

# West Bengal Inland Fisheries Act 1984, Climate Change and the Sundarbans people



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# WEST BENGAL INLAND FISHERIES ACT 1984, CLIMATE CHANGE AND THE SUNDERBANS PEOPLE

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## **Abstract**

In this position paper, we discuss the policy framework in the Sunderbans in the context of climate change induced events which threaten the lives and livelihoods of the inhabitants of the Sunderbans region. First, we highlight the importance of Sunderbans mangrove forests to sustain the ecological diversity in the region and to support the livelihood of its people. Second, we examine the West Bengal Inland Fisheries Act 1984 and The West Bengal Marine Fishing Regulation Act, 1993. We discuss their negative impact on long term sustainable private investment. Further, we also discuss the reforms promised by the West Bengal Inland Fisheries Policy 2023. Finally, we conclude by offering policy recommendations.

**Keywords** Sunderbans mangrove forests · Climate change · Fisherfolks · Animal-human conflict · Regulatory Environment

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## 1 Introduction

Sunderbans are an archipelago spread across India and Bangladesh. These are low-lying islands found at the confluence of three major rivers, Ganga, Brahmaputra, and Meghna, as they flow into the Bay of Bengal. They cover an area of 40,000 sq. km and are barely 0.9m to 2m above sea level. The area is home to the most extensive mangrove forests in the world. The Sunderbans mangrove forests are spread over an area of 10,000 sq. km, with 62 per cent in Bangladesh and 38 per cent in India<sup>2</sup>. This is the world's largest such region, characterized by a vast network of tidal waterways, mudflats, and small islands.

Because of their unique geography, the Sunderbans support an ecological diversity not found elsewhere. Sunderbans is home to a wide array of biodiversity. This includes the Royal Bengal Tigers, which is an endangered species; estuarine or saltwater crocodiles, which are the only surviving members of the Jurassic time<sup>3</sup>; olive ridley turtles, water monitor lizards, gangetic dolphins<sup>4</sup>, irawadi dolphins, batagur baska<sup>5</sup>, and various amphibians, invertebrates, birds and fish species. Sunderbans is also home to more than 300 varieties of plants<sup>6</sup>. Some 78 species of mangroves have been recorded in the area, making it the richest mangrove forest in the world<sup>7</sup>. The presence of 62 species of macrofungi, as documented by Dutta et al. (2013), further underscores the biological diversity and ecological importance of this mangrove habitat. Mandal et al. (2019) highlight that these mangroves are vital breeding grounds for numerous aquatic species. Besides, the Sunderbans are also home to about 13 million people.

The mangrove forests play a critical role in preserving and protecting the pulsating life of the Sunderban region. The mangrove forests of the Sundarbans are not merely terrestrial formations; they are dynamic ecological entities that contribute to the protection of inland areas from severe weather events. Mangroves have evolved as salt-tolerant ferns, trees, and shrubs adapted to live in coastal conditions. To deal with the saline waters of the sea, they have developed a complex salt filtration system. Such a filtration system helps them cope when they are entirely immersed. Further, they are also equipped with a complex root system to cope with saltwater immersion and wave action. The mangroves are also well adapted to the waterlogged mud conditions and low oxygen levels because of their root structures, which sometimes come out of the soil like straws.

Because of their unique and composite biological structure, mangroves can support a fragile and complex ecological system which provides shelter to several critically endangered species. For this reason, UNESCO designated the Sunderbans as the World Heritage Site in 1997. However, the mangrove forests in the

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<sup>2</sup>Mitra A and K Banerjee, 2004. Focus Indian Sundarbans. In Living Resources of the Sea, Ed., Banerjee SR, WWF India: Canning Field Office, 24 Parganas (S), West Bengal, pp. 96.

