

GLOBAL WARMING AND PATTERN OF MAIN ECONOMY IN SUNDARBAN

Biplab Das

Research Scholar (PhD)

Indian Institute of Engineering, Science and Technology, Kolkata

ABSTRACT:

In this article, the phrase “global warming” refers to the change in the Earth's global average surface temperature. Measurements show a global temperature increase of 1.4 °F (0.78 °C) between the years 1900 and 2005. Global warming is closely associated with a broad spectrum of other climate changes, such as increases in the frequency of intense [rainfall](#), decreases in [snow](#) cover and [sea ice](#), more frequent and intense [heat waves](#), rising [sea levels](#), and widespread [ocean acidification](#). The [Intergovernmental Panel on Climate Change](#) (IPCC) has produced several reports where the economics literature on climate change is assessed. In 1995, the IPCC produced its [second](#) set of assessment reports on climate change. Working Group III of the IPCC produced a report on the "Economic and Social Dimensions of Climate Change." In the later [third](#) and [fourth](#) IPCC assessments, published in 2001 and 2007 respectively, the assessment of the economics literature is divided across two reports produced by IPCC Working Groups II and III. In 2011 IPCC Working Group III published a Special Report on [Renewable Energy Sources and Climate Change Mitigation](#). The changing elements of climate change have two consequences. First a scarcity of resources like food, water, and agricultural land. Second an increase of the number of natural disasters like floods, storms, and tropical cyclones. These consequences lead to three social effects: political instability, economic instability, and migration.

carbon dioxide is added to the atmosphere, solar heat faces more trouble in getting out. The result is that, if everything else remains unchanged, the average temperature of the atmosphere would increase. As people burn more fossil fuels for energy they add more carbon dioxide to the atmosphere. This creates a blanket of carbon dioxide over the Earth's surface, which allows the short waves of the sun to penetrate the Earth's atmosphere, but prevents the

BACKGROUND OF THE STUDY:

The single human activity that is most likely to have a large impact on the climate is the burning of "fossil fuels" such as coal, oil and gas. These fuels contain carbon. Burning them liberates carbon dioxide gas in the atmosphere. Since the early 1800s, when people began burning large amounts of coal and oil, the amount of carbon dioxide in the earth's atmosphere has increased by nearly 30%, and average global temperature appears to have risen between 1° and 2°F. This increment of temperature is keenly related to the basic property of the gas. Carbon dioxide gas traps solar heat in the atmosphere, partly in the same way as glass traps solar heat in a sunroom or a greenhouse. For this reason, carbon dioxide is sometimes called a "greenhouse gas." As more

