



# Occupation of the Coast: II

The puzzle of shrimp production on the East coast of India



The Research Collective

December 2020



**The Research Collective**, of the Programme for Social Action (PSA), facilitates research around the theoretical framework and practical aspects of development, sustainable alternatives, equitable growth, natural resources, community and people's rights. Cutting across subjects of economics, law, politics, environment and social sciences, the work bases itself on people's experiences and community perspectives.

Our work aims to reflect ground realities, challenge conventional growth paradigms and generate informed discussions on social, economic, political, environmental and cultural problems.

### **Occupation of the Coast: II**

Editors : Siddharth Chakravarty and Savita Vijayakumar

Authors: Varsha Priyadarshini, Jeffrey Immanuel, Siddharth Chakravarty, Ananya Pattnaik,

Devika Shekhawat, Sreeja Dutta

Photographs in photostory by: Kaelyn Maehara

Cover Design, Infographics and Layout: Tasneem Khan

The Research Collective - PSA

December 2020

For Private circulation only

#### **For copies:**

Programme for Social Action

G-46 (First Floor), Green Park (Main)

New Delhi-110016

Phone Number: +91-11-26561556

Email: [trc@psa-india.net](mailto:trc@psa-india.net)

Suggested contribution 100/-

# Occupation of the Coast: II

## The puzzle of shrimp production on the East coast of India

Occupation of the Coast-I was published for the World Forum of Fisher People General Assembly which was held in December 2017. The focus of this first edition was to provide an overview of the changes and challenges faced by coastal communities in general, and fishworkers specifically, with regards to the Blue Economy development framework in India. Building on our learnings from this and in order to update on specific trajectories of change, this second publication focuses on intensive shrimp aquaculture on the East Coast of India. Through contributions from academics and community members from three coastal states, Occupation of the Coast: II brings together insights on the micro-scales of shrimp production by encompassing labour, ecology, caste, gender, livelihoods and the economy. The core objective of each paper will be to highlight the specific relations of production, both vertically in terms of the production process and horizontally across landscapes. From these diverse points of view we hope to problematise the narrative that promises a conflict-free transition to the Blue Economy in India.

# Authors

## **Varsha Priyadarshini**

Varsha is currently pursuing her Masters in Development Studies from IIT-Guwahati. She is keen on expanding her research around Caste and the Indian economy in the coming years.

varsha1908p@gmail.com

## **Jeffrey Immanuel**

Jeffrey Immanuel has finished his Masters in Technology and Development and is currently working as a researcher in Climate Studies, IIT Bombay. His research interest lies in understanding and delineating the larger political economy of DEVELOPMENT – Who wins? Who loses? At What Cost?

jeffrey.immanuel@gmail.com

## **Siddharth Chakravarty**

Siddharth is interested in the political economy of seafood production, particularly in the interactions of capital, labour and nature.

oceanbanter@gmail.com

## **Sreeja Dutta**

Sreeja is a development practitioner and an independent researcher. She is a recent graduate from Azim Premji University, Bangalore. She is currently working with Foundation for Ecological Security in Balaghat district. Understanding the dynamics of ecology and labour through different perspectives are of keen interest.

sreeja.dutta96@gmail.com

## **Devika Shekhawat**

Devika is a Student of Sociology with a keen interest in writing, teaching and research work. She has completed her Masters in Sociology from Jawaharlal Nehru University, New Delhi and is currently pursuing her PhD from Ambedkar University Delhi on questions of work, health and labour in tea plantations of Assam. Devika is interested to work on questions of gender, labour, sexuality, ecology and culture.

devikashekhawat16@gmail.com

## **Ananya Pattnaik**

Ananya is a PhD research scholar at IIT Delhi. She finished her post graduation at Jawaharlal Nehru University. Her research interests include politics of gender and religious identity.

ananyapttnk123@gmail.com

## **Kaelyn Maehara**

Kaelyn is a California-born filmmaker and photographer, who is currently working in natural history television in Bristol, United Kingdom.

Her recent credits include shows for clients like National Geographic, Netflix, and Quibi.