<sup>3</sup><https://anubooks.com/wp-content/uploads/2017/02/Special-Issue-KK-Verma-Part-I-23-articles.pdf#page=25>

<sup>4</sup>[https://www.wwfindia.org/about\\_wwf/critical\\_regions/sundarbans3/about\\_sundarbans/](https://www.wwfindia.org/about_wwf/critical_regions/sundarbans3/about_sundarbans/)

<sup>5</sup>It was believed to be extinct, until it was found in the Sunderbans

<sup>6</sup><https://sundarbantigerreserve.org/?tab=Flo>

<sup>7</sup><https://whc.unesco.org/en/list/452/>

Sunderbans also protect the region from natural hazards such as coastal soil erosion, wave damage, tsunamis, cyclones, storms, and flooding. They also protect the inland soil from becoming saline due to seawater.

While mangroves play a critical role in protecting and preserving the local environment, the mangrove forests contribute significantly to the global fight against climate change. Mangroves sequester carbon dioxide and store it in the soil. Almost 75 to 95 percent of the carbon sequestered by the mangroves stays below ground and is stored in their dead roots<sup>8</sup>. They account for 14 percent of carbon sequestration by the global ocean<sup>9</sup>.

By supporting the ecological system of the Sunderbans, the mangroves also protect the lives and livelihoods of the inhabitants of the region. The people of Sunderbans depend on agriculture, fishing, and forest produce for their livelihoods. By absorbing the intensity of tsunamis and cyclones, they control the damage caused by such natural events. The mangroves prevent the agricultural lands from salination from the seawater. Mangroves and a network of water channels provide safe breeding spaces for several commercially important fish and crab species. Hence, Sunderbans mangroves provide livelihoods for millions of fisherfolks living on the eastern coastline of India and Bangladesh.

In this position paper, we discuss the socioeconomic conditions of the fisherfolk living in the Sunderbans and their critical dependence on the fragile ecological system of the Sunderbans for their livelihoods. Then, we discuss the vulnerability of the Sunderbans to climate change. We also discuss how the gaps in the current policy contribute to the ecological destruction of the Sunderbans, threaten the livelihoods of its people, and hurt human dignity. Finally, we discuss the recent policy reform and present alternative policy responses to ensure the long-term health of Sunderbans and the variety of life forms that it supports.

## 2 Socio-Economic Status of the Sunderbans Fisherfolks

The Sunderban region in the Indian territories is located in the two districts of North 24 Parganas and South 24 Parganas in the state of West Bengal. The Sunderban region covers 32% of North 24 Parganas and 65% of South 24 Parganas. Despite being an ecologically sensitive and fragile zone, it is a densely populated region. As per the last census published in 2011, the population in the region was 4.4 million. At around 1,100 per sq km, the population density is much higher than what is typically found in ecologically sensitive coastal areas. However, if we also include the Sunderbans in Bangladesh, the region is home to about 13 million people. The population in the Indian Sunderbans has increased by 354 per cent in 50<sup>10</sup> and 16 times in the last 140 years years<sup>11</sup>.

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<sup>8</sup>Alongi DM, Clough BF, Dixon P, Tirendi F. Nutrient partitioning and storage in arid-zone forests of the mangroves *Rhizophora stylosa* and *Avicennia marina*. *Trees*. 2003;17:51–60.

<sup>9</sup><https://www.tandfonline.com/doi/full/10.4155/cmt.12.20>

<sup>10</sup>The official 2021 Population Census is not yet published.

<sup>11</sup><https://www.saspublishers.com/article/17793/download/#:-:text=The%20study%20area%20covers%20on,354%25%20in%20las>

A World Bank study estimated that the average per capita income in the Sunderbans is only 0.9 USD per day<sup>12</sup>. Moreover, a high degree of daily vulnerability in income also contributes to extreme poverty. Based on primary surveys, some studies sketch the socio-economic profile of people and communities living in the Sunderbans region. These studies suggest that most of the people living in the Sunderbans rely on agricultural produce, fishing, shrimp cultivation, and forest produce, such as honey. While the region is largely economically poor, relatively well-off people who own land and other assets depend on agriculture. These people are located mostly in the interiors of the Sunderbans. On the other hand, people who do not have land live closer to the coast and rely on fishing and forest produce.

