on agricultural wage earnings for sustenance. As the island has eroded, the better-off villagers who occupied upland in the central part of the island have almost all moved permanently off-island and purchased land in nearby areas. The remaining marginalized sections of the island have come to depend on migratory labor of some members of their families and on limited farming activities where it remains possible — either on their own small plots or on leased land.

Ghoramara Island is a stark preview of the changes increasingly impacting islands and coastal communities in the Sundarbans.

## Overview of the Sundarbans, West Bengal, India

### *Land and People*

The Indian Sundarbans has a population of 4.4 million. Within this area, Ghoramara Island is located in Sagar Block (a block is a subdivision of a sub-district). As of the 2011 census, the entire population of Sagar Block was 212,037 and Ghoramara Island's population was slightly over 5,000 — a number that has declined further since Cyclone Yaas. Sagar Block is 88 percent Hindu and 12 percent Muslim. Members of Scheduled Castes make up 27 percent of the population and Scheduled Tribe members are 0.4 percent of the population.

Within the area of the Sundarbans, there are two land use zones: the human settlement area and the core protected area of the mangrove forest where people cannot live or own land. The core area of the Sundarbans refers to the most ecologically sensitive part of the forest. It is characterized by dense mangrove vegetation, diverse wildlife, and vital breeding grounds for various species. All land in the core area is strictly protected and managed by the Forest Department to ensure the preservation of its unique biodiversity and delicate ecosystem.

There are roughly 104 islands in the Sundarbans, of which about half are inhabited, and half are restricted from human entry. Many of these islands, including the topic of this case study — Ghoramara Island — are subject to land loss due to erosion, rising sea levels, and inundation during storm surges, a problem that has increased over the years.

## ***Tenure Systems and Land Governance***

**Human settlement area.** In the human settlement area of the Sundarbans, land tenure relationships are similar to that of the rest of West Bengal State. The State is unique among Indian States for implementing largely successful and enduring land reforms, including land redistribution by imposing a ceiling on land holdings and redistributing “ceiling surplus” land to landless persons, and by recognizing and protecting a class of protected tenants called “*bargadars*.” As a result of these reforms, the area is dominated by farmers who operate small holdings and by near-landless families (those holding less than one acre/0.41 of a hectare) who may have a house plot and small piece of agricultural land, but who also rely on agricultural labor. Within Sagar Block, 24 percent of workers’ main livelihood comes from cultivating their own land and 44 percent make their main living from agricultural labor. Figures for Ghoramara Island, which is within Sagar Block, are unavailable, though the island’s economy is almost entirely agricultural. Farming in Sagar Block is dominated by marginal farmers (those holding less than 1 hectare) with 18,896 farmers falling into this category. There are an additional 1,505 smallholder farmers (those holding between one and two hectares).

Agriculture is a key livelihood activity in the district with rice (paddy) as the key crop cultivated. For those with holdings near rivers or near the coastline, saline intrusion is a constant concern and increasingly limits agriculture. For those living in these fringe areas and for those who are landless or near-landless, livelihoods often depend on mangrove forest and other coastal non-agricultural activities, such as fishing.

The area is also impacted by large businesses and landholders with fishponds and prawn farms. These businesses can be profitable but provide minimal employment opportunities for local populations compared to agricultural activities such as rice farming, which would historically include the hiring of the local agricultural labor force.

**Core protected area.** In the core protected area, human entry is restricted and limited, although entry is permitted for limited livelihood purposes, such as fishing, crabbing, honey collection, and mollusk shell collection. Sagar Block and Ghoramara Island are located outside of the core protected area.

**Main local institutions.** Important government bodies in the Sundarbans include:

- *Gram* (village) and *Samati* (block) *Panchayats*. *Gram Panchayats* (GPs) are elected local governance units.
- Block Development Offices (BDOs) are responsible for implementing government programs related to development and for administration of a block including rural development programs.
- Block Land and Land Reform Offices (BL&LROs) are responsible for keeping the Records of Rights (land records) and land administration.
- Women's self-help groups (SHGs). West Bengal has a strong network of women's SHGs supported by the government's State Rural Livelihoods Mission (SRLM). SHGs promote savings and advance credit and are a forum for women's collaborative economic empowerment .
- Department of Sundarban Affairs (DSA) implements development activities through the Sundarban Development Board (SDB) and promotes social, economic, infrastructural, and cultural advancement of people residing in this area.



- Forest Department protects and manages land in the core area to ensure preservation of its unique biodiversity and delicate ecosystems. The Forest Department's duties also include the operation of the lease and permit system through which authorizations for forest exploitation are awarded.

### **Climate Change Event: Cyclone Yaas**

On 26 May 2021, the cumulative effect of the 4-meter-high sea surge, caused by the combined effects of an astronomical tide (coinciding with the full moon) and Cyclone Yaas, decimated the Sundarbans.

