

# “VULNERABILITY AND STRUGGLE FOR EXISTENCE: A SINKING ISLAND GHORAMARA.”

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**Abstract:** *The Ghoramara Island is a part of Sagar Island as well as Sagar block and belongs to the active deltaic part of river Hugli. Till in the year 1903, this island was connected with the Sagar Island. Now it is located at 18.36 nautical miles away from Haldia dock in the estuary of Hugli. However the British happening dwelling the island throughout 1811, the location was recognized with the help of the ‘Sagar Island Society’. The island was generally colonized by the migrants from the coastal part of Midnapore and the others portion of the Bengal. This island is under stark and severe threat of corrosion and has even now vanished nearly 50% of its real area in previous four decades. This led to the submergence of a wide and vast part of this island that consisted and involved of land of agriculture and settlement. Subsequently, having lost their plots and land, the laborers and farmers of the Island turned in to landless cultivators and no work no pay daily labourers. So, it was absolute significance of crisis of job as their chief professions were farming and fishing. Thus, the livelihood pattern, situation of the occupants of Ghoramara Island has become very vulnerable through losing their own houses and lands. So, often they are bound to rehabilitate in the nearest Sagar Island. To get free, rid of this vulnerable condition, an instant step is essential to prevent and protest the erosion. Thereby find an substitute employment of the dwellers. Ecotourism can be a substitute way out which can be improved, changes and developed in the Ghoramara Island as ‘Mini-Alternative Gangasagar’. Thus, more occupation opportunities can be generated to these islanders by making the Ghoramara Island as a popular heart for the travellers. The environmental issues related to the erosion and its possessions in Ghoramara Islands along with its possible suggestive and allusive substitutions, alternatives, the present paper deals with.*

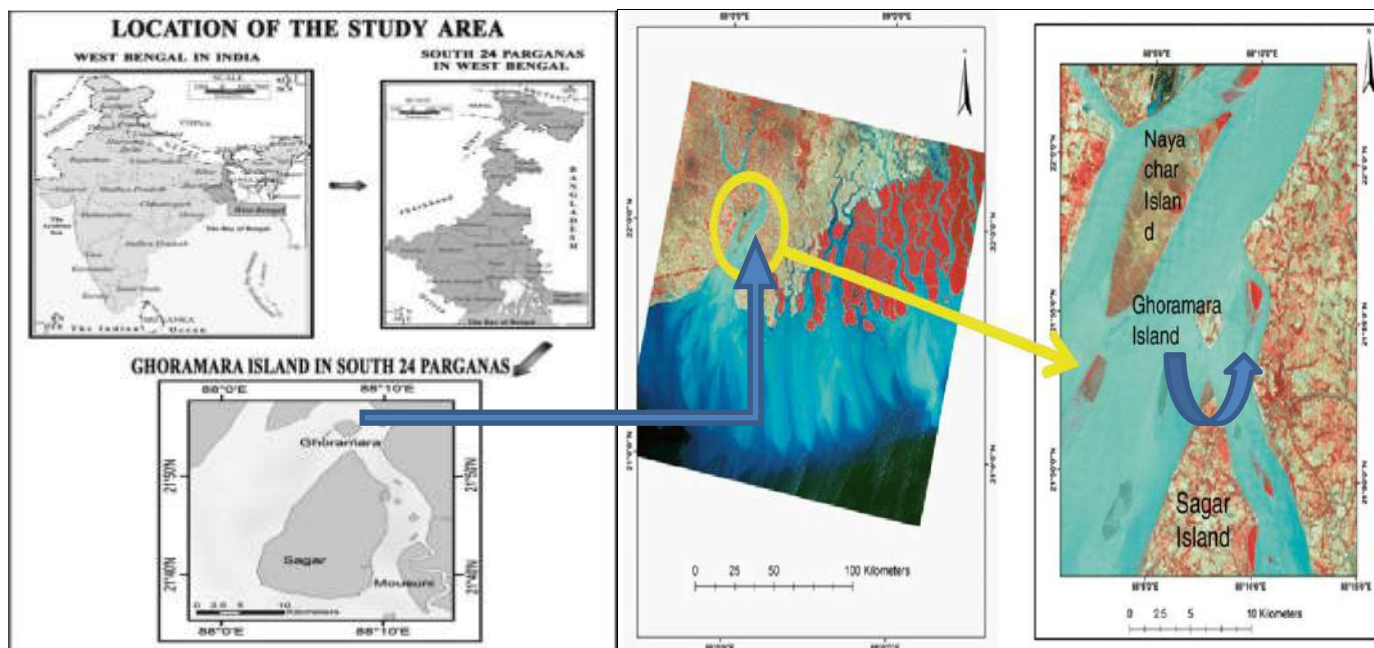
**Key Words:** *Corrosion, Vulnerable, Sinking Island, Struggle for Existence, Eco-Tourism, Ghoramara, Mini-Alternative Gangasagar.*