One of the studies<sup>13</sup> on socially marginalized communities living in the Sunderbans surveyed 132 members of a marginalized community or Scheduled Caste (SC) category living in the Sunderbans area and found that all of them were fisherfolks. The fishermen were impoverished and earned \$14 to \$15 a month. Most of them were illiterate and used relatively primitive fishing methods such as dug-out canoes, individual use casting nets, and gill nets. Madhu, Sarkar, and Acharya (2021) also suggest that Sundarban fisherfolk primarily derive their livelihood from traditional fishing methods and gear. It should be noted that while gill nets capture fish, they also kill any species that swim into them, thereby causing significant ecological damage. Another study<sup>14</sup> documenting the socio-economic status of women engaged in fishing in the region highlighted the poor human development in the region. The study shows that all the women engaged in fishing belonged to socially backward communities. 87 per cent of the women are illiterate and work on subsistence levels.

Another study (Rimmi Dutta 2022) discusses the socially vulnerable status of women and suggests that gender discrimination is quite common in the Sunderbans area. This gender discrimination translates into hard physical labour, greater risks of Intimate Partner violence, other forms of domestic violence, intimidation, and less freedom in decision-making in the household. The women also particularly suffer due to subsistence living, poor quality of drinking water, lack of education and health facilities and lack of work opportunities. The findings from another study<sup>15</sup> suggest that sections of people who are not socially marginalized are slightly better off but still living close to the poverty line. This study includes a large portion of non-marginalized sections. In this survey, a significant fraction of the respondents were engaged in agriculture and had annual incomes from six hundred dollars to twelve hundred dollars.

A synthesis of these surveys suggests that people living closer to the coastlines, who do not have land for agriculture and depend on fishing, are most vulnerable in the Sunderbans region. The Sunderban mangrove forest is also the only mangrove forest inhabited by tigers. Recent reports suggest that Sunderban forests are

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<sup>12</sup><https://documents1.worldbank.org/curated/en/300751587116898295/pdf/A-Policy-Consideration.pdf>

<sup>13</sup><https://core.ac.uk/download/pdf/33721084.pdf>

<sup>14</sup><https://www.indianjournals.com/ijor.aspx?target=ijor:ijee3&volume=53&issue=2&article=031>

<sup>15</sup><https://www.cropandweed.com/archives/2016/vol112issue3/15.pdf>

nearing their tiger carrying capacity<sup>16</sup>. This creates additional risks for people living closer to the coastlines and mangrove forests.

### 3 Climate Change and Sunderbans

The Intergovernmental Panel on Climate Change, in its 2007 report<sup>17</sup>, highlighted robust evidence for climate change. It also suggested that this climate change is still happening and has happened due to anthropogenic activities. Studies have expressed concerns over climate change and its implications<sup>18</sup>. Global temperatures have increased by about 1°C, and the last five years have recorded the highest temperatures globally (UNDP 2019). Climate-induced disasters have also become evident in many parts of the world.

The Sunderban region is particularly susceptible to climate change and rising sea levels because the region is a network of low-lying islands (barely at sea level) and estuaries. In a study<sup>19</sup> conducted in 2012, the Zoological Society of London (ZSL) found out that the Sunderban coast was retreating up to 200 meters a year. The official estimates are that agricultural activities have destroyed tens of thousands of hectares of mangrove in the last decades. The study notes that the mangroves risk disappearing if their habitat is not protected. The mangroves are resistant to submersion in water. However, they cannot survive if the tidal inundation occurs too frequently or lasts too long.

