

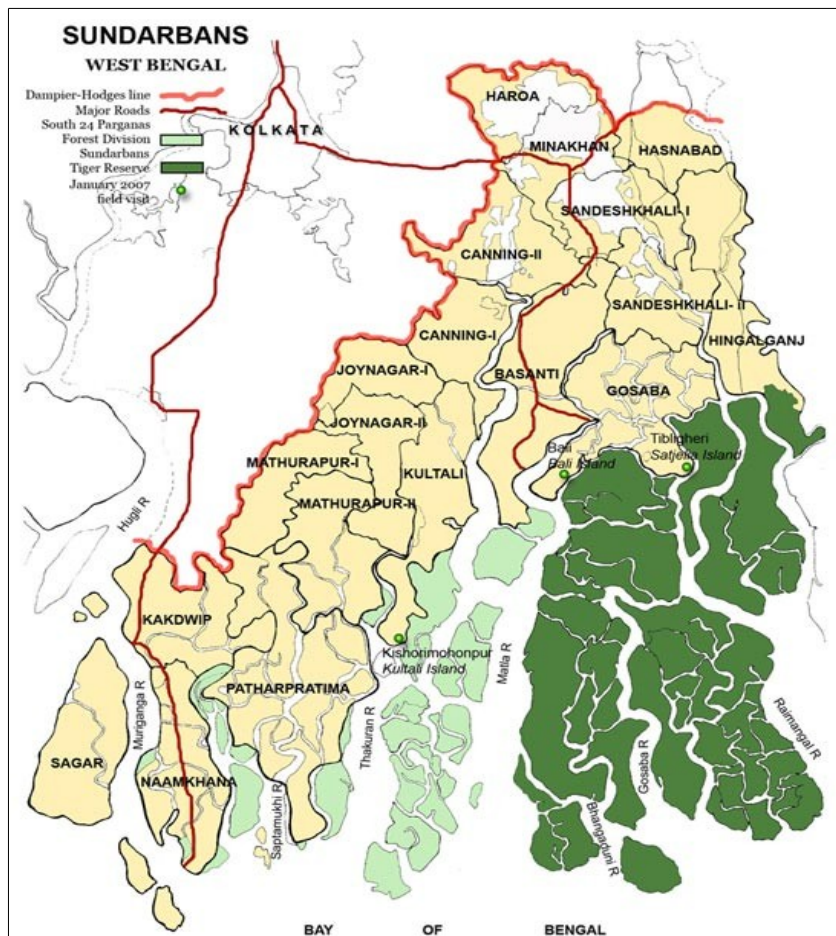
Transformation from being peasants to Climate Refugees – A case study of 5 Indian Sunderban Villages...

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In the era of global warming different countries and different communities are getting affected in different ways. However the island nations and underdeveloped countries are going to be the worst sufferers. Global warming is causing sea levels to rise. This in turn is endangering the island nations further. One such endangered group of islands is the Sunderbans, world's largest mangrove forest.

“The Sunderbans are a network of tidal channels, rivers, creeks and islands. Some of these islands are mere swampy morasses, covered with low forest and scrubwood jungle, but those to the north, which are embanked, grow rich crops of rice. As one approaches the coast, the land gradually declines to an elevation throughout many hundred square miles [that] is scarcely raised above high-water mark. This scabbard area is a typical specimen of new deltaic formation. It exhibits the process of landmaking in an unfinished state, and presents the last stage in the life of a great river the stage in which it emerges through a region of half land, half water, almost imperceptibly, into the sea”¹.

That is how L.S.S O'Malley described the Sunderbans in 1914. Life under the colonial and the post colonial days has not very different for the islands or its dwellers. An International border separated the administration between India and Bangladesh. Definitely the population of these islands has gone up by leaps and bounds yet infrastructurally they are still back in the old days.



Map of Sunderban
Source : Danda
2007²

The geography of these islands needs to be discussed here. This cluster of islands was formed at the mouth of the Ganga-Brahmaputra delta by deposition of silt brought down by these mighty rivers and their numerous distributaries. Since these islands lie at the mouth of the sea and unlike other islands and deltas, face the onslaught of currents of both the rivers and of the sea. The silt deposited by the river is often washed away by the sea during high tides. Again the eroded silt gets deposited at some other place. This process of land formation on one side and erosion on the other has been going on simultaneously for thousands of years. The rivers have frequently changed their courses in between. Hazra(2002)³ mentions about the shifting of the main channel of the Ganges in Bangladesh a few hundred years ago. This caused a scarcity of freshwater flow in the Indian Sunderbans Delta and an increased salinity in the water around these islands. From the beginning the Sunderban islands have been a subsiding delta, with vertical upbuilding. The islands are only 3 to 8 meters above the water level and are partially or completely inundated during high tide. Due to progressive shallowing of the channels of the Hooghly and its distributaries the height of tidal bore goes up to 6.4 meter and further inland this increases to 7.17 meter⁴. The flood and ebb tide have a semi diurnal nature(12.5 hours interval) and occur twice daily. Within this cycle floodwater flows for 2-3 hours duration. In the remaining 8-9 hours the estuary is covered by ebb tide flow of lesser velocity⁵. The Indian Sunderbans sprawls over an area of about 9630 km² and lies between 21°40'N and 22°09' N latitude, and 88°01'E and 89°06'E longitude, is the smaller and western part of the complete Sundarbans delta⁶.