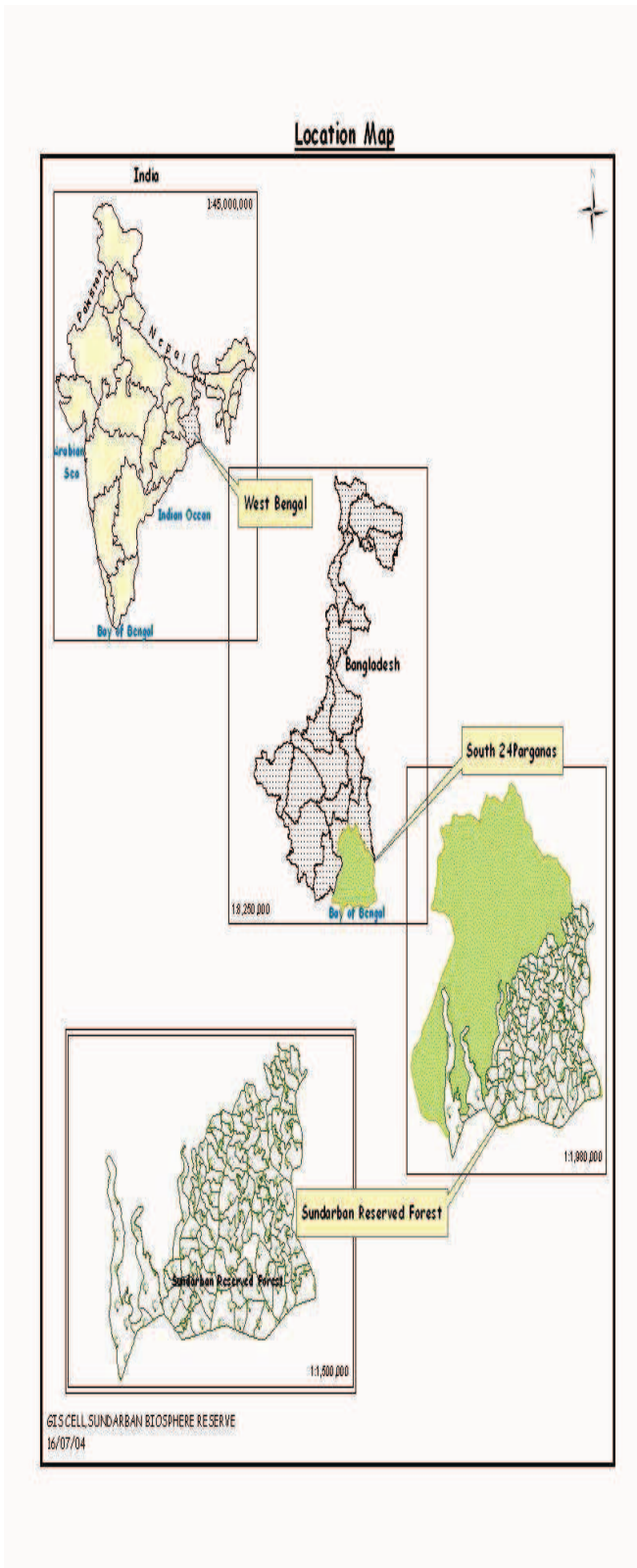


Fig-1: Location map of the study area

long wave radiations (emitted from the Earth's surface) to get out. If this activity continues for a long period of time, the average temperature of the atmosphere will almost certainly rise. This is commonly referred to as global warming. Global warming is thus the increase in the

average temperature of the Earth's near-surface air and oceans in recent decades and its projected continuation.

There are several options for how insurance could be used in responding to climate change (Arrow et al., 1996, p. 72). One response could be to have binding agreements between countries. Countries suffering greater-than-average climate-related losses would be assisted by those suffering less-than-average losses. This would be a type of mutual insurance contract. Another approach would be to trade "risk securities" among countries. These securities would amount to betting on particular climate outcomes. These two approaches would allow for a more efficient distribution of climate change risks. They would also allow for different beliefs over future climate outcomes. For example, it has been suggested that these markets might provide an objective test of the honesty of a particular country's beliefs over climate change. Countries that honestly believe that climate change presents little risk would be more prone to hold securities against these risks.

OBJECTIVES:

- #. To find out the way for wealthier nations are better able to bear the costs of adaptation to climate change than poorer ones.
- #. To find out main economical pattern in sundarban's people and to realized actual condition.
- #. To show that adaptive capacity is greater where there are government institutions and arrangements in place that allow equitable access to resources.

METHODOLOGY OF THE STUDY:

The primary data collected from the respective authority like panchayet, club and person of the villages. Though my study is based mainly on primary data but I also collected secondary data from mahakuma library, Katwa information centre, NATMO, Gazetteer, different books etc. just to get a general idea about the background of the study area.

The methodologies followed in the present report may be divided into three parts –

Pre-field methods This stage includes - i)

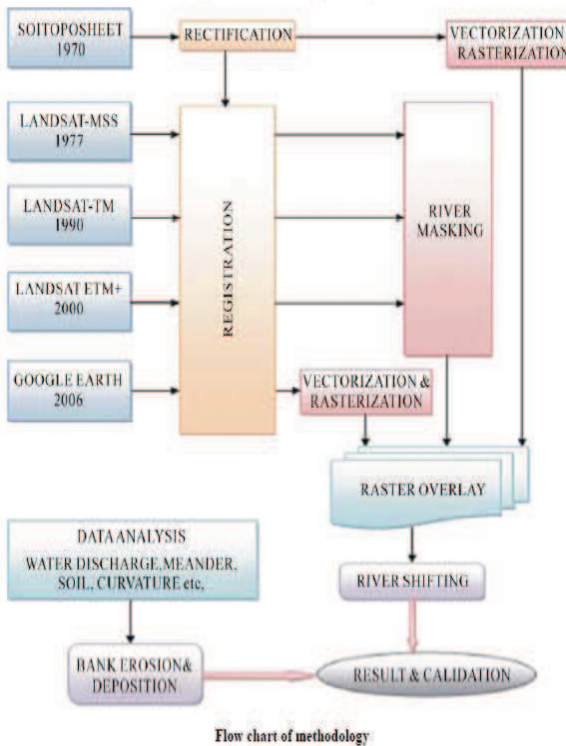


Fig-2: Flow chart of methodology

collection of districts map ii) collection of secondary information from district handbook, census report, information from B.D.O office, Panchayats ,reports,others books and journals etc. iii) preparation of questionnaire statistical schedule for collection of primary data which are closely related with the research work.