## 1. INTRODUCTION:

Ghoramara Island is about 30 km north of the Bay of Bengal. It has seen exceptional erosion in last few decades. It has shrunk to around 6.7 square km from 26 square km. The erosion has been quick over the previous four decades with about partial as half of the land vanished to the river Ganga throughout this periodic time. According to the census 2011, the population is now just 5193, but once was around 40,000. The secondary school was established in 1951, offered education till class eight. Classes were extended up to the tenth standard from 1981. The school has produced many doctors, engineers and teachers over the years having an enrollment of 500 students. The literacy rates have remarkably been in height of this island. As per Census 2011, the literacy rate of Ghoramara was 91.02 percent paralleled and compared to 76.26 percent of West Bengal. The dropout rates are miserably very high as students have to provide for their families or assistance their parents in cultivation or fishing.

## 2. STUDY AREA:

Sagar is the largest individual island of the Sundarban. It is located at the mouth of the estuary of Hugli and divides it into two channels. The western channel is retained as Hugli and eastern as named of Muriganga. The study area, Island of Ghoramara is situated 18.36 nautical miles away from the south east of Haldia port in estuary of the Hugli River. Its area is 3.56 Sq.km (2015). This island is stretched between 21° 53'56" N to 21°55'37" N latitude and 88° 06'59" E to 88° 08'35" E longitude (Map-1). Khasimara, Hatkhola, Bagpara, Roypara, Mandirtala and Chunpuri are the remarkable villages of ghoramara island. The Island is wholly round by the river in four sides. It is surrounded in the east by Bartala River, in the west by the river Hugli, in the north by the Mureganga River and in the south by the Bay of Bengal. This island is located with an aerial extent of 8.18 km<sup>2</sup>. It has seen the Survey of India (SOI) topographic sheet No. 79C/1, 1968, Scale 1:50 000). The major villages on this Island include Khasimara, Baishnabpara, Baghpara, Raipara, Mandirtala, Chunpuri and Khasimara Char.



Map-1: Location map

### 3. THE NAMING OF GHORAMARA ISLAND:

From Kolkata, capital city of the Indian state of West Bengal about 92 km of south, positions a smoothly and slowly disappearing island of Ghoramara. The growing-raging tidal waves have been worrying at the ends of this fragile delta island, for over three decades, decline and reducing it to half its original size. According to traditional stories, an Englishman's horse was killed by a tiger on the well-known and a famous island in Sundarbans delta. Thus was named the island of 'Ghoramara' has become that's literally meaning 'killing a horse'. To the native population, this Island was given by Britishers to "act as watchmen or guards, seeing trading ships from competing nation's alike Portugal". But the observant eyes see the land of their descendants washing missing into the depths of the river. Legend has it that two British colleagues and brothers were allocated the former Ghoramara Island as their Jamindaari (income or revenue land). Quickly, the younger brother came horse-riding on his horse to examine the land. He left his horse tied to a tree after taking a few rounds of the land. He found on returning the horse missing and discovered after that it had been eaten by a tiger. Therefore the island notoriously got its name as ghora (horse) mara (killed).



Map-2: Satellite image of ghoramara island:

### 4. OBJECTIVES:

The main objectives of the study are:

- i. To observe the vulnerability and erosional threats of Ghoramara Island.
- ii. To explore the problems and struggle for existence.
- iii. To identify the reason behind the employment crisis of the people of Ghoramara Island.
- iv. To highpoint the opportunities of ecotourism as a new approach of occupation prospect in Ghoramara Island.

**5. METHODOLOGY:**

The data, Primary and secondary both are used for this present study. The data is collected from numerous bases and sources, like-

**Primary source:** By field survey at Ghoramara Island in 2019 over questionnaire schedule, the Primary data has been collected.

**Secondary source:** Mainly from Ghoramara Gram Panchayet and also from Books, Journals and newspaper (Ananda Bazar Patrika), secondary data has been collected.