She has a bachelor's degree in Aquatic Biology from the University of California, Santa Barbara and a master's in Documentary Production at the University of the West of England. Kaelyn is most passionate about our oceans and telling the untold stories of the creatures and people directly connected to the sea.

kaelynmaehara9242@gmail.com



# Table of Contents

Introduction	6
<b>BOX1</b>	
Literature Review on Culture Fisheries	14
<b>ODISHA - Varsha Priyadarshini</b>	
Locating the caste economy of Chilika shrimp	19
<b>WEST BENGAL - Siddharth Chakravarty</b>	
Who wins when shrimp booms?	51
<b>TAMIL NADU - Jeffrey Immanuel</b>	
Coastal Shrimp Aquaculture in India: Should the Farmers be Blamed?	83
<b>BOX2</b>	
Linking Culture Fisheries to the Blue Economy	110
<b>WEST BENGAL - Sreeja Dutta</b>	
Vulnerabilities of livelihoods in the Sundarbans; is shrimp production a viable option?	115
<b>ODISHA - Devika Shekhawat and Ananya Pattnaik</b>	
Shrimp Aquaculture, Ecological Decline and the Spectre of NRC	137
<b>PHOTO STORY - Kaelyn Maehara</b>	
People and Ecologies living with Shrimp Aquaculture	157
Acknowledgements	170

# Introduction

## From Pink Gold to White Shrimp

The term shrimp conjures up different imaginations for different persons. For consumers in India, it signals a versatile, semi-luxurious food; it can be made into a gassi in coconut milk, barbecued on a grill, made into a biryani. For consumers in America, where a bulk of the shrimp produced in India is exported, shrimp is a cheap luxury: a commodity that is precious but affordable to be consumed in pastas, salads and cocktails. Shrimp thus is a paradox; for the importing nations it plays no nutritional security or national metabolism role. In India, on the other hand, it is not produced to meet food security needs of the country. While the reason for promoting shrimp production is often cited as a pathway to meet food and nutritional security, in reality the growth of shrimp production has primarily been for the export markets of North America, Europe and Japan. This publication is interested in understanding how this paradox of shrimp plays out in the socio-ecological realm along the East coast of India, where an overwhelming majority of the shrimp is produced.

The publication draws from the historian Yvette Florio Lane:

“The history of shrimp is more than just a story about a popular food. It is also a story about exclusion and power, about wealth and poverty, and about the change from a basically rural world to one transformed by modernization in the form of the petroleum engine and capitalism. Commercial shrimp fishing and farming have been plagued from the beginning by labour abuses, ecological destruction and racism. The story of shrimp is also one of shifting global power. As the twentieth century became the ‘American Century’ through industrial and economic might, the story of this shellfish became an increasingly American one. American inventors and innovators took control of the shrimp industry and held on to it. From shipbuilding to frozen food technology to tourism, America led the way. For some, shrimp truly were ‘pink gold’. But the tide is again shifting, and the story is now turning towards Asia, as farm-raised shrimp become a multi-billion-dollar business there.”- Shrimp, A Global History

The East coast of India contains the largest tracts of land and water that are viable and have been ear-marked for shrimp production. The thrust we see for aquaculture today follows the trajectory of demand that took a predominately capture based fishery towards culture production. This takes us back to the “Pink Gold Rush” (for shrimp) of the 1960s for wild-caught penaeid prawn, which began to decline by the 1970s. Following three decades of intensive fishing effort and policy-making, focus began to shift towards land-based production of India’s main prawn export species, the Black Tiger Prawn. Today, the spectacular numbers regarding shrimp exports tell us how successful this shift has been. Frozen shrimp exports from India account for 72% of the foreign exchange generation from the seafood basket totalling to USD 4.89 billion in 2018-19; yet shrimp production in India hovers around the 5% mark of total seafood produced in the country. Thus shrimp, which is low in quantity but giant in value, has been a driving force of India’s (sea)food export policies. This growth has come largely in the form of the Pacific White Shrimp which was approved to be grown in India in 2009 and has since replaced India’s previous export species, the Black Tiger Prawn. On account of the quantity to export value ratio, frozen shrimp is by far the most profitable sector to invest in; it is no

wonder that both the new fisheries policy and the scheme<sup>1</sup> introduced by the Government of India during the pandemic show intensive shrimp aquaculture as a thrust sector. The documents related to these show that India has a total potential of brackish water resources of 12.4 lakh hectares and saline/alkaline affected areas of 12 lakh hectares which are suited for the farming of shrimp. As per the government’s calculation, currently India utilises less than 7% of land area of this potential.

