

Impact of Climate Variability on Ecology of Indian Sundarbans



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Submission: August 28, 2023; Published: September 11, 2023

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Abstract

The Sundarbans, which is the largest contiguous mangrove forest and growing delta in the world, is built by the confluence of three rivers namely The Ganges, The Brahmaputra and The Meghna. It has been declared as the World Heritage Site in the year 1987 by UNESCO and comes under Ramsar Site from 2019. The Sundarbans mangrove forest covers an area of about 10200 km² of which Indian Sundarbans is about 4200 km². There are altogether 102 islands in the Sundarbans delta among which 54 of them are inhabited and 48 of them are forested. The lifestyle of fisherman is governed by the tidal fluctuations while the agriculturalists prefer to sow salt-tolerant variety of paddy crops which is governed by the physical setup of the area. The most imperative yield of river in the Sundarbans is crab which fetches foreign cash for them. As we are in Anthropocene epoch, anthropogenic activities triggering climate change and climate crisis has adversely affected this bountiful ecosystem. In the last two decades Sundarbans has lost 110 km² of mangrove forest due to this cyclonic depressions and sea level rise in two decades. With the high tide, there is salt water mixing with the fresh water, the soil pH remains neutral after the high tide recedes. To achieve sustainable development of this diverse and rich ecosystem, a National or State-level "Committee for Saving the Sundarbans" should be formed by the government under which all NGOs may work together concatenating short-term and long-term beneficial work thus improving the better management for the livelihood of the people of the Sundarbans.

Keywords: Anthropocene epoch; Sundarbans mangrove forest; Migratory Animals; Submergence

Introduction

The Sundarbans, which is the largest contiguous mangrove forest and growing delta in the world, is built by the confluence of three rivers namely The Ganges, The Brahmaputra and The Meghna. It has been declared as the World Heritage Site in the year 1987 by UNESCO and comes under Ramsar Site from 2019. If The Sundarbans is at risk, then two megacities namely Kolkata and Dhaka will also be at risk of submergence. It is a diverse ecosystem which is rich in exotic flora and fauna. The Indian Sundarbans have been considered endangered in 2020 assessment under the IUCN Red List of Ecosystem frame work [1]. The Sundarbans mangrove forest covers an area of about 10200 km² of which Indian Sundarbans is about 4200 km². There are altogether 102 islands in the Sundarbans delta among which 54 of them are inhabited and 48 of them are forested (Figure 1).

Livelihood

The lifestyle of fisherman is governed by the tidal fluctuations while the agriculturalists prefer to sow salt-tolerant variety of

paddy crops which is governed by the physical setup of the area. The most imperative yield of river in the Sundarbans is crab which fetches foreign cash for them. The local people who are associated with this profession has bear the attack of Royal Bengal tiger when they go for capturing crabs in the interior of the jungle. They also go into jungle to collect honey and cut wood to be used as fuel. The Environmental determinism is witnessed here when environment is determining the livelihood of the residents along with possibilism is showcased when the skill of the natives help to combat the vagaries of the environment and surviving in this ecosystem braving all odds. Women participation is pivotal in every stride of life here. They play a crucial role in food gathering and planting mangrove saplings to save the erosion of the river banks [2].

Impacts of Climate Variability

As we are in Anthropocene epoch, anthropogenic activities triggering climate change and climate crisis has adversely affected this bountiful ecosystem. This ecosystem is asking for rescue. The

tropical cyclones namely Amphan, Yaas, etc. have ravaged this ecosystem immensely. Many inland ponds have turned brackish due to salt sprays during these cyclonic depressions. Sea-level rise is also another problem which is being faced in this ecosystem. In the last two decades Sundarbans has lost 110 km² of mangrove forest due to this cyclonic depressions and sea level rise in two decades a report of The Economics Times says so. The very truth has been revealed that if Mother Nature survives then only living and non-living components thrive well otherwise everything will perish in this vibrant ecosystem. The sea level change at Diamond Harbor Station near Sagar Island shows that there is considerable rise in sea level which is causing severe damage to the coastal ecosystem, livelihoods and infrastructure. A study shows that in Sundarbans also cultivable land has decreased at the cost of built-up area, sandy area and mixed open land. Moreover, the loss of intertidal mudflats is having an impact on habitat of migratory

and native waterbirds and other fauna of this ecosystem [3]. Bonn Convention works for the conservation of Wild Migratory Animals worldwide is also concerned about the loss of habitat for the migratory animals in the Sundarbans as well. The plantation of mangrove is very pivotal because it acts as a shield from the adverse impact of severe cyclones namely Amphan, Foni, Yaas etc., saving the residents surviving behind the mangroves. The stilt roots and the pneumatophores help to bind the soil together and reduce erosion. These supporting and aerial roots add beauty to the scenery of the landscape and waterscape which is a real treat for the eyes when there is a low tide. With the high tide, there is salt water mixing with the fresh water, the soil pH remains neutral after the high tide recedes. This is the amazing fact about this ecosystem which cleans itself automatically. Due to this neutral soil condition, the mangrove vegetation thrives well here and adds to the scenic beauty of this landscape and waterscape [4].

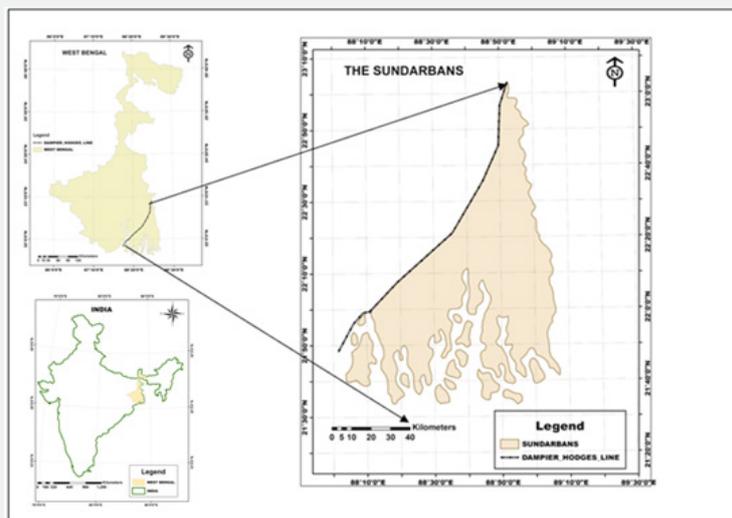


Figure 1: The Location Map of Indian Sundarbans.

Conclusions

This is high time when we all should come forward and join hands in hands with local residents to help restore, preserve and save the Sundarbans so that our future generation may experience and enjoy the bounty of Mother Nature that we are blessed with [5]. To achieve sustainable development of this diverse and rich ecosystem, a National or State-level “Committee for Saving the Sundarbans” should be formed by the government under which all NGOs may work together concatenating short-term and long-term beneficial work thus improving the better management for the livelihood of the people of the Sundarbans.

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DOI: [10.19080/ECO.A.2023.03.555607](https://doi.org/10.19080/ECO.A.2023.03.555607)

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