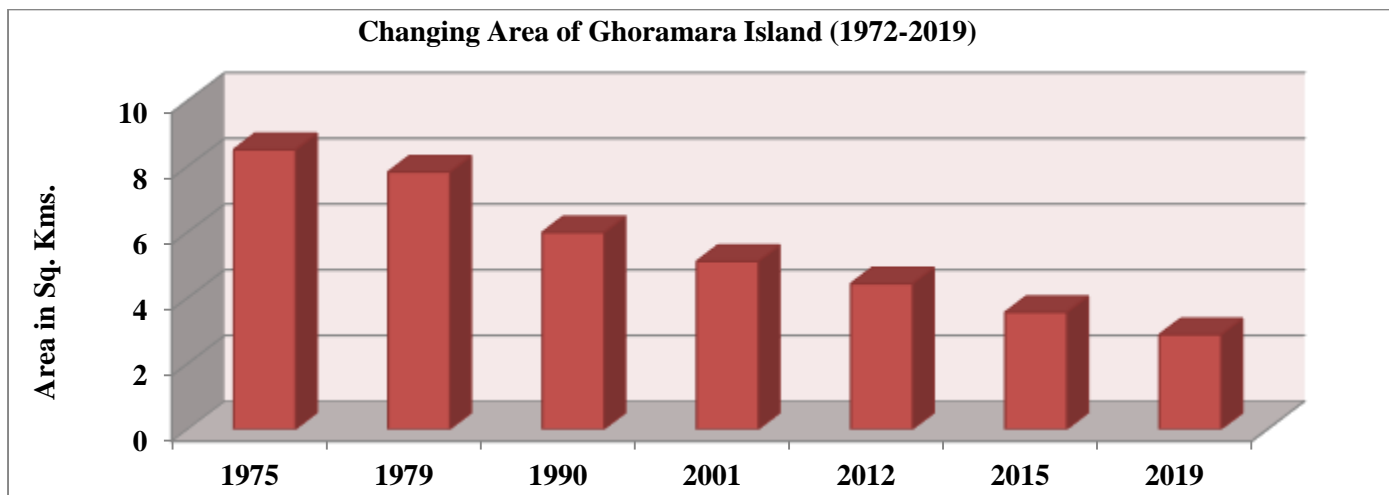
These collected data were analyzed by the application of geoinformatics with cartographic depictions and statistical tool.

**6. EROSIONAL-SHRUNK, THREATS AND STRUGGLE FOR EXISTENCE:**

The soil erosion has become a threat to its existence for Ghoramara Island. In 1972, the total area of the island was 9.09 sq. km in. But it has decreased to 3.56 sq. km in 2015. The areal decrease of land is very prominently identified in 1975, 1979, 1990, 2001, 2012, 2015 and 2019- that was 8.51, 7.83, 5.99, 5.11, 4.43, 3.56, 2.88 square kilometer respectively (Table.-1 & Fig.-1).

**Table-1: Changing Area of ghoramara island (1972-2015)**

Changing Area of Ghoramara Island (1972-2015)								
Year	1972	1975	1979	1990	2001	2012	2015	2019
Area in Sq. Km.	9.09	8.51	7.83	5.99	5.11	4.43	3.56	Around 2.88



**Figure-1: Chinging area of ghoramara island**

Ghoramara lost the villages of Khasimara, Khasimara Char, Lakshmi Narayanpur, Bagpara, Baishnabpara during the period of 1997-1990. In last three decades the resulting in severe land loss on its north-west-coast. The island of Ghoramara has been suffering from severe coastal corrosion or erosion and areal reduction. In addition, the southern part of the island started getting affected from 2005 to 2019. It proved that the ghoramara island has become shrunken that is a great threats and struggle for existence in future.

**7. RISING WATER LEVEL AND STRUGGLES FOR EXISTENCE OF GHORAMARA ISLAND:**

The speed of relative water level rise is presently approaching 3.14 mm annually near Sagar Island moreover as associated with Ghoramara Island and this might increase to three.5 mm p.a. over the following few decades thanks to warming, including the opposite global and native factors. Studies over the decades have recorded that the ocean level within the area rose from 2.26 mm a year in 2002 to 12 mm in 2014 and by another 2.9 mm in 2019. Of these figures are beyond the sea-level rise along the Indian coast (average increase of 1.7 mm a year). It's a well-documented

undeniable fact that islands have already begun disappearing Lohachara went under in 2006 and therefore the uninhabited island of recent Moore was claimed by the ocean in 2011.

