

# The Threat of Climate Change and Policy Uncertainty to Sunderbans and its People



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## Introduction

The Sunderbans Delta is a region spread across 40,000 sq km in India and Bangladesh at the confluence of the Ganga and Brahmaputra as they flow into the Bay of Bengal. It is home to the largest mangrove forests in the world. The mangroves cover 10,000 sq. km closer to the coastline. These mangroves are critical for both the fragile ecological balance and the livelihoods of the 13 million people who inhabit this region.

Sunderbans' mangroves have historically acted as a natural barrier for inland areas from severe weather events like storms, cyclones, and floods. Their complex root system thrives in salty waters and low oxygen, filtering salt and stabilising the coastline. This critical ecosystem, a UNESCO World Heritage Site since 1997, shelters endangered species and prevents soil erosion and salinization.

This blueprint covers the Indian Sunderbans, which are part of West Bengal's North and South 24 Parganas districts. We analyse the West Bengal Inland Fisheries Act, 1984, which is the current law, and the West Bengal Inland Fisheries Policy, 2023, a policy vision document. This blueprint prescribes policy changes and approaches to shield the Sunderbans' mangrove ecosystem and empower fisherfolk communities for sustainable livelihoods.

## Current Situation

### Mangroves

The Sunderbans mangrove forest safeguards 13 million people from cyclones and rising seas. This vital sanctuary protects several endangered species, like the Royal Bengal Tiger and serves as a breeding ground for several commercially critical fish species.

Since 1971, the human population of the Sunderbans has grown 354 percent, putting pressure on resources and the environment. In a study conducted in 2012, the Zoological Society of London (ZSL) found that the Sunderban coast is retreating by 200 metres a year. These mangroves help mitigate climate change and account for 14% of global ocean carbon sequestration.

The shrinking of the Sunderbans increases salinization, which harms agriculture productivity inland. The impact of cyclones, a frequent occurrence in the region, is also made worse as the mangroves get depleted. Shrinking habitats and rising tiger populations have also led to human-animal conflicts, with conservative estimates suggesting 3,000-6,000 human lives lost to tiger attacks. The current regulatory environment which prohibits people from entering protected areas encourages The actual lives lost are likely to be much higher

## Fisherfolk communities

The 2011 census shows that 4.4 million people live in the Indian Sundarbans, with a World Bank study estimating their average daily income at a meagre \$0.90. While relatively better-off communities in the region own land and engage in agriculture, people from the more marginalised sections of society live close to the waters and rely on fishing. The income for these marginalised communities dips even lower, reaching \$15 monthly.

Rising sea levels, driven by climate change, have led to shrinking fish populations, jeopardised fisherfolk incomes and threatened coastal communities. Restricted market access compounds these problems, further squeezing livelihoods. Traditional practices struggle to adapt to environmental shifts, and technological advancements remain out of reach.

These multifaceted challenges demand comprehensive solutions. Sustainable resource management, technological advancements, and improved market access are crucial for improving the lives and livelihoods of these communities.

## Policy Challenges

Overfishing, deforestation, and a dearth of sustainable options are pushing the Sundarbans mangroves toward an ecological crisis. However, the West Bengal Inland Fisheries Act 1984 exacerbates the problem instead of providing solutions. This Act grants excessive authority to officials, creating fertile ground for corruption and hindering the development of sustainable solutions. Provisions like Section 8, which empowers officials to confiscate fish tanks built by local communities for alternative income, stifle self-reliance and innovation. Furthermore, Section 17 meddles with local labour markets, disrupting established dynamics. Section 18 confines appeals against officials within their own department, offering no meaningful avenue for redressal.

The West Bengal Inland Fisheries Policy, 2023, a vision document from the West Bengal state government, recognizes the shortcomings of the previous Act by advocating for sustainable practices and empowering fisherfolks through increased freedom and participation. This shift encourages private sector involvement. A key feature is the introduction of long-term water body leases for private investors, contingent on adopting sustainable aquaculture practices. This approach incentivizes responsible investment and combats overfishing.

The policy recognizes the importance of data-driven management. By documenting fish production, revenue, and water quality, stakeholders will gain valuable insights for informed decision-making. This transparency will ensure responsible resource management and help identify areas for improvement.

Financial support will play a crucial role in empowering marginalized communities and women. The 2023 Policy offers state-backed insurance and credit access, de-risking aquaculture ventures and making participation more accessible. This approach fosters a sense of shared responsibility and ensures that the benefits of sustainable practices reach those who need them most.

The policy vision acknowledges the potential of technological advancements. While recognizing ethical considerations, it promotes the responsible use of genetically modified fish to increase productivity and disease control. Public-private partnerships for testing facilities also aim to enhance research and development, providing long-term solutions for sustainable management. The policy prioritises building community capacity through skills training programs to equip them with the necessary knowledge to participate actively in sustainable fishing practices and management decisions.

However, the 2023 West Bengal Inland Fisheries Policy falls short of addressing critical mangrove conservation needs directly.

## Policy Recommendations

The Sundarbans mangrove forests exemplify the “tragedy of the commons,” where unregulated access and short-term individual gains can lead to collective loss. The 2012 study by the Zoological society of London warns of their potential disappearance if action is not taken, highlighting the urgent need for concrete mangrove conservation solutions.

Exploring alternative ownership models is essential to break free from the current limitations. Some methods include:

### **Community-based ownership**

Empowering local communities by granting communities ownership and decision-making power fosters a sense of stewardship and incentivizes sustainable practices. Community-based co-management may also be a suitable option. Here, communities collaborate with government agencies to manage resources, drawing on shared expertise and resources. Initiatives like Joint Forest Management, which originated in West Bengal in 1988, demonstrate the success of this approach, where communities actively protect and manage resources, leading to improved outcomes for both livelihoods and ecosystems.

### **Conditional ownership**

Allowing private entities to hold leases with sustainability clauses and community involvement could also work. For example, in Indonesia, conditional logging concessions are granted to private companies with stringent requirements for reforestation, biodiversity protection, and community development. Independent monitoring and reporting ensure compliance.

### **Private ownership**

Privatising ownership and offering incentives for proper management could work. For instance, Costa Rica’s innovative Payments for Ecosystem Services (PES) program directly compensates landowners for sustainable forest management of mangroves.

## Conclusion

The Sundarbans face monumental challenges. Protecting its mangroves while ensuring the livelihoods of millions who depend on them requires a shift in policy. The West Bengal Inland Fisheries Policy, 2023, offers a promising foundation for sustainable fisheries management. It focuses on empowering communities, incentivizing sustainable practices, and leveraging technology. However, a crucial piece of the puzzle—mangrove conservation—remains unaddressed.

Alternative ownership models, such as community-based management, conditional ownership with sustainability clauses, and private ownership incentivized by ecosystem services payments, offer promising avenues for sustainable resource governance. By harnessing local knowledge, fostering collaboration, and leveraging innovative approaches, these models can help break the cycle of environmental degradation while ensuring the resilience and prosperity of the Sundarbans ecosystem and its inhabitants.