The fauna and flora of the forest area and the habited part of the Sunderbans are parts of a unique ecosystem created by the admixture of land and forest, and a water body comprising the upland sweet water and the saline tidal water of the Bay of Bengal. The Hooghly river flows along the western bank of the Sundarbans. To its east flow the rivers of Ichamati, Kalindi, Raimangal and Haribhanga. The Dampier-Hodges line marks its northern boundary while the Bay of Bengal acts as a natural boundary in the south⁷. The Sunderbans Mangroves ecosystem is also the only mangrove eco-region that harbors the Ind Pacific region's largest predator, the tiger. Mangroves are a transition from the marine to fresh water and terrestrial systems. They provide optimum living environment for numerous species of fishes and crustaceans that are adapted to live, reproduce, and spend their juvenile lives among the tangled mass of roots known as pneumatophores that grow upward from the anaerobic mud to get the trees' supply of oxygen. The mangrove forests on these islands also act as a major carbon sink and helps in cleaning the environment⁸. The existense of the mangroves is crucial for the survival of these islands vis-a-vis the southern part of the state of West Bengal in India and southern Bangladesh.

Unlike other forests there is a coexistence of human settlements and reserve forest in the Sunderbans, though there is no human settlement within the reserve forest area. The two have always been separated by rivers. The human settlements outside the reserve forest area can be classified into two parts depending on their geographic location. Some of them have now become part of the mainland and are connected by roads and have basic infrastructural facilities as found in other rural areas of India. In the South 24 Parganas, the Administrative Blocks like Canning, Joynagar, Mathurapur, Kakdwip and Namkhana fall almost entirely under this category. People from these blocks do not live very near the forest and their living conditions and livelihood options are similar to that of other areas of the district. But in the blocks of Gosaba, Basanti, Patharpratima, Kultali and Sagar which together account for around 40% of the total area of the district, have enormous uniqueness in regards to the people, their livelihood and threat perceptions which needs to be understood in a specific way. The inhabitants are almost entirely detached from the mainland and live an unimaginable life. Finally there are blocks which though part of the Sunderbans, lie in the North 24 Pargana districts. These are Sandeshkhali I, Sandeshkhali

II, Hingalganj, Minakhan, Haroa and Hasnabad⁹.

The Sunderbans is presently under the threat of severe coastal erosion due to relative sea level rise¹⁰. Besides global warming and subsequent thermal expansion of water, subsidence which for the Bengal Delta(s) is rather rapid (2-4 mm/yr), compaction of silt and other local causes may be responsible for the exceptionally high rate of relative sea level rise in the Indian Sunderbans. The mean tide level in the Sunderbans seem to vary in close correlation with sea surface temperature in the Bay of Bengal¹¹. Current projections estimate that the temperature in the Sunderbans will rise by 1°C by 2050¹². In the Ganga-Brahmaputra delta the suspended sediment load is high. If we consider sea level rise due to sedimentation to be 0.1 mm per year, the net rate of sea level rise would be 3.14 mm per year. This is significantly more than the present trend of average global sea level rise of 2 mm per year¹³.

Till the year 1770, the Sunderbans of India and Bangladesh together was spread over an area of 36,000 sq. km. Currently it covers an area of 25,000 sq. km, which means almost 11,000 sq. km has been lost due to erosion. According to Hazra¹⁴ by 2020 the region would lose 20% of its land. In the past 40 years, the total area of the delta islands has shrunk by about 210 sq km to 6359.552 sq km¹⁵. Out of the 102 islands of different shapes and size, 54 islands are currently inhabited in the Indian Sunderbans. This rising sea level will pose serious problem during the pre and post monsoon phase when most of the cyclones occur¹⁶. In 2007, the Inter-Governmental Panel on Climate Change recognized the threat to the Sunderban mangroves, which act as a carbon sink for entire South Asia due to anthropogenic stress. Already, islands like Lohachara¹⁷, New Moore, Talpatti, Kabasgadi and Suparibhanga have disappeared under the sea while Ghoramara Island is half submerged. Not only for the 5 million people the Sunderban islands are also home to a great variety of animal, plant and aquatic life. The loss of these islands would also mean a losing a vast treasure of animal and plant life.