The mangroves can reduce the risk of many hazards<sup>20</sup> such as cyclones, sea level rise, erosion, storms, wave action, etc. The loss of mangrove forests also affects the region's susceptibility and vulnerability to cyclones. The tropical delta region where the Sunderbans is located is also prone to cyclones and storms. The United Nations has identified the coastal areas of Bangladesh as the most prone to cyclones. The neighbouring coastal areas on the Indian side of Sunderbans are equally at risk. For example, the region was hit by four cyclones between 2019 and 2021 - Fani, Amphan, Bulbul and Yaas. The rising global temperatures induced warming of waters and rising sea levels have increased the propensity of cyclones and tsunamis in the region<sup>21</sup>. In May 2020, cyclone Amphan struck the region and destroyed 1600 hectares of mangrove forests<sup>22</sup>. Similarly, significant tracts of mangroves have been lost either due to cyclones or submersion in water.

The coastal areas of the Sunderban region face risks of loss of mangrove forests and the resultant soil and coastal erosion due to flooding and tidal waves. In the past few decades, several islands have been permanently flooded<sup>23</sup>. For example, the islands of Suparibhanga, Lohachara, South Talpatti Island, and Kabasgadi have

<sup>16</sup><https://thewire.in/environment/sundarbans-capacity-tigers-cooperation-bangladesh>

<sup>17</sup>[https://www.ipcc.ch/site/assets/uploads/2018/02/ar4\\_syr\\_full\\_report.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/ar4_syr_full_report.pdf)

<sup>18</sup>Moss, R. H., Edmonds, J. A., Hibbard, K. A., Manning, M. R., Rose, S. K., Van Vuuren, D. P., Meehl, G. A. (2010). The next generation of scenarios for climate change research and assessment. *Nature*, 463, 747

<sup>19</sup><https://phys.org/news/2013-01-bengali-forests.html>

<sup>20</sup><https://tamug-ir.tdl.org/server/api/core/bitstreams/f22ad1d6-cead-48ca-8921-63edb389e51b/content>

<sup>21</sup>[https://www.cms.int/sites/default/files/publication/fact\\_sheet\\_sundarbans\\_climate\\_change.pdf](https://www.cms.int/sites/default/files/publication/fact_sheet_sundarbans_climate_change.pdf)

<sup>22</sup>[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3657203](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3657203)

<sup>23</sup><https://thediplomat.com/2020/05/in-the-indian-sundarbans-the-sea-is-coming/>

been completely submerged in water. Climate change has also resulted in the loss of biodiversity in both flora and fauna. Due to an increase in the salinity of water and loss of protected estuaries, several aquatic species face greater risks. While some of these aquatic species are critically endangered, others are commercially critical, particularly for the livelihoods of people living in the region.

### 3.1 Impact of Climate Change in Sunderbans on Livelihoods of Fisherfolks

Because of being close to the sea levels, climate change-induced events threaten the ecological diversity of the Sunderbans. As the Sunderbans come under pressure, it also threatens the livelihoods of nearly 13 million people who live in the region. This threat to livelihoods can manifest itself in the following ways:

First, Sunderbans act as a nursery for ninety per cent of aquatic species found on the eastern coast of India. As the nurseries are threatened, they affect the livelihoods of fisherfolks located in Sunderbans and elsewhere on the eastern coastline of India.

Second, due to a lack of other work opportunities, women supplemented the family income by drying fish. As the fish catch dries up, so will the work opportunity for women.

Third, as the mangroves shrink and islands submerge under the seawater, the people dependent on forest produce, such as honey, will likely experience a decline in income.

Fourth, the increased vulnerability to cyclones due to the loss of mangroves will lead to greater loss of lives and property. Climate change has led to increased cyclone frequency and the destruction of the buffer to cyclones, which mangroves provided against the cyclones. A study<sup>24</sup> documents that thousands of people have lost their lives and livelihoods due to cyclones.

Fifth, people living in the interior regions of Sunderbans are experiencing a decline in agricultural productivity due to water and soil salinisation. A study<sup>25</sup> notes that crop cultivation in the Sunderbans has become challenging because of soil salinity and climate change.