Field methods By questionnaire schedule primary data will be collected from the study area. Observation schedule also help to collect the information.include collection of primary data from aged person in different G.P. and collection of present condition of Agradweep by photograph in different reliable place of Bhagirathi river.

Post field methods Collected data will be classified in a master table and various cartographic and statistical techniques will be made in support of the theoretical discussion and preparation the final report.

RESULTS:

SOCIO-ECONOMIC CONDITION OF SUNDARBAN:

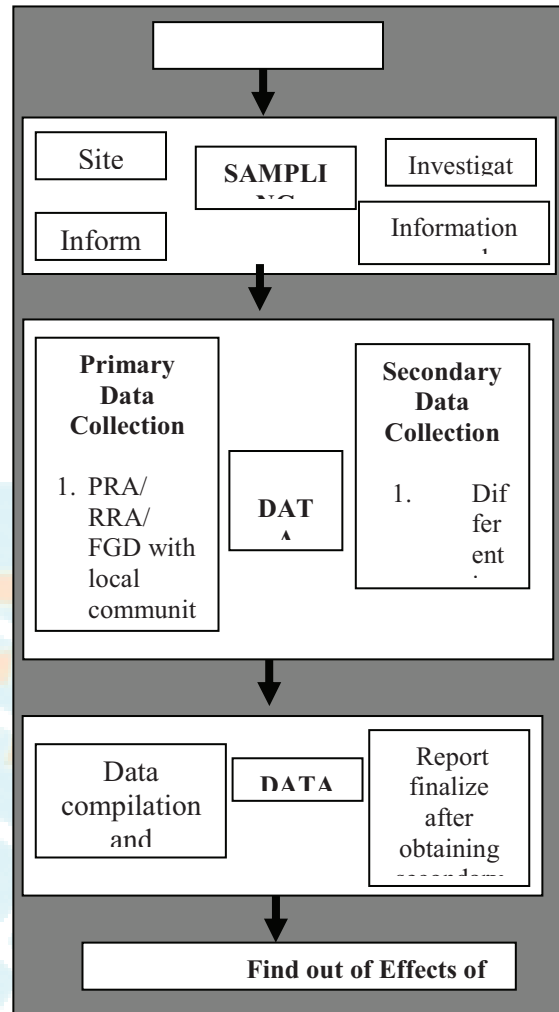


Fig-2: Lav our of the

The Sundarbans has a population of over 4 million but much of it is mostly free of permanent human habitation. The Sundarbans plays an important role in the economy of the southwestern region of Bangladesh as well as in the national economy. It is the single largest source of forest produce in the country. The forest provides raw materials for wood based industries. In addition to traditional forest produce like timber, fuelwood, pulpwood etc., large scale harvest of non wood forest products such as thatching materials, honey, bees-wax, fish, crustacean and mollusk resources of the forest takes place regularly. The vegetated tidal lands of the Sundarbans also function as an essential habitat, produces nutrients and purifies water. The forest also traps nutrient and sediment, acts as a storm barrier, shore stabilizer and energy storage unit. Last but not the least, the Sunderbans provides a wonderful aesthetic attraction for local and foreign tourists. The forest also has immense protective and productive functions. Constituting 51% of the total reserved forest estate of Bangladesh, it contributes about 41% of total forest revenue and accounts for about 45% of all timber

and fuel wood output of the country (FAO 1995). A number of industries (e.g. newsprint mill, match factory, hardboard, boat building, furniture making) are based on the raw materials obtained from the Sundarbans ecosystem. Various non-timber forest products and plantations help generate considerable employment and income generation opportunities for at least half a million poor coastal population.

It also provides natural protection to life and properties of the coastal population in the cyclone prone Bangladesh. Despite human habitations and a century of economic exploitation of the forest well into the late fortys, the Sundarbans retained a forest closure of about 70% according to the Overseas Development Administration (ODA) of the United Kingdom in 1979. At the behest of Ziaur Rahman, the President of Bangladesh, the government of the UK was then able to conduct an indepth research thanks to possession of important past records. Forest inventories reveal a decline in standing volume of the two main commercial mangrove species — sundari (*Heritiera* spp.) and gewa (*Excoecaria agallocha*) — by 40% and 45% respectively between 1959 and 1983 (Forestal 1960 and ODA 1985). Despite a total ban on all killing or capture of wildlife other than fish and some invertebrates, it appears that there is a consistent pattern of depleted biodiversity or loss of species (notably at least six mammals and one important reptile) in this century, and that the ecological quality of the original mangrove forest is declining (IUCN 1994).