Humans started settling in these islands a long time back, but traces of these earlier civilizations are rarely found, mostly destroyed by the Portuguese and Arakanese pirates who used to plunder these islands at the eve of the decline of the Mughal rule in India and before the arrival of the British in the 17th century. Written history of the Sunderbans primarily begins with the British. In order to increase their resources, the British cleared the forests and brought the islands under cultivation. The Britishers realized that cultivation could not be possible on these islands without first stopping the saline water from entering the agricultural fields. Thus they constructed earthen embankment along these islands. The embankment ran for 3500km along the islands. However at that time it was not known that these embankments would impede the natural land building process. Scholars like Hazra(2002)¹⁸ and Rudra(2008)¹⁹ have pointed out that settlements of the Sunderbans had begun before the delta building process was completed. Because the rivers could not deposit the silt on these islands, the silt started getting deposited along the embankments. With passage of time the river beds got elevated and the rivers started flowing at a level higher than the embankment. Thus the height of the embankment also had to be increased from time to time. The embankment were and are still very important for the survival of the inhabitants. The British had sold the cleared lands to the highest bidders or Zamindars. The zamindar and the British together were responsible for the regular maintenance of the embankments²⁰. After Independence this responsibility was transferred to the Irrigation Department of West Bengal. However poor maintenance and the constant erosion of the embankment walls by the currents has weakened it over the years and as a result each time there is a cyclone, which again are very common in this area, the inhabitants live in constant fear of having their homes washed away by the torrential water, for these embankments frequently collapse in times of storms. Rising sea levels is threatening these embankments like never before. Breakages in the embankment

due to weathering and sudden floods are very frequent and as a result saline water gushes in people's land and spoils their crops and land. One such breach happened during the 2009 May super cyclone called Aila, which is yet to be repaired²¹.

Most of these islands do not have electricity courtesy of the fact that they are highly inaccessible. Like O' Malley had described they are a "network of tidal channels", thus in order to reach some of the interior islands, one has to change boats some three to four times. Just to clarify these boats are mere country boats where the passengers brave the weather by sitting on the frames of the boat, mere inches above the water home to many crocodiles. Yes, earlier all these boats were moved by oars but now they have a diesel engine. Once you reach these islands either mud jetties or slimy, half cracked cemented ones greet you. At the time of independence, all the roads were mud roads. In the last sixty years, a few have been converted to concrete ones, and some others into brick roads. Thus during monsoons and floods reaching the interior areas of these islands becomes very tricky. The locals usually prefer building mud houses for it is too risky to spend money on concrete houses for there is no guarantee, of it surviving for a long time due to the frequent flooding and erosion on these islands.

Developing an ecologically sensitive area is much more difficult than developing backward regions that do not necessarily have characteristics of the former. Ecologically sensitive areas are fragile areas where conservation or reservation of the natural environment is sustained by state controls and grants. The United Nations Framework Convention on climate Change provides a database to transfer long standing coping strategies, knowledge and experience from communities with survival strategies during different kinds of hazards to communities who though face similar predicaments do not have the knowledge base. To lessen the effects of storms and floods in Latin American countries like Brazil, S E Asian countries like Thailand, Bangladesh and in African countries like Ethiopia, Mozambique, reforestation is carried out for both dry and mangrove forests. Agro and forestry practices are integrated in the farming system by planting trees in agriculturally productive lands. Routine pruning and top working of the trees is done to make them more storm resilient. In the same way dams can also be built to stop flood water but they are both expensive and environmentally hazardous. Bangladesh which is primarily a riverine country does Cage Aquaculture where fishing folks cultivate fishes in cages in open water bodies; they also carry out flood resilient aquaculture. Erecting flood resistant houses or houses on stilts also help in the times of floods, like it is done in Ecuador or Bangladesh. To fight the loss of crops the people of Lao in S E Asia diversify their rice based diets, while in Mozambique seeds are selected and stored for future. In order to cope with loss of lands and crops, damage to human settlements due to sea level rise and subsequent flooding, "forestry Capacity" and adaptation strategies which would integrate climate and development have been formed in the Mekong delta. Community based disaster planning programs in the Philippines similarly help in protecting the people. Erecting and maintaining flood mitigation structures like trenches, dykes or by draining existing waterways or enlarging riverbeds like is done in Kenya can also help in reducing the destruction wrought by floods. Diversifying or alternative livelihood practices like poultry, handicrafts are popularized or encouraged in Bangladesh, Thailand and African countries. To cope with shortage of irrigation water, water harvesting is done by utilizing infiltration pits and stone terraces in Zimbabwe. In Zimbabwe, anthill soils are spread to manage the soils in a better way by increasing its retention capacities and thereby productivity²².