**8. GHORAMARA: AS A SHANKING ISLAND:**

The rate of relative water level rise is presently approaching 3.14 mm p.a. near Sagar Island yet as associated with Ghoramara Island and this might increase to three.5 mm annually over the subsequent few decades thanks to heating, including the opposite global and native factors. Studies over the decades have recorded that the ocean level within the area rose from 2.26 mm a year in 2002 to 12 mm in 2014 and by another 2.9 mm in 2019. Of these figures are on top of the sea-level rise along the Indian coast (average increase of 1.7 mm a year). It's a well-documented proven fact that islands have already begun disappearing: Lohachara went under in 2006 and also the uninhabited island of latest Moore was claimed by the ocean in 2011. Ghoramara: A sinking island the ravages of monsoon are visible because the boat reaches Ghoramara. On a thatched shed suspends a green boarding that reads 'Ghoramara Ferry Ghat'. The board is that the only constant on the island; everything else is often changing. In the Every year, the houses and area of land-dwelling are being swallowed by the starving and hungry sea. For this, the structural topography of the island is being alert and changes. The whole area of Ghoramara was 8.51 sq km in 1975; it reduced to 4.43 sq km in 2012 and a pair of.88 in 2019. The rapid erosion of the island, located at the mouth of the Bay of Bengal, has grabbed the eye of all those attempting to grasp how rising sea levels and global climate change are impacting lives and migration patterns. Ghoramara is exclusive in other ways too. While Prime Minister Narendra Modi demonetised entirely ₹500 and ₹1,000 notes in 2016, Ghoramara, which had not at all bank or ATM ability and facility, endured on credit as there was not any way and mode of exchanging cash. Three years later, there's still no bank on the island. People make out with a post office. The last boat from the island departs for mainland province long before sunset, leaving the islanders stop from the remainder of the country at the hours of darkness. There's no grid-connected electricity and no din of recent life; only the sound of waves lapping the shores. Respective Changes in Sundarban: A report by the National Centre for Coastal Research in 2018 observed that state lost maximum land thanks to coastal erosion within the country (99 sq. km between 1990 and 2016). However, the land gain within the State, thanks to accretion, has been only 16 sq. km. An analysis of the complete Sundarbans points out that between 1969 and 2009; about 210 sq. km of landmass has eroded within the region. The Inter -governmental Panel on temperature change (IPCC) predicts that water level will raise a complete of 0.18 to 0.6 meters between 1990 and 2100. Temperature change is rapidly altering landscapes round the world. In 1995, Bangladesh's Bhola Island, also a component of Sunderbans, was half-submerged by rising sea-levels, leaving 500,000 people homeless. US state of Missouri loses about 65 sq. km of land to sea each year. Countries like Maldives, Tuvalu and coastal cities like Mumbai, Shanghai facing the best vulnerability. There may well be as many as 300 million climate-refugees by 2050 in keeping with a 2011 study.

The Ghoramara islands in the Sundarban Delta complex of the Bay of Bengal have been facing the overwhelming effects of global as well as local climate change. For the rising sea levels, high tides and floods have been swallowing a part of portions of the island. The size of Ghoramara Island has decline or reduced by more than a few times its real land mass, in the last two decades.

As per a report of The Indian Express in 2015, the island, also mentioned to as the "sinking island", "was spread over 22,000 bighas" but now it has been "reduced to approximately 5,000 bighas". For this the outcome is such that there is actually an opportunity or possibility that the island may be vanished off, wiped off of the map in early and very soon.

**9. POPULATION GROWTH OF GHORAMARA ISLAND: (1971-2011)**

The total population of Ghoramara Island has increased gradually from 1971 to 2001 census. But from 1001 to 2011 the population has decreased. In 1971 it was 4163 where 5236 in 2001 but was 5193 in 2011(Table.-2 & Fig.-2).