A regional distribution of area under cultivation (AUC) along India’s coastline and the estimated production (EP) on these lands show that the states on the East coast of India dominate the production share. Of this too, there are significant differences in the species produced, the per hectare productivity, and the relations of production. Thus, national data on production and exports is unable to capture the regional diversities and the micro-scales of production.

Total area under cultivation in India (in Hectares): 152595  
Total area in East Coast: 142912 (93.6%)  
West Bengal- 55211  
Odisha- 11486  
Andhra Pradesh- 64222  
Tamil Nadu and Puducherry- 11993

Total estimated production in India (in tonnes): 690001  
Total production on East Coast: 578450 (84%)  
West Bengal- 76534  
Odisha- 42735  
Andhra Pradesh- 459181  
Tamil Nadu and Puducherry- 45234

1 In 2020, India introduced the Pradhan Mantri Matsya Sampada Yojana, a new five-year funding scheme. Alongside this, a new ‘National Fisheries Policy’ is being finalised in order to streamline production across the various sectors of the country

## The Puzzle

The Global Value Chain (GVC)<sup>2</sup> of shrimp, more simply, is the set of processes that actually work to get the shrimp on to the supermarket shelves in Northern and Asian markets. It is a long and complex puzzle of actors for whom value either accretes or erodes depending on their position; neither does the value in the chain flow unidirectionally, nor does the commodity in itself. For example, the Pacific White Shrimp, the mainstay species of India's shrimp economy, starts its journey as a wild shrimp on the coast of Eastern Pacific across the borders of what is today Mexico in the north to Peru in the South. From here, it is taken to labs in Hawaii for selective breeding in order to make them pathogen free and suited for culture-based production. This broodstock is then imported into India under stringent quarantining rules from the Indian government; the importers further provide these mother shrimps to hatcheries where the shrimp reproduces. Finally, via a cascading intermediary arrangement of actors, the shrimps are transported and supplied to individual shrimp farms across the country. Through the production phase, similarly complex global value chains bring feed, inputs and expertise to help the shrimp grow from a larva to the market-demanded adult shrimp commodity. Since a majority of

India's shrimp is exported, the shrimps are then harvested, processed, frozen, stored and shipped to a diversity of destinations, all the way from America to Japan to Vietnam. At this stage, the shrimps mix with similar shrimps from across countries and are further processed into ziplocked supermarket packets and find themselves as ready-to-eat shrimp for consumers.

Along the shrimp's global journey, its value is contested, extracted, shared and squeezed between all of these actors. Unlike the shrimp trade during the liberalisation era, economic value flows are no longer simply in the North-South binary. There are American transnational corporations operating in India, domestic firms offering IPOs on the stock market, landlords cultivating shrimp on hundreds of acres of land and agri-businesses and aqua-feed actors forming alliance. India, as part of this global value chain, has largely undertaken the production of shrimp, and to an extent, the post-processing low-value generating activities; however, upgrading the value chain is now the focus of government's policies. This publication is interested in asking questions of value—what does shrimp mean to different actors in this chain— a point which is an important area of inquiry in international food systems. For farmers who produce shrimp or for those who are being targeted by various

---

2 GVC refers to 'the full range of activities that are required to bring a product from its conception, through its design, its sourced raw materials and intermediate inputs, its marketing, its distribution and its support to the final consumer' (Global Value Chains Initiative 2017).



schemes of the government, depending on how well or badly they have done, shrimp can mean dollars and social mobility or gambles and losses. For firms on both sides of the shrimp production process, shrimp means the ability to join a global value chain, and place oneself at particular nodes and generate incomes. For policy-makers, shrimp provides foreign exchange. For fishers, shrimp means pollution and infringement. Thus, for different actors, shrimp means different things and this implies that shrimp production is far from a cooperated, benign process of production.