By looking at the different measures adopted by the different countries in order to combat disasters, one can say these measures have been specifically planned to suit the needs of the region and its people. This approach is very important as such vulnerable regions have unique characteristics and they need special attention and care in order to survive.

Careful research and study of these areas have found a vent through these various steps. The Sunderbans is an area of great significance because it is not only a unique forest region but also home to a huge population. Thus there are a host of development issues, which need to be resolved apart from the ecological ones²³. It serves as a microcosm for examining global dilemmas of development, ecology, and competing values. Survival measures catering solely to this unique region has to be planned and executed to make the survival of these islands and the islanders possible. Thus general and universal policies cannot be applied here.

Delta Management in the Sunderbans is often compared with the Netherlands. However, there are several geographical differences between the two²⁴. Thus what has been achieved in the Netherlands with the help of dykes cannot be imitated in the Sunderbans. The latter requires more specific planning of a contextual manner.

My Dissertation was on the Problems of development and planning in the Sunderbans under Prof. Swapna Banerjee-Guha as part of my Masters in Development Studies(2010-2012). I collected data from 5 villages, namely, Beguakhali(Sagar Block), Rangabelia, Pakhralaya, Gosaba(Gosaba Block) and Masjidbari (Basanti Block) of the South 24 Parganas on various socio-economic indicators. I spoke to various experts, government officials and read the works of both the parties and came to the conclusion that participatory development, afforestation of mangroves, regular maintenance of the embankments and improving the infrastructure of these islands may make them a little more stable and sustainable for the residents. These islands have a huge impact on the environment. Their survival is essential to keep Bangladesh and West Bengal safe from the vagaries of nature.

The objectives of the study were -

1. To look into problems of livelihood and the factors associated with the same.
2. To analyze the phenomenon of outmigration in relation to the vulnerability of the region both economic and physical environment. It was found that increasingly the youth are migrating from the islands in search of better opportunities in the cities. Also it is found that this phenomena has increased since Aila. Climate has significantly played a role in making life difficult for the people living here.
3. To look into the prevalent development pattern in the unique region and enquire into the measures adopted by the local government bodies.

Data Source and Methodology

Both quantitative and qualitative methodology was used in this study. Primary data was collected by the author through questionnaire survey. Structured Interview schedules covering information on different dimensions like embankment,practiced livelihood, climate change etc were used.

Sampling Method- Random Sampling was done in the five case study villages in order to get information on a wide variety of issues. Four of the five case study villages are located in the eastern Sunderbans while one has been taken from the west. This has brought out the differences in the two parts of the region.

Secondary Data Source- Secondary data has been taken from i) State Gazette, Bureau of Statistics, West Bengal ii) data compiled by individual researchers like Anuradha Banerjee(Environment,Population and Settlements of Sunderbans Delta,1998) iii) Annual report of Tagore Society for Rural Development iv) Human Development Report, South 24 parganas,2009, and v) Annual report of Sunderbans Affairs Department 1996-99.

Limitations experienced by the researcher- Availability and access to Government data

was very poor. This has resulted in specific gaps in the research. However, the researcher has tried to supplement them with primary and other secondary data. The paucity of time was also a major hindrance faced by the researcher. Access to these islands is still difficult. In the pre monsoon and monsoon months these islands become almost inaccessible from the mainland. Thus the data collection could only be done in the winter months. Aila has destroyed embankments and roads that has made the problems of commuting worse in recent years. However this researcher hopes to carry further research in this area in the future and get more insights on this region.

Geographically, the current settlements in South 24 parganas can be divided into the following different regions-

- i) The Stable Delta of the North which comprises of slight higher elevations and is the land of sluggish river and depressions which includes the districts of Haroa, Hasnabad, Minakhan and Sandeshkhali
- ii) The Active Delta of the southern part which is made of a composite of tidal channels, river, creeks, islands and includes the districts of Gosaba, Namkhana, Sagar Is, Patharpratima etc²⁴.

The Sample Villages-

The village of Beguakhali is located in the south west corner of Sagar island . This island is the largest Sunderban island and is located in the western Sunderbans. It is subject to constant erosion and accretion. Houses here are mostly lined along the ponds and water channels (locally called Khals), that happen to be the chief sources of water for irrigation and household purposes (Banerjee,1998). This island has a metallic road running across the length of the island. As the river Ganges meets the Bay of Bengal at Sagar, it is an important pilgrimage centre for the Hindus.

The villages of Rangabelia, Pakhiralaya and Gosaba of the Gosaba block and Masjidbari village in the Basanti block lie in the eastern part of the Sunderbans that also house dense tidal reserved forests in the south and south-east. Thus only the northern part of the above blocks are inhabited. These blocks are separated from each other by numerous water channels and rivers like Matla and Bidyadhari. The villages are cyclone prone and also face the wrath of river currents.