**Table-2: Population growth of ghoramara island: (1971-2011)**

Growth of Population: Ghoramara Island(1971-2011)					
Year	1971	1981	1991	2001	2011
Population	4163	4336	4972	5236	5193

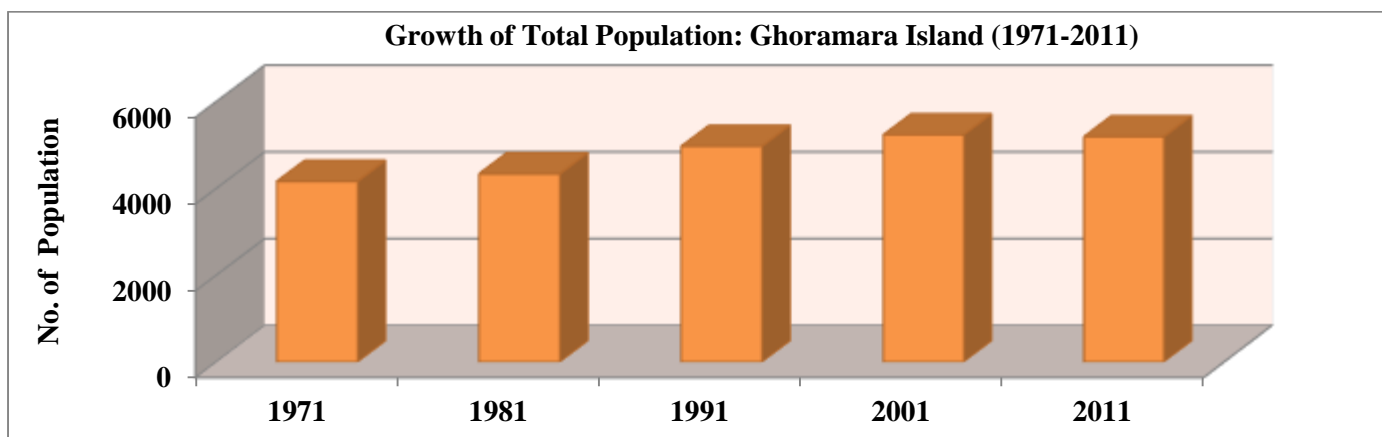


Figure-2: Growth of total population.

### 10. DECADAL GROWTH OF POPULATION: GHORAMARA ISLAND (1971-2011)

From 1991 the decadal growth has declined gradually in Ghoramara Island. In the last decade of census means 2001 to 2011 it has fallen in -0.83% (Table-3 & Fig.-3). Because the local people are shifting from this island due to the cause of insecurity of existence of this Island to nearest secured place like Kakdwip, Namkhana and Sagar Island.

Table-3: Decadal growth of population (1971-2011)

Decadal Growth of Population : Ghoramara Island				
Year	1971-1981	1981-1991	1991-2001	2001-2011
Decadal Growth in %	3.99	12.79	5.04	-0.83