Ghoramara Island suffered the worst impact of the disaster. The ingress of saline water swept away hundreds of houses and rendered most agricultural land uncultivable. All residents of the island were heavily impacted, though the most vulnerable residents living on the edge of the island were completely devastated. The government assessed the most vulnerable and in need of aid to be 30 families.

Fortunately, despite the physical devastation of the island, there was no loss of life as the Government of West Bengal started evacuation and rescue operations when the cyclone warning was sounded 48 hours in advance. The Block Panchayat Head of Sagar recounted that, *"The aged and vulnerable population were shifted to Kakdwip and Sagar flood shelters. Post cyclone, adequate relief measures have been taken to provide succor to the helpless families. Several CSOs [civil society organizations] and youth organizations are coming to the island with dry food, milk, water, and clothes for the families who could not leave the island and had taken shelter at school buildings."*

Landesa was invited by the local government to visit the island in the wake of Cyclone Yaas to assist in the development of a resettlement plan for the island's most vulnerable residents. This experience highlighted that resettlement requires not only identifying available suitable land, but it also

requires identifying beneficiaries, ensuring a secure transfer of land rights to undisputed land, and a host of accompanying assistance to help people – and especially women and vulnerable sections of communities – rebuild lives and livelihoods. The case study highlights the many questions for government policymakers, NGOs, and local populations to consider when climate change forces managed retreat, through relocation and resettlement.

### **Impacts of Climate Change and Disasters on People's Welfare**

Prior to Cyclone Yaas, the residents of Ghoramara Island had already been coping with the catastrophic, but slow, loss of their land. Many families were already surviving through labor migration. Families report engaging in two types of labor migration. One type is seasonal migration in search of wage-earning jobs in nearby rural or urban areas. The second type is more permanent migration to large urban areas of other Indian States. The remittance made by this migrating population offers relief to the remaining family members – often women, children, and the elderly.



*Ghoramara residents on severely damaged island edge in the aftermath of Cyclone Yaas. Pinaki Halder /Landesa. June 2021.*



When Cyclone Yaas struck, the local government reported that roughly 1,100 families remained living on Ghoramara. These are families who cannot afford to resettle or buy land elsewhere and whose livelihoods remain firmly anchored to the island. Their livelihoods now depend on remittances from migrating family members and on cultivating what agricultural land remains usable.

### **Responses by the Community**

In the immediate aftermath of Cyclone Yaas, Landesa spoke with community members who were just starting to assess the extent of damage and cope with the destruction. Two women shared details of their immediate situation, plans, and needs:

Sandhya Hazra was waiting for a ferry boat to cross the river back to Ghoramara. She said, *“I took shelter in a relative’s home at Kakdwip with my daughter in the morning of the storm surge. I came back here to collect whatever could be retrieved from the debris. Last year, we weathered past the mighty Cyclone Amphan with less damage. The Yaas storm surge has snatched whatever we still possessed. My husband is a fertilizer dealer here, but we both are not coming back again here.”*

Tanuja Biwi was returning home after collecting food, water, and clothes distributed by a visiting club from the city. She said, *“My husband at home is sick. He cannot walk. By the grace of the Almighty we are alive, but the gushing in sea has taken everything we had, even a couple of goats. Our room caved in. We need immediate attention.”*

### **Response by the Authorities**

In the wake of Cyclone Yaas, the South 24-Parganas District Administration developed a rehabilitation plan for the 30 most vulnerable families affected by Cyclone Yaas. A key component of the developed plan was to relocate the most vulnerable families to stable land off-island. The government identified a block of government land on the large and stable Sagar Island to relocate the 30 families. The families to be resettled were those living on the edge of Ghoramara Island, who prior to the cyclone had had a piece of land to live on and a small agricultural plot to

grow seasonal crops and vegetables. Their homes and small land plots had all been severely damaged or swallowed completely by the storm. As an initial step, the district authorities visited Ghoramara Island and nearby Sagar Island in June 2021 with the following intentions:

- Facilitate initial discussions and planning for the proposed resettlement of 30 of the island's most vulnerable families who had completely lost their homesteads due to the storm surge.
- In consultation with the Block Development Officer, Block Land and Land Reforms Officer, and Panchayat authorities, evaluate the suitability of the land identified on Sagar Island for resettlement through government land allocation.
- Develop a resettlement and livelihoods rehabilitation plan for the 30 families.

Landesa accompanied the authorities and provided technical advice on land-related matters. During the visit a panchayat official noted that 1,100 families had been living on the island prior to Cyclone Yaas. He said that the 30 families that were identified for resettlement were the most absolute vulnerable and those who had not already been able to purchase land off-island.