Farm lands were distributed on these islands by the British as "Lots". Some became fairly rich landlords, while the others remained poor. These settlers belonged to both Hindu and Muslim communities. In fact some even converted to Christianity. The edges of these islands came to be inhabited by the landless with time. However after independence, the porous border led to a continuous influx of refugees from Bangladesh. Farmers here were always subsistence farmers. Then came 1979, these islands witnessed human massacre, when the erstwhile government of West Bengal forcibly tried evicting the settlers from these islands citing violation of forest Conservation Act²⁵ . This incident can easily be compared to a imperialist genocide, settled in when it suited the state and again evicted from when the state felt like.

Coming back to the present day, The primary livelihood of the region are agriculture and fishing. There are several problems associated with the practice of agriculture in the Sunderbans. The saline soil of the region only supports the production of certain varieties of paddy,pulses and a few vegetables. But again these can only be harvested once a year because of scarcity of fresh water to be used for irrigation. Rains are thus very important for the farmers of the Sunderbans. Efforts are being made to make a second harvest possible by using chemical fertilizers and hybrid seeds and harvesting water. In present time, farmers spend a good amount of money buying hybrid seeds and fertilizers. As mentioned, paddy grown by these farmers is consumed entirely by the household and there is hardly anything left for the market. Not all the households in the Sunderbans own

land. There are several families that are agricultural labourers or work on leased land. The constant erosion by the river, increasing family size and a debt dependent living have resulted in landlessness to a great extent. There are also families who never owned any land. It was found that the villagers gradually lose their land under the burden of debt. Also the per capita ownership of land is quite small in the Sunderbans, family disputes over a small plot makes many farmers landless. The official rates of agricultural labourers is Rs 75 per day, as fixed by the Government²⁶. Because of the outmigration of labourers to other states, in search of better pay, many farmers face difficulty during harvest season due to scarcity of labourers. They are forced to hire labourers at a high price. Farmers in Rangabelia, Pakhiralaya, Gosaba are forced to pay agricultural labourers around Rs 120-150 per day, while in Beguakhali, the rates go up to as high as Rs 200-250. Due to lack of irrigation water, most of the land in the Sunderbans can be harvested only once a year. Thus the labourers find work only for one season. Moreover, size of landholding is also small; that brings down the average income. Land- man ratio in the Sunderbans is thus heavily distorted.

The Following table shows the average land holding in the sample villages and also the land : Man ratio in those villages.

Table 3.3 – The Average land holding in study villages

Village	Sample size	Landed peasants	Land owned (bighas) 1bigha=0.13 hectares	Average family size	Land:Man ratio (in bighas)
Beguakhali	41	27	2	5	2:5
Gosaba	28	12	2.5 - 3	5	2.75:5
Masjidbari	13	5	2	4	1:2
Pakhiralaya a	33	27	3 - 5	4	1
Rangabeli a	43	22	2.5 - 3	5	2.75:5

Source- Compiled from primary data collected by the author.

Distorted Land-Man ratio is the reason behind the abject poverty of the region and also the cause of high rate of outmigration. The dependency ratio in the following table also reflects the poor economic conditions of the the study villages

Table 3.4 Dependency Ratio in the Study Villages

Village	No of families Surveyed	No of employed members	No of unemployed members	Dependency Ratio
Beguakhali	41	69	126	69:126
Gosaba	28	84	141	84:141
Masjidbari	14	32	47	32:47
Pakhiralaya	32	48	77	48:77
Rangabelia	43	52	104	1:2

Source-Primary Data Collected by the Author

Households without any land get involved in fishing or work as agricultural labourers. There are mainly two types of fishermen. The first kind fishes for the market, while the second type fishes for domestic consumption. Usually the big fishermen own trawlers and go out to the sea to fish. This practice is more prevalent in the western Sunderbans and around the Reserved Forest Area. Again there are small fishermen who fish using their small motorboats. The lives of these daring men are always at risk from crocodiles, tigers and bears, specially when they fish in the Reserve Forest Area. Besides, the practice of fishing for prawn spawns, that is done in knee deep water results in frequent crocodile bites. Scholars²⁷ are of the opinion that overfishing has also resulted in a drastic decrease in the number of fishes and thus fishermen are facing a decline in profit. Many households fish from their own ponds and use the catch for domestic consumption. Often cyclones fill these ponds with saline water killing all the fresh water fishes. Cyclones also capsize boats and trawlers killing hundreds of fishermen every year. Thus the two most important livelihood practices in the Sunderbans are extremely vulnerable with respect to the changing climatic conditions and population pressure.