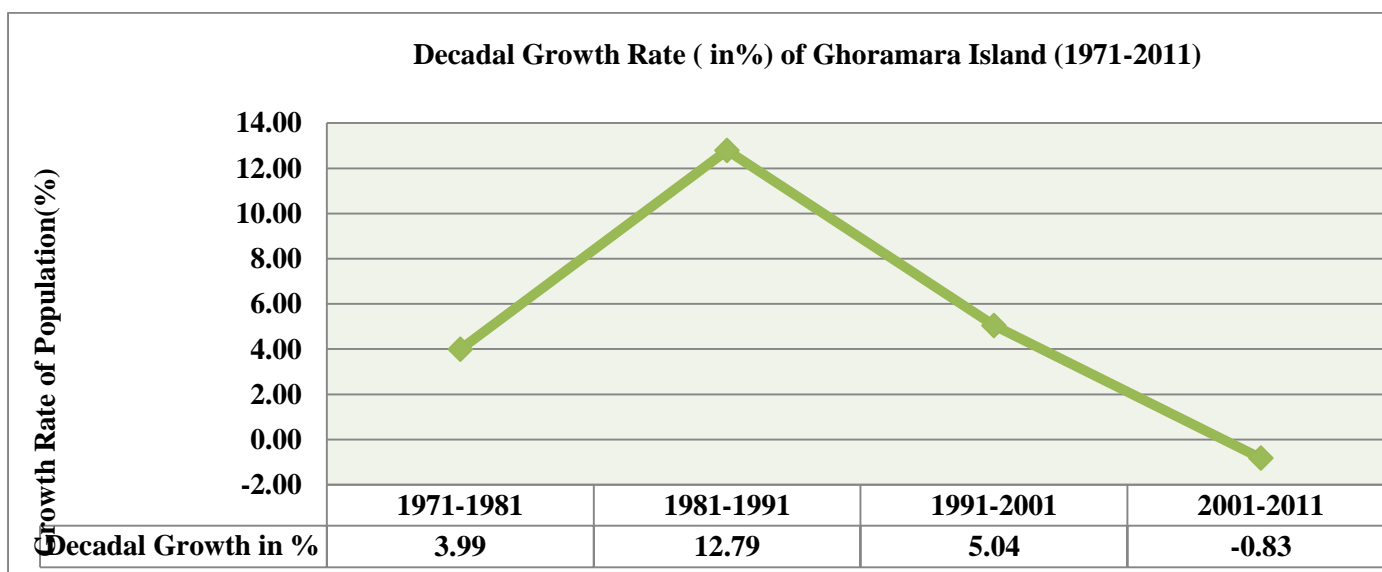


Figure-3: Decadal growth rate in (%)

### 11. POPULATION DENSITY OF GHORAMARA ISLAND:

Population density measures the pressure on the Island. From 1971 to 2001 the density of population had increased gradually (Table-4 & Fig.-4). But in this period the area of the Island has decreased. So the carrying capacity was low in that period. It is proving a vulnerability situation from 2001 to present because the density is coming decreased where area is closing. Therefore the population is shifting to secure places.

Table-4: Population density of ghoramara island.

Population Density/Sq. Kms. of Ghoramara				
Year	1971-72	1990-91	2000-2001	2011-12
Population Density/Sq. Kms.	457.98	830.05	1024.66	1172.23

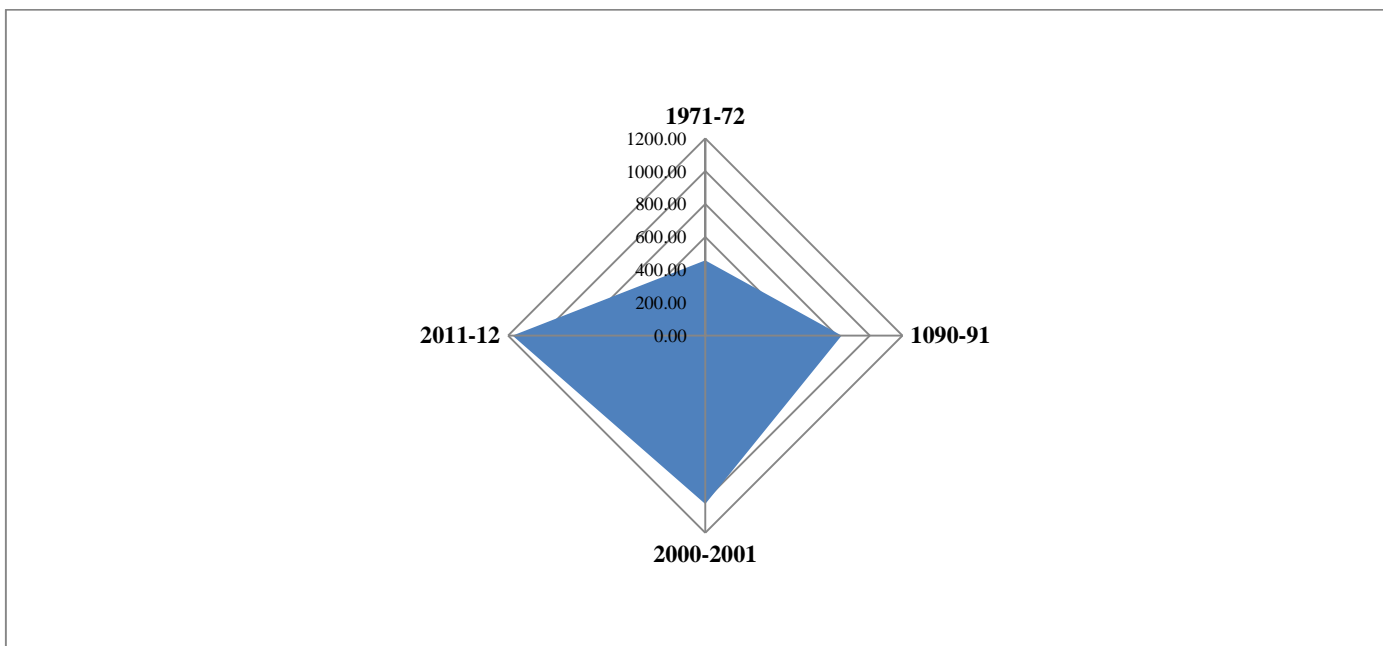


Figure-4: Population density of ghogamara island

**12. AREA COVERAGE BY HECTARES AND PERCENTAGE OF EACH LAND USE/LAND COVER CLASS FOR DIFFERENT YEARS IN GHORAMARA ISLAND:**