Sixth, as the mangroves shrink and the tiger population increases, it creates more man-animal conflict. As per some estimates<sup>26</sup>, 3,000 to 6,000 people have been killed in tiger attacks. Hence, climate change increases risks to human life because of more frequent encounters of humans with the wild population.

Seventh, several people have resorted to shrimp cultivation for their livelihood. Shrimp cultivation and exports have emerged as a highly lucrative source of income. However, shrimp cultivation is thought to harm the environment in several ways, such as causing a loss of agricultural biodiversity, crowding out of several aquatic species, interrupting saltwater, deteriorating soil and water quality, and declining the amount of land available for crop production.

<sup>24</sup>[https://cdn.cseindia.org/userfiles/presentation3\\_sundarbans.pdf](https://cdn.cseindia.org/userfiles/presentation3_sundarbans.pdf)

<sup>25</sup><https://www.indianjournals.com/ijor.aspx?target=ijor:ijbs1&volume=10&issue=1&article=012>

<sup>26</sup><https://www.theindiaforum.in/environment/counting-tigers-discounting-victims-tiger-attacks#:~:text=In%20some%20>

The economic challenges faced by the Sundarbans' fishing community are multifaceted. As Mistri and Das (2019) highlight, issues such as seasonality in farming, infrastructural inadequacies, and environmental activism constraints profoundly affect their economic landscape. Additionally, the limited participation in lucrative activities like ecotourism further exacerbates their economic vulnerability, leaving them on the fringes of broader economic development.

Access to essential resources and markets is another significant hurdle. The environmental shifts and technological stagnation have created a barrier to accessing the resources crucial for their livelihood. This limited access, compounded by the region's frequent encounters with natural disasters, amplifies their socio-economic vulnerabilities, as Biswas and Nautiyal (2020) pointed out. These constraints not only hinder their economic progress but also pose a threat to their long-standing cultural traditions and practices.

The socio-economic fabric of the Sundarbans' fishing community is complex, and addressing these challenges calls for a comprehensive approach that encompasses sustainable resource management, technological advancement, and market access improvement. Such interventions are vital for ensuring the resilience and sustainability of this unique community, deeply rooted in the ecological and cultural landscape of the Sundarbans.

#### **4 Legal Plunder and Environmental Destruction: The West Bengal Inland Fisheries Act, 1984**

The Sunderban mangrove forests and the Sunderban region provide shelter against the vagaries of nature and livelihood to 13 million people in two countries. However, the pressures of an ever-increasing population and lack of livelihood opportunities in the mainland have resulted in encroachment and ecological destruction of the Sundarbans mangroves.

This represents a classic situation referred to in the economics literature as the "tragedy of the commons". This situation creates specific challenges related to the management, utilization, and conservation of common natural resources for the policymakers. While it is in the common social interests of the 13 million<sup>27</sup> residents to conserve the Sunderbans, individuals do not have an incentive to protect the Sunderbans. On the contrary, individuals are incentivised to use the forest land for agricultural purposes. In other words, the social interests of individuals are not aligned with their private self-interests.

There is academic literature which maps the the policies designed to address the challenges associated with the tragedy of the commons by aligning self interest with social interest. pSeveral governments have devised unique market-based public policies to address this misalignment of incentives. These policies can be categorized into four types: tradable pollution permits, reductions in market barriers, pollution tax, and

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<sup>27</sup><https://www.cnn.com/2015/02/18/millions-at-risk-from-rapid-sea-rise-in-swampy-sundarbans.html>



reductions in government subsidy<sup>28</sup>. Stavins (2003) notes that well-designed market-based policies allow pollution cleanup at the lowest overall cost to society by providing incentives for the most reductions in pollution by those firms that can achieve these reductions most cheaply.