Fishing households were identified in the villages of Beguakhali, Gosaba and Masjidbari. There were no fishermen families amongst the sample households interviewed in Pakhiralaya and Rangabelia. Those interviewed, keep the catch for their own consumption and not for the market. Sagar island has access to the sea and from here fishermen go to the sea in big fishing trawlers. Their profit margins are far higher than the fishermen of eastern Sunderbans. They mainly catch prawns, crabs, Hilsa etc. Pakhiralaya, situated on the opposite bank of Sajnekhali Reserved Forest have many women and children involved in prawn seed collection which they do by standing in knee deep water. There have been several instances where they were attacked by crocodiles and sharks.

The following table shows the number of families engaged in fishing in Beguakhali, Gosaba and Masjidbari.

Table 3.5-Number of families involved in fishing activity in the study villages.

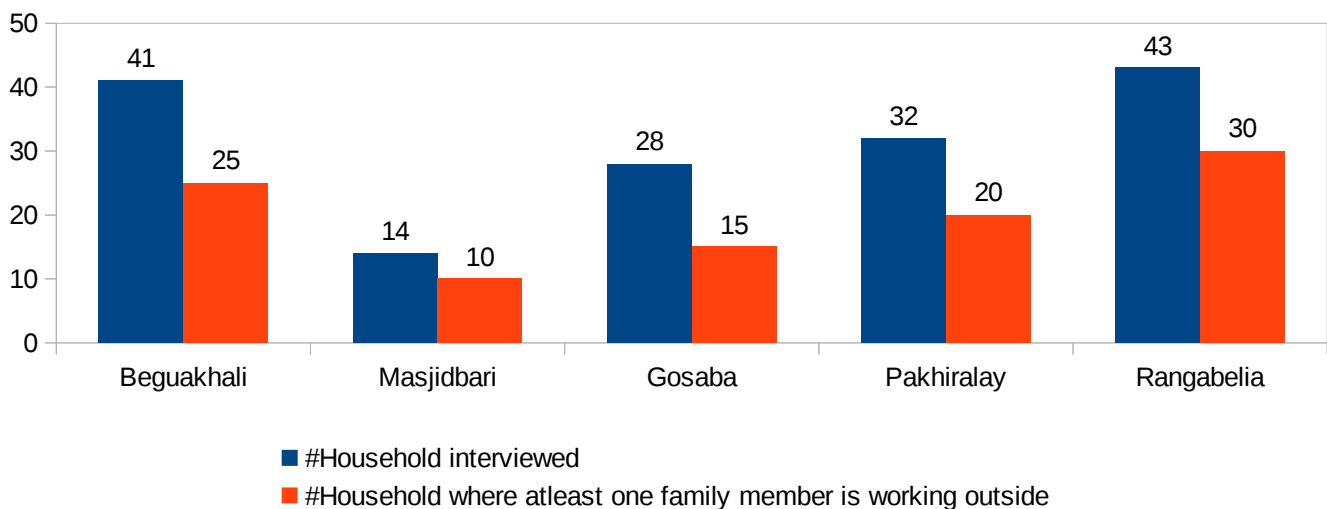
Village	Sample size	No of fishing families	Family Size	Transport	Market
Beguakhali	41	5	5	Trawlers and country boat	Sagar,Kolkata , kakdwip
Gosaba	28	10	5	Country boat,driven by motor	Canning,Gosaba Rangabelia
Masjidbari	13	7	3	Country boat	Gosaba,Canning Basanti

Source-Primary Data collected by the Author

Apart from the above occupations, other livelihood activities include, teaching, driving vans, working as health workers etc. Many women in Rangabelia and Pakhiralaya are engaged in Zari work. However, number of people involved in these, are very less.

Thus the process of outmigration from these islands is not only happening only because of climate change, a series of reasons are behind it, like lack of industrial and infrastructural development and abject poverty. These people simply do not have a choice. In fact things are getting worse with every passing year. The following table shows, the number of people working outside in the sample villages.

Volume of Migration from these Villages.



Source-Primary data Collected by the researcher

Since as part of my Master's dissertation I had done my field work in Sunderbans, I had come across families of such migrants. Many a time they did not have any clear idea where their husband, sons or daughters were. Middle men facilitated this migration process. Some of them come back during harvest times but again several are trying to take their families away with them. Unfortunately the people who are going outside to work are not always lucky, working under unhuman conditions in unknown cities takes its toll on them and as a result several of them come back severely ill. I met several such families while collecting data. The medical expenses they incur further dips their savings and thus their stay outside does not become profitable. Thus the islands of Sunderbans are left with elderlies and children, while the young have migrated out. This situation is common in both Indian and Bangladesh Sunderbans.

The population of women in Sunderbans is quite substantial and so are their problems. I have divided the women of Sunderbans in two different categories and then studied their issues.