Table-5: area coverage and percentage of land cover: ghoramara

Land Use/Land Cover (Hactares.) Area in Ghoramara Island										
Land Cover Type	1972		1979		1989		2000		2010	
	Area	(%)	Area	(%)	Area	(%)	Area	(%)	Area	(%)
Ocean Water	57.6	6.12	64.75	7.93	13.68	2.11	22.55	4.05	40.32	8.26
Vegetation	157.68	16.74	99.35	12.16	102.96	15.85	108.5	19.48	116.37	3.83
Wet Land	151.56	16.09	145.86	17.86	155.52	23.94	98.75	17.73	87.21	17.86
Paddy field	297.72	31.61	333.03	40.77	174.24	26.82	117.09	21.09	113.49	23.24
Uncultivated Land	297.72	28.94	170.05	20.82	201.33	30.99	208.76	37.49	129.33	26.48
Fisheries	4.68	0.5	3.72	0.46	1.89	0.29	1.2	0.22	1.71	0.35
Total Area	941.76	100	816.76	100	649.62	100	556.85	100	488.43	100

Source: Jana et al, 2012

**13. OCCUPATIONAL STRUCTURE OF GHORAMARA ISLAND:**

At present, the 37 percent inhabitants are accompanying with daily labours of which the 6 percent goes out of West Bengal and works in diverse states transversely India. About 23 percent families was involved in agriculture (Table.-6 & Fig.-5) and was 17percent in fishing, 9 percent in small type of business, 8 percent was engaged in service (govt. and private sectors) and 6 percent was also in other type of occupation professions (Fig.5 & Tab.-6). Up to 2011, the total numbers of 1021 farmers, 441 farmers are initiated to be land less totally.

Table-6: Occupational structure of Ghoramara

Occupational Structure (%) of Ghoramara Island	
Daily Labour	37
Farmer	23
Fishing	17
Small Business	9
Service(Govt.+Privet)	8
Others	6

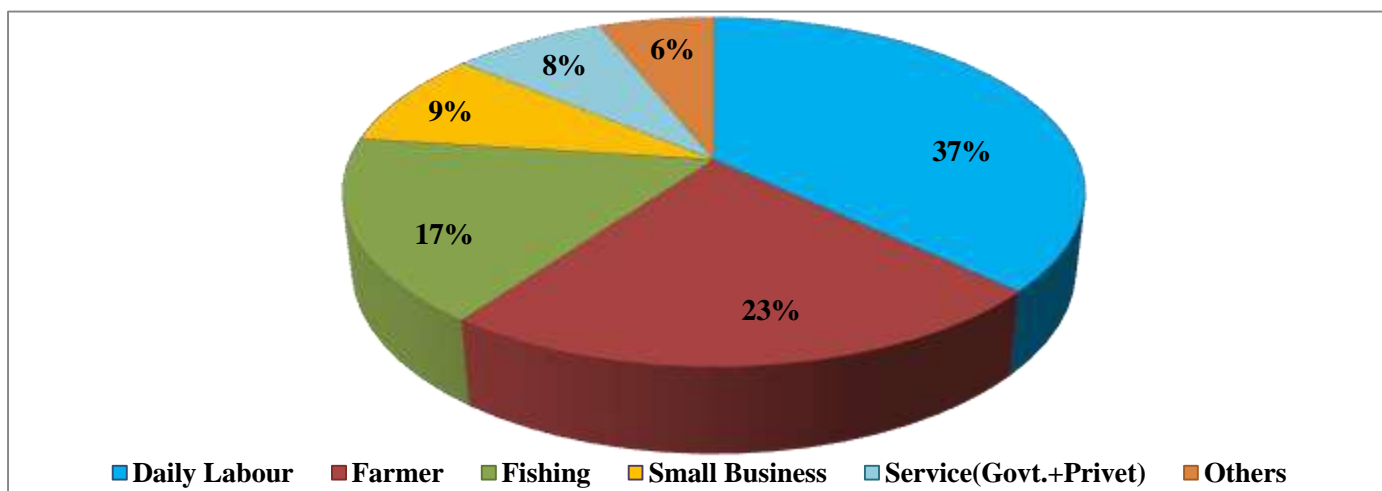


Figure-5: Occupational structure of ghoramara:

#### 14. VULNERABILITY AND MIGRATION:

The populace of this island till 2001 was about 5 thousand but thanks to the submergence of the populated Lohachara Island below water recognitions to increasing and rising sea levels, the populaces from Ghoramara Island are transferred to other adjacent Sagar and Namkhana Island. The inhabitants are forced to depart the island thanks to degradation of the natural habitat. The term environmental refuges are used for the inhabitants of this island (Jana et al, 2012). To sheltered their future and find free out of this danger and hazard 25% household of the Ghoramara Island had accepted their new and innovative land in Sagar Island, Kakdwip, Patharpratima, Falta etc. and also the remaining 75 percent families don't have any new land to settle in near future.

In Ghoramara, most of the people (44.64%) have monthly income of `1500-2500 whereas all told the colonies, except in Bankimnagar most respondents belong to the income category below ` 1,000 and ` 1000-1500. this can be significant because it shows that the income of the immigrant colony people includes a decreasing trend from their previous income at their native place in Ghoramara. the matter of unemployment is more prominent specifically in Phuldudi, south Haradhanpur and Jibantala-Kamalpur colony areas (Chakma et al, 2014).

#### 15. CONSERVATION FOR EXISTENCE OF GHORAMARA ISLAND:

The foremost thing to be done is preventing the land erosion to conserve the island. About 2500 metres of the river bank has been protected by bouldering but in numerous positions this bouldering possesses affected because of the stream erosion of the river Hugli .Therefore, together with the bouldering of the entire river bank it's necessary to take care of and take regular take care of protection which is expensive. To forestall the land erosion, the mangrove trees were planted during this region but the adverse effect of the tide and ebb likewise because the strong stream caused the full area vulnerable. But growing 'vetiver' grass on the bank of the river improves the scenario. It's succeeded in preventing the land erosion by growing its roots almost 12 to fifteen feet under earth. Moreover, this plantation essentials a minimum cost which effectual attitude for has developed much effectual steps for this Ghoramara Island.

#### 16. REHABILITATION AND ALTERNATIVES:

They are totally dependent on the Government's Rehabilitation Programme. The landless people of Ghoramara Island have been rehabilitated in the different colonies of Sagar Island such as Phuldubi, South Haradhanpur, Bankimnagar, Gangasagar, and Jibontala-Kamalpur etc.

#### 17. PROBABILITY, ESSENTIALITY AND SUGGESTION FOR INFRASTRUCTURAL DEVELOPMENT: TO EXISTENCE FOR GHORAMARA ISLAND

- i. Conducting Eco-Tourism and Eco- Park.
- ii. Creation of Natural Beautification around the Island.
- iii. Plantation by tree planting project through local administrative body as well as the both Government to protest the erosion the Island.
- iv. Concrete Guard Walls and continuation of dragging of the coastal area.
- v. Women Training for handicraft and various other decorative materials for alternative incomes.
- vi. Improvement of Jetty Ghat.
- vii. Quick Connecting Vessels Service from lort-8 of Kakdwip to Island.
- viii. To continue organized the awareness Program for local people.

- ix. Creation of various facilities by Governments.
- x. Formation of Flood Centre.
- xi. Quick Response Team (QRT) formation through the Government only for this Island.
- xii. Development for local market and price control by local task force to protest black marketing.
- xiii. Promote the well electrification.
- xiv. After all to make well drainage system with permanent concretization for rapidly passes out the tidal water of Muriganga River.

#### **18. CONCLUSION:**

The specialities of Gangasagar Mela is visiting the Kapil Muni temple and cleansing and bathing in Holy Ganga River at Sagar Island are despite the shortage of this two magnetism and attraction, there's enough relevance scope of naming the Ghoramara Island as 'Mini- Alternative Gangasagar'. The necessity of the hour is to conserve the Ghoramara Island and therefore the development of an ecotourism to rescue the Sagar Island from its future erosion and to scale back the chance of the Ghoramara Island. The naming of the Ghoramara Island as "Mini- Alternative Gangasagar" and thereby developing an ecotourism will bring success within the developing the island. The island which was connected to the most land of Kopil Muni up to 1903 possesses every eligibility to be named as "Mini- Alternative Gangasagar" which might identify the old link between Ghoramara and Sagar Island.

#### **19. ACKNOWLEDGMENT:**

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