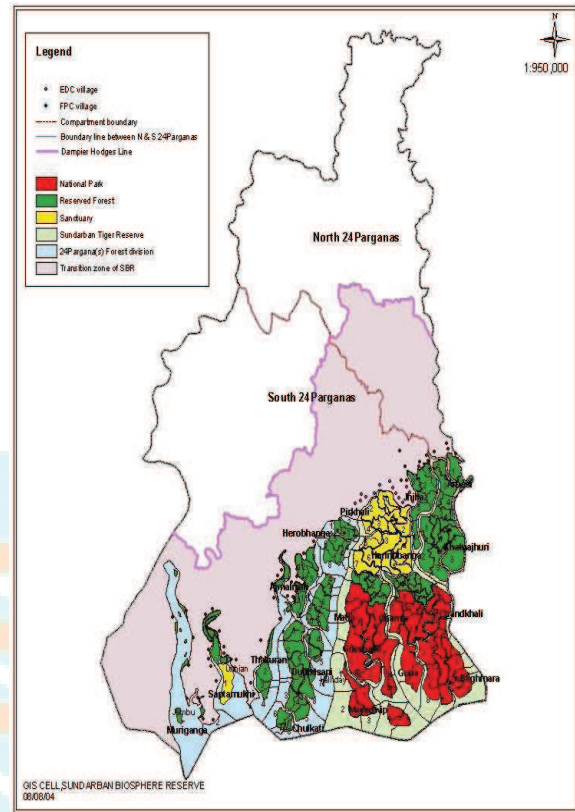


Fig-3: Biosphere reserve of Sundarban

Social services such as health, education, and police security are provided throughout most parts of the Sundarban. There are significant constraints to access during the monsoon season, retention of professional staff to use the facilities, and lack of service provision in specific locations. Access to energy is still limited with 73% of villages not electrified. Even for electrified villages many households are not connected. Access to water is often limited and many of the tube-wells in the N24P region are arsenic contaminated. The increase in arsenic is not necessarily due to new or growing incidence but due to increased testing for arsenic.

AGRICULTURE :

Fig-4: Agriculture of sundarban

The effective area of agricultural land in Sundarban is 3,15,500 ha. Typically the soils are deep fine textured, heavily structured and slow draining. Nearly 62% of total cultivable land of this region is low lying and suffers from elevated salinity during dry season, from intrusion of saline water, capillary action, and increasingly acid sulphate build up. Soil drainage is generally inadequate and deep water stagnation occurs in monsoon season. At present nearing 20% of the agricultural land in this region is multi cropped. In this region 9% of the farmers



are classified as small farmers and 35% as marginal farmers. Apart from this, the concentration of Bargadars, Pattaholders and landless agricultural labourers are very high. In 2001, per capita land was 0.084 ha. The farming community consisting of small and marginal framers.

local panchayats and for certain portion with active NGOs of the area.



Fig-5: Rice of Rabi session in sundarban

The agricultural programme consists of schemes-

- (a) Distribution of fruit plants amongst school students of this region.
- (b) Distribution of agricultural inputs during Rabi season for bringing more areas under double cropping with non - traditional crops like oil seeds, pulses and cotton etc. The major thrust of this scheme is to create additional employment opportunity for the local people and to bring change in cropping pattern.
- (c) Extension of mushroom (oyster) cultivation.
- (d) Extension of Cotton cultivation.
- (e) Demonstration of organic and vermicomposting.
- (f) Training & Workshop etc on the use of Bio-fertilisers&Bio-pesticides.
- (g) Training & Workshop on agriculture & allied activities etc.

RABI:

Farmers of this region are provided with high quality seeds mainly high yielding varieties and hybrid seeds for cultivation in specific unit area. The programmes are chalked out keeping in view the agro- climatic conditions, soil status and available irrigation facility etc. The farmers under the programme are selected in consultation with

Agriculture Division:

The activities relating to agriculture and allied activities are implemented through 27 Growth Centres located in 19 blocks of Sundarbans under the supervision of three Branch Offices namely Kakdwip (9 Growth Centres), Canning (10 Growth Centres) and Nezat (8 Growth Centres) Branch Offices.