The first group would include women who are migrating out from Sunderbans in search of jobs with their brothers or husbands or alone. This is quite a big group. These women usually unskilled go to big cities to work as maids, construction labourers or factory workers. In Sri Lanka the demand of migrant women workers doubled since the mid 1990s²⁸. The increase in the women migrant population flow manifests changes in the international labour market that has witnessed a growing demand for traditionally female jobs in the domestic sector, e.g. , maids, nurses, sex industry, and textile industries²⁹. It may seem like there are areas in the international labour market that demand immigrant labour and the specificity of this demand primarily concerns the female labour force³⁰. But studies show that women migrants are more vulnerable as climate refugees than men. Because of their increased likelihood of living in poverty, and their gendered social roles, women are more likely than men to suffer from climate change³¹. Outmigrating women who migrate alone, often take the help of an 'Agent'. These agents are usually persons from the same village, distant relatives or simply someone, who is well connected and thus facilitates the movement. During my earlier research, I had come across cases where women or girls who had gone out, had come back with remittances and have gone out again. But again there were also cases, where girls had simply disappeared. And in such cases, those agents also go missing. In fact in the recent past we are increasingly hearing about Sunderban girls and women being rescued from different parts of India ³².

The second group consists of women who are left behind in Sunderbans by their outmigrating male family members. They are of different age groups and social status. During my previous study I found that these women often turn to be the sole bread earner for the family, for the remittances sent by the male workers home is not always regular or enough. Added to that they are responsible in looking after the land, (if the family possesses any) the elderlies left behind and the children. It is not an easy job, considering the conditions of the transport and communication system, the available health facilities in these villages. Some of them work as baby shrimp collectors, standing in knee deep water. It is a very risky job and they face frequent crocodile attacks and are also paid very little. But like I have already mentioned shrimp culture is quite a profitable business but the profits are thus taken by the powerful while these women suffer in silence. Thus they too form an important subsection of the over all gender equation.

Till the end of the last century, there were almost 22 million traditional and internationally recognized' refugees, who fled their homes because of political oppression, religious persecution or ethnic troubles. In addition, to these there were also large numbers of people who could be characterized as environmental refugees; people who could no longer gain a secure livelihood in their homelands because of drought, soil erosion,

desertification, deforestation and other environmental problems, together with the associated problems of population pressures and poverty³³ In 1995, they were estimated to have totalled at least 25 million, and their numbers have been increasing. Poverty serves as an additional 'push' factor associated with the environmental problems that displace people. It is sometimes difficult to differentiate between the refugees who are driven by environmental factors and those that are impelled by economic problems³⁴. According to Kibreab³⁵, "the term environmental refugee was, invented at least in part to depoliticise the causes of displacement, so enabling states to derogate their obligation to provide asylum". This stands true for the people of Sunderbans as well. The number of such environmental refugees from both Indian and Bangladesh Sunderbans has also increased alarmingly with time.

A group of scientists along with World Wildlife Fund came up in 2011 with a policy document called, called The Indian Sunderban delta- A Vision³⁶. They are of the opinion that it will be better if an ecologically sensitive area like the Sunderbans gets slowly vacated. Nature would then perhaps take over and finish the land building process which was hampered by human activity and thus ultimately these islands could be saved. However I find this suggestion not very feasible. Where should they go? The only option left to them is to migrate out to distant cities and work as unskilled labourers. Their motherland cannot sustain them any longer, again the question is, who is responsible for that?

I would like to see the development trajectory of Sunderbans within the realms of Accumulation by Dispossession concept and the Postcolonial theory. Rosa Luxemborg, Claudia Von Werlhof, Maria Mies, Veronika Bennholdt – Thomsen ³⁷ wrote about the violent exploitation and subsuming of non capitalist sector and regions by the capitalists. Dispossession , privatization and enclosures of common resources which we see happening to Sunderbans. In The New Imperialism (2003)³⁸, David Harvey attributes the rise of the neoliberal project to chronic problems of overaccumulation since the early 1970s. Drawing on Rosa Luxemburg he distinguishes between expanded reproduction and accumulation through dispossession, and argues that the latter has become the dominant form of accumulation Finance capital and institutions of credit backed by state powers constitute the "umbilical cord" that ties together expanded reproduction and accumulation by dispossession. ³⁹ A key shortcoming of orthodox left politics, Harvey maintains, has been its single-minded focus on proletarian struggles at the point of production, and its neglect of the extraordinary array of struggles unleashed by accumulation through dispossession – struggles over displacement, privatization of water, electricity and other services, degradations of nature, bio-piracy, and so forth. The key political challenge is to forge connections between these two forms of struggle – a prospect about which Harvey is sanguine, in light of widespread recognition of the crucial role of financial arrangements in linking expanded reproduction and accumulation through dispossession⁴⁰. These are issues faced by the inhabitants of the Sunderban islands on a daily basis also. The farmers or the fishermen who had accumulated a little wealth by exerting political control, or by migrating and working outside only becomes richer but the landless living on the edges of the islands only becomes even more dispossessed. Not only does he gets more and more debt ridden due to hundred one reasons he also loses his land to the roaring tide. Shrimp farming and pisciculture are quite lucrative trades in Sunderbans. During my energy survey in the villages of Gobindopur, Khetromohanpur and Brojoballavpur in Patharpratima block ⁴¹ I came across several rich fishermen. One such fisherman was sending his reared crabs to Japan, which was going to fetch him quite a neat sum of money. But again such artificial rearing is both expensive, risky and also damaging to the natural ecosystem. For example, in order to rear shrimps, pumps running on diesel are installed in ponds. Also diesel pumps are used for extracting water from