A starting point for this publication is to deconstruct this puzzle, to unpack these diverging values, and the power relations in society which are invariably at the centre of value-making. However, the publication does not take a neutral view as a mere observer to the process; published by an organisation that has been entwined with the fishworkers' movement in India for a few decades, the publication attempts to view the process of shrimp production from the lens of the fishing communities along the East coast of India. Therefore, through the contributions made by authors, this publication asks some questions to the narratives around shrimp; these are related to both, the growth of shrimp and its success at the national level. Borrowing from critical agrarian studies, it starts by asking,

'Growth for whom?' and 'Growth where?' In relation to the first question, the publication is interested to see who participates, and who cannot or is denied, in the value chain of shrimp. It is also interested to see who is able to gain from this growth on account of their participation. Thirdly, it is interested to explore the regional dynamics of shrimp production within the borders of the nation-state. Why is it that, while Andhra Pradesh has an almost comparable area of land under shrimp cultivation to West Bengal, its total output is a whopping 3 lakh tons more than that of West Bengal. Or while Andhra Pradesh produces about 80% of India's Pacific White Shrimp, West Bengal produces about 85% of the Black Tiger Prawn. This regional difference then pries open the door for the investigation of local socio-ecologies within which shrimp production is undertaken; the attempt to localise and study the local dynamics of shrimp production is the common theme that ties the publication together.

## Pieces of the Puzzle

The papers in this publication are based in different sites in the East coast coastal states<sup>3</sup> and centre on a range of ecologies and actors in the shrimp production process. The order in which they are laid out in the publication come from the understanding that shrimp

---

3 The publication is missing the coastal state of Andhra Pradesh which produces 80% of India's shrimp. While research was conducted in the region, due to the unseasonal floods which hit the state in October, the data was lost due to damage to the author's laptop. The publication shall be updated once this paper is made available.



production is a complex process where power, social relations, ecologies, government policies and other non-state actors act in concert to shape and give direction to the shrimp's developmental journey.

The first paper in the publication looks at shrimp production in Lake Chilika, Odisha, by examining the local dynamics of the traders in a town called Balugaon. Here, the author examines a five-decade long journey of shrimp in the lake by looking at the relational interplay between different actors and highlights how a waxing and waning process of shrimp production has been a constant of this ecology. Here, shrimp booms, busts, regulation, privatisation and conservation take specific forms at specific times showing how shrimp production is an outcome of various non-market forces. By examining the caste dynamics of the traders, and their resulting social mobility over the years, the paper makes an important intervention that dents the growth narrative. The fishing groups on the lake, the original settlers and users of the lake's resources, have been systematically invisibilised through the shrimp production process.

The second paper brings a political economy lens to understand the shrimp production process in Baguran Jalpai in West Bengal. By tracing the process of how nature is commodified, and labour is cheapened through the shrimp production stage, the paper looks at how relative surplus value is created for various actors on both sides of

the farmgate, thus leaving the farmer with shorter end of the stick. On the input side, the farmer is caught in a situation where value is squeezed away from them before production even begins through informal credit mechanisms. Consequently, at the end of the production cycle (at the point of sale) value is captured by actors who exercise a monopsony. Therefore, it is an effort to locate the problematics of shrimp 'sunshine sector' of the Blue Economy discourse in India by asking critical questions, starting with the title "Who wins when shrimp booms?"

The third paper provides us historical context for the emergence of culture-based shrimp production in India through a case study in Lake Pulicat in Tamil Nadu. It looks at policy and financial developments behind the scenes, by uncovering the role of powerful actors like that of the state, multilateral institutions and the research institutes. In doing so, it traces the key actors, who were and continue to nurture the business ecosystem that allows for the unsustainable intensification by the farmers at the local level in the so called 'free market'. This top-down view helps lend context to all the other papers in the publication by providing the policies, events, trade agreements and financial instruments that came together through the post-independence decades to create the scenarios unravelling in India today. By looking at historical role of research institutions, state agencies and multi-lateral agencies, it illuminates the forces

that influence the uptake of aquaculture, and takes away the focus from individual farmers when examining the socio-ecological impacts of intensive shrimp production. In doing so, it calls for deeper investigations into the local dynamics of production, urges for the alliances of people's movements and envisions a transfer of agency from the big actors to the people.