Unfortunately, the Sunderbans region is governed by the West Bengal Inland Fisheries Act of 1984, which barely recognizes the challenges associated with the tragedy of the commons. On the contrary, the act is likely to encourage overfishing, cutting down forests for agriculture, corruption, and legal plunder (a term coined by the 19th-century French economist Frederic Bastiat to describe appropriation of the wealth and income of individuals through legal means).

In 1984, the state government of West Bengal enacted The West Bengal Inland Fisheries Act. While the actual reason for the enactment of the law is not clear, the stated purpose of the Act is “to provide for the conservation, development, propagation, protection, exploitation and disposal of inland fish and fisheries in West Bengal”. It should be noted that the Act defines “fish” as aquatic plants and animals in any stage of their life cycle. Hence, the law was applicable in the entire state of West Bengal, covering and regulating all aquatic species, including plants.

However, most of the sections in the Act would generate intended outcomes which are contrary to those envisioned in the law. The Act grants arbitrary powers to government officials while making ambiguous laws. The Act also protects the officials from any prosecution or legal proceedings. Such laws are likely to create policy uncertainty, threaten livelihoods, hurt human dignity, and deter the private sector from providing long-term sustainable solutions. In the following subsection, we discuss some of the sections of the Act.

## 5 Draconian provision of The West Bengal Inland Fisheries Act, 1984

Section 8 of the Act gives arbitrary authority to the government officials to seize fish tanks which people build for pisciculture to reduce their dependence on fish in natural waterways and transfer them to other individuals or groups of individuals. It will also breed corruption and compromise the human dignity of poor fisherfolks belonging to marginalized communities as they are left helpless at the mercy of government officials.

*“If the competent authority, on receipt of an information or on his own motion or otherwise, is satisfied that a multi-ownership tank is not utilized in accordance with the prevailing norms of pisciculture and that it is necessary for any public purpose so to do, he may, after giving one month’s notice to the owner and the possessor of such tank, by order in writing take over the management and control of such tank”. “The management and control of such tank may be transferred by the competent authority to any person for proper utilization of such tank in such manner as may be prescribed.”*

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<sup>28</sup>Stavins , RN. 2003 . Experience with market-based environmental policy instruments . Handbook Environ Econ, 1 359 400, 414 to 360.

Section 12 provided below gives arbitrary powers to the government officials to stop exports, and, therefore, create uncertainty for fisherfolks and reduce their expected income from their fish harvests.

*\*"No fish or fish product rejected by any authority empowered to do so under any law for the time being in force as being unfit for export shall be put to sale for human consumption, unless the same has been certified by an authority, appointed by the State Government by notification, to be fit for such consumption and such authority shall also indicate in the certificate the period of validity thereof."\**

Section 13 below hinders the ability of the fisherfolks to breed fish by allowing for arbitrary powers to government officials.

*"No person shall self fish-spawn without using such standard measure as may be specified by the State Government by notification."*

In a market economy, business owners or vendors are incentivised to keep their surroundings clean. However, Section 16 gives arbitrary powers to local officials to determine cleanliness standards and impose them on the vendors.

*"Every person ordinarily dealing in fish of any quantity exceeding ten kilograms by way of sale, exposing for sale, transportation, storage, preservation, or processing shall observe such hygienic and sanitary conditions as may be prescribed. (2) If any person fails to observe any hygienic or sanitary condition as provided in the rules referred to in subsection (1), he shall be punished with a fine which may extend to ten thousand rupees."*

Section 17 of the Act interferes with the local informal labour markets.

*"The State Government may make rules regulating the payment of wages, either in cash or in kind or in both, the weekly duty hours and other terms and conditions of employment of the labour employed in fishing activity of any kind."*

Section 18 of the Act determines the appellate authority as the same official department against which a complaint is received. Further, the decision made by the appellate authority cannot be challenged.