FISHERIES:

Sundarbans being the nursery for nearly 90% of the aquatic species of eastern coast, the coastal fishery of eastern India is dependent upon Sundarban. Jhingran (1977) recorded a total of 17 species from a variety of sources and also mentioned that the diversity of the Hooghly-Matlah estuary increases along an increasing salinity gradient. Numerous species (estimated to be 400) are known to use mangrove swamps as nursery grounds (Gundermann and Popper, 1984; Lowe-McConnell, 1987). Apart from fish species, there are 20 identified species of Prawns and 44 species of crabs including two edible ones. For fishes, the Sundarbans function as nursery grounds for important commercial species of the continental shelf that are harvested in India and neighboring countries. The Sundarban delta provides physiologically suitable environment with respect to temperature, salinity and other physico-chemical parameters. Generally estuary receives abundant supply of nutrients from land drainage and large quantities of organic detritus

which is an important source of energy for a wide variety of estuarine consumers. Further, many commercial estuarine fishes grow to maturity there and make up a large part of the near-shore fishery of the northern Bay of Bengal. Other fishes and prawns that spend most of their lives in freshwater descend annually

to the estuary for spawning. Therefore, many marine and freshwater prawn and fish require this environment to complete their lifecycle. Most commercially important marine and estuarine fishes are.



Fig-6: Fisheries activity of Sundarban

A total of 478,770 people are estimated to fish in the Sundarban including the adjacent Bay of Bengal. Of these, 144,171 are active fishers. A total of 282 villages are fisher communities with high representation of schedule castes. Within the S24P there are 2,500 mechanized boats and approximately 4,000 traditional craft. The total catch from the Sundarban is estimated to be 276,000 tonnes of which nearly 200,000 tonnes is from the inland fishery. The Bay of Bengal fishery contributes an additional 185,000 tonnes, the bagnet fishery a further 28,000 tonnes and the Hilsha fishery up to 9,000 tonnes. Fishing effort has doubled in the last 15 years resulting in a decline in catch per unit effort (CPUE) from between 150-200 kg per haul to 58-65 kg per haul. Current expert opinion is that stocks are heavily exploited. The collection of PL shrimp has become a major income source with estimates of up to 400,000 collectors involved within the Sundarban. There are an estimated 1,500 to 3,000 million PL collected per annum.

JORI INDUSTRY:

In 1997 the world microfinance summit was held on Washington D.C. According to the summit definition of micro-finance is the loan of self help programme will provide poor people to earn money and survive in the society, apart from giving loan some other facilities can be provided like-storage facility, training, mutual co operation etc. We already experienced from I.R.D.P (which launched in 1980) that only providing loans was not sufficient to eradicate poverty. Some initiatives were

taken by NABARD (national Bank for Agricultural and Rural Development) in West Bengal : 1. Farmers club. 2. Development Programme for Women. 3. District Rural Industries Project 4. Area Development Plan. Last three initiatives were related with micro-finance.



Fig-7: Training centre for Jori industry of sundarban

It is worth mentioning that in Sundarban rural area's 20-27 percentages of jari workers mainly women are connected with Self Help Groups (SHGs). Among the family received some financial facility for their Self Help Group like low interest bank loan etc. but the receiving number of loan are remarkably low because they are not habituated with banking work and try to avoid debt for future. Renounced economist Md. Younus (Nobel laureate in peace, 2007) view over the earning of woman is- ' At first (any earning woman) try to make happy to her children, then to her husband, then relatives and in the bottom of the list her won take place in her mind. Besides that, they have tendency to think about the upcoming days which is inherent characteristics of woman- they want to earn to be secure in the future.

CONCLUSION:

Climate change will affect all areas of development work; mitigation and adaptation policies therefore need to be integrated into all existing projects and programmes. Climate change puts populations, particularly in low-lying poor countries like Bangladesh, at huge risk of becoming displaced. Increased attention and funding to support adaptation initiatives that enable communities to sustain their livelihoods despite increasingly hostile environmental conditions will enable families to remain on their land. A change in the quality of the atmosphere does not affect the welfare of all individuals equally. In other words, some individuals may benefit from climate change, while others may lose out. This uneven distribution of potential climate change impacts, plus the

uneven distribution of emissions globally, make it difficult to secure a global agreement to reduce emissions (Halsnæs et al., 2007:127).

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Author Profile

Biplab Das is interested in doing research on Geomorphology, disaster management and environmental issues. He obtained B. Sc (Hon's), M. Sc and M. Phil in Geography with first class from University of Calcutta and Manav Bharti University. Mr. Das is presently perusing PhD on 'Watershed Management' with national fellowship (JRF, CSIR-UGC NET) from Indian Institute of Engineering Science and Technology, Shibpur,Kolkata.