The authorities planning the resettlement area on nearby Sagar Island, included the following in the developing land use plan:

- House and garden allocation of 0.16 acre (0.06 hectare) for each of the 30 families;
- Community gathering area, including a small playground and shaded area for community meetings of 0.25 acre (0.10 hectare);
- Community pond and drinking water source of 0.20 acre (0.08 hectare); and,
- Internal pathways, drainage, and approach road of 0.15 acre (0.06 hectare).

The total area needed was 5.40 acres (2.2 hectares). It is notable that when government land is allocated, the State government has a policy of granting joint titles to wives and husbands or single titles to women-headed households. This policy was followed in the resettlement plan. The development plan necessary in order to resettle these 30 families was

granting joint titles to wives and husbands or single titles to women-headed households. This policy was followed in the resettlement plan. The development plan necessary in order to resettle these 30 families was comprehensive. It required the creation of a new hamlet, including all infrastructure, government services, and livelihood building support.

The full plan for development is detailed in the table below.

**Table 2: Resettlement plan for families affected by Cyclone Yaas**

<b>Activity</b>	<b>Details</b>	<b>Departments and Programs</b>
Land distribution to 30 families from block of government land	Provide 0.16 acre (0.06 hectare) of land to each family for construction of house and other land-based livelihoods activities. Joint title land to married couples	Block Land & Land Reforms Department (BL&LRD), BDO, Samiti (Block) Panchayat, GP
Land leveling and preparation for development		BDO via Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)
Construction of approach road and internal roads	All these must be constructed from scratch to allow communication, access to markets, public services, etc.	BL&LRO, BDO via MGNREGS, Panchayat & Rural Development Department (P&RD) via MGNREGS Panchayat Samiti, GP
House construction support to 30 families	Permanent, cement ( <i>pucca</i> ) houses for 30 families	P&RD via rural housing support scheme, Sundarbans Affairs Department (SAD), Sundarbans Development Board (SDB); house building grant for Cyclone Yaas victims

Drinking water	Sinking of one tube well	Public Health Engineering (PHE), Backward Classes Welfare (BCW), P&RD, SAD, SDB
Water for other purposes	Excavation of community pond for cleaning of utensils, clothes, etc.	P&RD via MGNREGS
Sanitary toilets	Construction of latrines for 30 individual households	Mission Nirmal (Clean) Bangla (MNB) & MGNREGS
Drainage	Construction of suitable drainage channels	BDO, P&RD (MGNREGS)
Electrification	Electricity connection for 30 families	Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) government rural electrification scheme
Community gathering place for the hamlet	Playground for the children; community recreation space for observance of festivals, etc. Area of about 0.20 to 0.25 acre (0.08 to 0.1 hectare)	P&RD (MGNREGS)
<b>Livelihood assistance</b>		<b>Departments and Programs</b>
Developing and nurturing betel vine and/or kitchen gardens for 30 families		P&RD (MGNREGS)/ Horticulture, Agriculture Department
Distribution of livestock (chicks, goats, sheep, cows, etc.)		Animal Resources Development (ARD) Department
Developing and nurturing fruit-bearing trees (mango, guava, etc.)		Horticulture, MGNREGS

Pisciculture community pond (supply spawn of locally suitable varieties)	Fishery Department
<b>Links to other needed services</b>	<b>Departments and Programs</b>
Formation and/or strengthening women's self-help groups (SHGs), which provide credit, livelihood, and other support for women in groups of roughly 10	SHG & Self-Employment Department, District Rrual Development Cell (DRDC), P&RD, Banks, Comprehensive Development Corporation (CADC), State Rural Livelihoods Mission (SRLM)
Skill development training of women SHG members /all eligible youth for self-employment	SHG & Self-Employment Department, DRDC, P&RD, CADC, SRLM
Training on animal rearing	ARD Department, SRLM (Anandadhara)
Pensions for all eligible persons, including widows, the disabled, and the aged	P&RD, Indira Gandhi National Old Age Pension Scheme (IGNOAPS), Indira Gandhi National Widow Pension Scheme (IGNWPS), Indira Gandhi Disability Pension Scheme (IGNDPS) and other State social pension schemes
Health insurance – Swasthya Sathi (government program)	GP, Health Assistant (Female), Integrated Child Development Services (ICDS)

Public Distribution System (PDS) and inclusion on Khadya Sathi lists or transfers of ration cards as needed (families eligible for reduced price rice rations)	Food & Supply Department
AWC (rural childcare center) and primary school enrollment at nearby location	GP, Education Department

Since this plan was developed, Landesa has continued its communication with involved government officials. According to the authorities, a land allocation map with internal roads was prepared by a survey team engaged by the BL&LRO. All 30 identified families received land record documentation for the land received, which was granted jointly in the names of wives and husbands, and the families have taken possession of the land. The local government prepared and levelled the land using labor resources from MGNREGA and enlisted the families for construction of houses and sanitation facilities. A deep tube well was installed for drinking water. Many of the families have started living permanently on the allocated land plots and have developed vegetable gardens. The livelihood activities, in-depth work with women's SHGs, and links to services have also been taken up, though Landesa has not been directly involved in this and cannot speak to progress.