*"An appeal against any order of the competent authority made under this Act or the rules made thereunder may be preferred within a period of thirty days from the date of communication of the order to the person aggrieved by such order: Provided that the appellate authority may entertain the appeal after the expiry of the said period of thirty days if he is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time. (2) An appeal under sub-section (1) shall lie with such officer, not below the rank of Deputy Director of Fisheries, as the State Government may by notification appoint. (3) On receipt of an appeal under sub-section (1), the appellate authority shall, after giving the appellant a reasonable opportunity of being*

*heard, pass such orders thereon as it deems fit within a period not exceeding ninety days from the date of admission of the appeal. (4) Every order passed by the appellate authority under this section shall be final.”*

Section 21 of the Act exempts the government officials from any prosecution or legal proceedings for any potential misconduct further emboldening them to misuse their arbitrary powers.

*“No suit, prosecution or other legal proceeding shall lie against the State Government or any officer or authority for anything which is in good faith done or intended to be done under this Act or the rules made thereunder”.*

## **6 License Raj: The West Bengal Marine Fishing Regulation Act, 1993**

Several studies, such as Philippe et al (2008), have documented the negative effect of license raj or license permits on productivity in the Indian economy. In 1991, the federal government introduced economic reforms which dismantled the license raj in certain sectors of the economy. However, the West Bengal government introduced a system of license permits with the introduction of The West Bengal Marine Fishing Regulation Act, 1993<sup>29</sup>.

Section 6 of the Act gives the state government the power to introduce licensing. As per the Act, the people who own the fishing vessels must get a license to operate their vessels. Hence, the license is given to persons, not fishing vessels. Further, the act automatically granted an exemption to persons who were operating fishing vessels. Hence, this act was designed to benefit the interest groups representing the existing market players and discourage new players from entering the space. This is consistent with the interest group theory propounded by Robert Tollison (1988; 2001) and several others, who suggested that public policies are often the outcome of regulatory capture by interest groups.

Under the Act, government officials can decide the license duration. Further, the Act gives officials the power to inspect a registered fishing vehicle at any time without any notice. Further, if the fishing vessel moves from one port area to another port area, the owner needs to notify the government officials in advance. The Act also exempts government officials from any legal proceedings due to their actions under the Act. Such legal provisions reduce the human dignity of the entrepreneurs, increase uncertainty for entrepreneurs, and make them vulnerable to rent seeking and arbitrary government actions.

## **7 Policy Reform: West Bengal Inland Fisheries Policy, 2023**

The policymakers noticed the drawbacks of the 1984 Act and, subsequently, a new policy framework, “West Bengal Inland Fisheries Policy, 2023”. The 2023 Policy is a vision document. The 2023 Policy recognizes the “limited private investment in the inland freshwater fisheries” as well as “low average productivity in inland fisheries”. The 2023 Policy aims to “create an enabling ecosystem which will trigger private sector

<sup>29</sup><https://www.indiacode.nic.in/bitstream/123456789/14499/1/1993-9.pdf>

participation in this sector including those of the self-help groups and Fish Production Groups (FPG)”. Further, the new policy also aspires to improve the use of inland fisheries for nutritional support to people, benefit marginalized communities and women, diversify of export basket, support research & innovation, and provide training for specific skills in consultation with the industry.

### 7.1 Key Features of the Policy

- Long-term auctioning and leasing of large water bodies to private investors
- Incentives for investors to hire from local communities
- Documentation of fish production, revenue collection and other related data related to large water bodies for policy interventions
- State-sponsored crop insurance
- State-assisted credit on a pro-rata basis for pisciculture
- Promotion of genetically modified fishery
- Creation of cold storage facilities for fisheries
- Public-private partnership for laboratory for soil and water quality assessment, feed testing, disease detection, etc.
- Pisciculture-specific technical and managerial training for people.
- Support for socially marginalized communities.

## 8 Policy Recommendations

The 2023 Policy document is a promise of reform by the West Bengal government. It is critical that policy recommendations are implemented at the earliest. The Sundarbans mangrove forests exemplify the “tragedy of the commons,” where unregulated access and short-term individual gains can lead to collective loss. A 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.

## 9 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.

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