The fourth paper takes up the question of the man-nature relationship through a case study and analysis of semi-intensive aquaculture uptake in the fluid ecologies of the Sundarbans in West Bengal. The precarity of the lives and livelihoods of communities in islands of Basanti and Gosaba are unravelled by tearing apart the factors that create various socio-economic vulnerabilities. We look at how extreme climate-change impacts, immediate existential threat posed by the tiger conservation project, and the disciplining and punishment culture of the Forest Department engaged in the management of the project, directly affect the socio-ecology. The semi-intensive culture production of shrimp against this background is examined with the attempts to pose questions that provide us with answers about what the real prospects and/or traps of a future with aquaculture within this precarious region. In doing so, it speaks to the other papers, by connecting the dots in what the future trajectory of shrimp production in the mangrove ecology might look like.

The final chapter in the publication revolves around the environmental degradation of coastal Odisha under the onslaught of decades of intensive shrimp production and examines how the State and the environmental elite's response to the degradation has been to selectively produce a vilifying discourse around the figure of the 'Bangladeshi infiltrator' (anuprabeskari) under the rubric of conservation. By tracing the trajectory of ecological deterioration of the two aquaculture zones in question: Bhitarkanika National Park in the district of Kendrapara and Chilika Lake, due to intensive shrimp farming and its impact on the local fishing communities, the paper shows how powerful actors have forged alliances that first led to the proliferation of shrimp aquaculture, and then to the destruction of the industry. More importantly, the paper highlights how conservation creates discourses that deflect attention from effectively identifying true causes that have led to this grave ecological ruin.

The publication also includes two boxed sections that provide a general background to situate the scenarios presented in the papers from different states. The first is a literature review of shrimp production, drawing together different schools of academic inquiry into shrimp production globally. The second places the intensive production of shrimp under the global Blue Economy development framework in an attempt to connect micro sites of production with macro platforms of



policy-making. Finally, the publication ends with a photo story that draws together a bird's eye view of a coastal village in West Bengal and locates the different social actors alongside their livelihood spaces, spaces that are increasingly being taken over by intensive shrimp production ponds. Together, these five papers, two boxed sections and photo story bring together not only stories from diverse states on the East coast of India, but also unpack the problematics of capitalist development and the ensuing transformations in the nature of relations, value, dominance and subordinations along the value chain and socio-economic landscape.

### **What Does the Puzzle Reveal?**

On some level, when one looks at this little crustacean, its size and anatomy, it's hard to imagine how it has impacted the lives, livelihoods and landscapes in so many places across the globe. A senior fisheries bureaucrat had once remarked that perhaps for this reason, shrimp should be nicknamed 'Helen' after the Helen of Troy, for she was known as the "face that launched a thousand ships". Looking at the statistics of the increase in mechanised crafts, first for the direct fishing of prawn and then for the fish that act as feed for farmed shrimp, in India over the last seven decades, shrimp has definitely launched many thousands of ships. However, this publication focuses not on fishing fleets, but the farms that have now come to replace them. It is within the examination of the local dynamics of production and the crustacean's global

footprint, that it tells us what and who is at stake when this bounty of the sea is cultivated on land.

Shrimp continues to be the 'Helen' of India's fisheries future. Amidst the pandemic in 2020, when the lockdown impacted production chains entirely and caused global markets to come to a grinding halt, the Indian state introduced a new funding scheme called the Pradhan Mantri Matsya Sampada Yojana (PMMSY). While the focus of the scheme is on the entire fisheries sector, shrimp continues to focus as an attractive investment sector given its potential to earn foreign exchange. And perhaps, this time around, the ships that will be launched will not be the fishing fleets, but the cargo ships that will carry this commodity from the shores of India into the global market. This is the irony of shrimp. In the era of the Blue Economy development framework, where the triple wins of society, economy and environment are touted as being foremost, this intensively farmed crustacean continues to hog the limelight, in spite of all the devastation it has left in its wake over the decades.