## Assessment

Ghoramara Island is one of the first stark stories of land submersion and forced migration worsened by the impact of climate change. In this case, the security of land tenure that island residents enjoyed did not help them to avoid the disastrous impacts of continuous flooding and more frequent and severe storm surges. Unfortunately, rapid adaptation was not a feasible option for this place. Therefore, most of the community was forced to leave their land.

Still, land remains of central importance to these families and securing new land for the most vulnerable of the island's populations was an ideal outcome. As mentioned above, many of the island's families—or at least





*Eroded edge of Ghoramara Island. Pinaki Halder /Landesa. June 2021*

some of their members—have entirely migrated off-island in search of alternative livelihoods. For the remaining families, and in particular for the most vulnerable and poorest sections who do not have the means to relocate using their own resources, government assistance to secure small house and agricultural plots was paramount.

In this case, various government departments and branches have been able to work together to support these 30 families. Nearby land was available and identified. Selecting beneficiaries was relatively straightforward. Women's SHG groups already existed and could be mobilized to support livelihood activities. Still, this has been and is a complex effort. As can be seen from the table above, resettling these families involved multiple government departments. Such an effort may be possible for 30 families, but what about the hundreds or thousands living on the edge of the Sundarbans who may require such assistance in the years and decades to come?

## Recommendations

Given the ongoing and real threat of climate change-intensified displacement in areas of the Sundarbans, in-place adaptation measures versus managed retreat must be regarded as a topic of major policy discussion and decision-making. In the Sundarbans, given the exposure of some areas to increasing frequency of storm surges and land erosion, adaptation in place may not be practical. Managed retreat may be necessary. Ghoramara Island is a prime example of an area that required managed retreat.

Given that managed retreat may be increasingly necessary in a variety of coastal and delta contexts, this small case study of Ghoramara Island may be used as an example of the important considerations that should be reflected as more governments begin devising plans for resettlement through managed retreat. The case of Ghoramara shows that current



*House heavily damaged by Cyclone Yaas. Pinaki Halder / Landesa. June 2021*

relocation efforts are largely “one-off” and devised as needed. No systematic institutional frameworks, policies, or funding mechanisms exist to support the relocation of entire communities when needed for managed climate-related retreat. As governments begin to devise such policies, the experience of Ghoramara can be used to think through the questions that must be answered.

Key questions for consideration by governments and others working on resettlement plans:

- **Identification of beneficiaries of resettlement programs.** Who should be eligible for resettlement assistance and land grants? If only the more vulnerable will be resettled, how are they identified? Will both landed and landless persons be assisted? How can identification programs ensure that women are recognized and included?
- **Identification of land.** Ideally, identifying nearby land would minimize feelings of total displacement and allow the continuation of some existing economic and social activities. What if no suitable nearby land is readily available? Would the government consider purchasing land? How much land should be allocated to each family?
- **Laws, policies, and institutional arrangements.** What laws and regulations may need to be adopted to streamline, standardize, and make transparent and participatory the process of resettling communities? What processes can be put into place to help institutions work smoothly and efficiently together?
- **Community participation in decision-making.** Will the families to be resettled have input into the choice of location? Will they have a say in the other support provided, like the livelihood support? How can the process be made or kept participatory and transparent?
- **Gender integration and social inclusion.** How can women and marginalized groups be ensured an active voice in decision-making? How will the intervention specifically reach out to and obtain the input and suggestions of these groups? Can the intervention be made gender transformative? That is, can women’s role be permanently highlighted and elevated in impacted communities?



- **Do no harm.** At times of disruption and change, the possibly for gender-based violence increases. How can program designers minimize this risk? What resources are available for women facing such harm? What training in psychosocial support may be needed for those implementing resettlement programs?
- **Conservation and restoration.** What efforts to promote climate-smart livelihoods and sustainable land management choices can be included? How can government ensure that resettlement does not lead to additional environmental problems? Further, how can governments leverage the resettlement process to support and strengthen conservation and climate mitigation efforts? Should restoration efforts be a key component for managing abandoned land, or should it be left to further degradation, resulting in the loss of potential benefits of ecosystem services?
- **Funding.** In the case of Ghoramara island, existing government land and existing government programs were used to resettle residents. How can resettlement be funded when existing programs do not exist, and government land is not available? How can national and international funds and resources be tapped? ■

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