ponds for irrigation, by farmers who carry out a second crop in the dry season. Since they do not have electricity they burn a lot of diesel thus. This is another reason why not every farmer can afford a second harvest. The state which enjoys the benefits from these revenues still has not given them electricity to make the lives of these people easier.

The definition of PostColonial is shrouded under a lot of arguments⁴² Spivak in her epic, "Can the Subaltern Speak" (1988)⁴³ analyzed whether the subaltern is capable of speaking for themselves. She went on to say that perhaps they are able to speak, but it is the inability or unwillingness of the culturally dominant to listen. The people of Sunderbans can be said to be in a similar kind of predicament. They want to share, but the question is are we, the culturally dominant willing to listen? For Spivak had identified the Indian elites as the oppressor of the Subaltern subject⁴⁴. Spivak laments the fact that even progressive western intellectuals like Foucault and Deleuze, unfortunately universalized and generalized when speaking of the third world, "Masses or referring to the workers' struggle". The same thing happens in case of Sunderbans. It is an extremely sensitive ecological zone and thus schemes and policies designed specifically for this region needs to be implemented here. Homi Bhaba has written about how the colonizer tries to mould the colonized according to their needs but never lets them become better than him⁴⁵, the same thing can be seen in Sunderbans. There are schools but when it comes to further opportunities, electricity, infrastructure, they have nothing. Their development trajectory is not given much importance by the dominant class, in this case; the State. The forces of political economy which helps the strong to accumulate while the have nots get dispossessed in the post colonial economy of our country is slowly and steadily dispossessing the dwellers of these ecologically fragile islands to distant lands and turning the into vulnerable climate refugees. The processes of uneven development set in motion since the colonial times, still continues with the integration of post colonial societies into the world economy, but as dependent and subordinate partners. The presence of multinational companies, the burden of external debts and dependence on export led growth has assured the continuance of their subordinate positions⁴⁶.

The Post Colonial theory itself has been widely criticized as well. It has been accused of being "too theoretical and not rooted enough on material concerns" ⁴⁷. Also this theory is too fixated in the past, perhaps it is in need of contemporary researchers. Like McEwans has mentioned that this theory has neglected urgent life or death questions. I think climate change and its consequences on the third world population is an area overlooked by the post colonialists. In the contemporary world, the problems of the climate migrants need to be looked into from both global and subaltern perspectives and thus researchers are required to study this issue. That is what I want to work in the future. I would like to work bring together both the macro and micro problems of Sunderbans in front of the global audience.

Since the phenomenal 5 year development Plans began in India, a lot of development policies has been executed in different parts and sectors of India. Industrial growth, increase in financial resources and opening the Indian economy to the world has revolutionised the country. However the Sunderban islands, apart from serving a very important ecological role also provides a good amount of revenues to both Bangladesh and India. Even eco tourism in the eastern Sunderbans earn revenues for rich entrepreneurs who are able to pay for the initial set up but the locals there cannot compete with such money.

The threat to the Sunderban islands and the inhabitants is becoming blatantly real with every passing day. The inhabitants of Sagar Island is loosing their land and homes on a daily basis. Some are trying to relocate in another part of the island while some are simply leaving the island for good. The embankment is broken at several places. The maintenance work is unable to keep up with nature's wrath. The dwellers on the periphery

of these islands are the worst sufferers, for they are forced to move every year after their land gets eaten away. The high school in Rangabelia has lost half its play ground, grown ups who are alumni of that school point to their now drowned football ground. Bhora kotal or high tides make the people shiver, thinking about the consequences. No one wants to leave their homeland ; however it is, yet these unfortunately people are being forced to do so. There is hardly any time to play the blame game now. It is time for action. The mid July events in Sagar and Mousuni islands again reminded us of this fact ⁴⁸ ⁴⁹. And let us not forget that the existence of our city, Kolkata also to a great extent depends on the survival of Sunderbans. Thus let us come together and take measures to stop this World Heritage Site from disappearing.

“Treat the earth well: it was not given to you by your parents, it was loaned to you by your children: We do not inherit the land from our ancestors, we borrow from our children..”

-Native American Proverb.

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