The chapters in this publication reveal that shrimp is, in fact, not the Helen of Troy, but a Trojan Horse. Like in the Greek mythology, the horse is the metaphor for the idea that is sold to farmers through attractive schemes with promises of high returns in a short amount of time. But hidden under the glossy pamphlets, the promotional speeches and the promises of triple wins lies a trap. What is perhaps hardest





to resist about shrimp production is that it is not a trap for everyone involved in the process all the time. As the boom and bust cycle of shrimp production shows, there is money to be made, and yet, invariably on the other side of this profit is a story of loss, of dispossession, of hunger, of violence and of marginalisation. And so, it is important to draw the readers' attention to the community of people who have borne these impacts the hardest and yet, continue to resist intensive shrimp production: the fishing communities of India. In all of the chapters in the publication, it is clear that the fishing communities are nowhere in the value-adding GVC of shrimp; rather their coastal socio-ecologies have become sites for absorbing the externalities and the waste from intensive shrimp production. While this publication, and the timeline within which it was put together, does not allow for the examination of impacts, resistance and visions of alternative futures from the fishing communities, we urge all the readers to pay attention to India's glorious history of the fishworkers' movements and direct them to engage, support and amplify the voices of fishing communities.

Savita Vijayakumar and Siddharth Chakravarty

Editors - Occupation of the Coast II



## BOX1

# Literature Review on Culture Fisheries

Shrimp is a luxury product—a ‘preciosity that is pointless for the metabolism of importing economies’ (Veuthey and Gerber, 2012, p. 613). Yet over four million tons of this commodity was produced for the world markets in 2016 (FAO, 2018). The rise of shrimp to its current dominant position can be traced back to the 1960s when growing affluence in the United States and Southeast Asia, especially Japan, led to an increased demand for shrimp (Hall, 2003). For the next three decades, shrimp entered a boom period, caught mainly by trawling in tropical waters, and was increasingly integrated into global markets. By the 1990s, returns to the wild-caught shrimp industry had begun to plateau and in the changing global arena of liberalisation, shrimp entered on-land production. This signalled the shift of shrimp production from capture fisheries to culture fisheries.

The story of shrimp reflects the trends of the globalisation of capture fisheries between the 1960s and the 1990s which led to an immense increase in the quantities of landed fish. The FAO (2016) estimates that from a total of 40 million metric tons in the 1960s, landings rose to 90 million metric tons by the early 1990s. Trends in global fisheries landings show that in spite of the spatial expansion and technological intensification of capture fisheries, global catch landings have plateaued: today 90% of global fish stocks are either fully-exploited or over-exploited. Alongside this declining trend has been the increasing trend of per capita fish consumption; global seafood consumption has more than doubled since the 1960s (Guillen et al., 2019). By the turn of the millennium, the impact that this expansion has had on ecology has caused widespread understanding that global fisheries are in crisis (Campling and Havice, 2018). A combination of declining catches, increasing demand and public pressure have resulted in the promotion of culture fisheries as being a new panacea for fish production with supposed economic, social and environmental benefits (Franco et al., 2014). In addition, given the imperative of debt repayment by post-colonial states alongside the shift in the global food market from national development to global consumption (Hall, 2003), the foreign exchange potential of fish, especially of shrimp, meant that ‘regional governments and bi- and multi-lateral aid organisations assiduously promoted them’ (*ibid.* p. 251).

This shift from capture to culture fisheries has spawned an immense wealth of literature. A large body of this literature is related to the benefits of fish trade on national economies in terms of growth and GDP contribution (for a review see Béné et al., 2016). One strand draws attention to the fact that fish provide significant benefits for ‘adult health and child cognitive development’ (*ibid.* p. 178) and contain nutrients and compounds that outweigh those in terrestrial animals; thus being essential to food/nutritional security. The other strand highlights the fact that the spectacular rise of aquaculture, which now outdoes capture fisheries landing, has ‘not simply increased the availability of fish, it has also prevented prices from rising’ (*ibid.* p. 181), thus being pro-poor. Overall, this literature stresses that culture fisheries are good for growth: they provide forex earning, they positively impact upon the conservation of wild fisheries, provide nutritional food for millions and hold down global food prices. The fact that the culture fish exports of developing countries increased by an average of 10% per year in value terms between 2000 to 2016 (FAO, 2018) lends credence to this narrative.

Related to the literature on the impact of culture fisheries trade is a body of literature that explores culture fisheries from the lens of Global Value Chains (GVC). The simplest strand of this literature

uses GVC as an analytical tool to calculate value added at the various stages of the commodity's progress from local production to global dispersion (Navghan et al., 2017). The next strand of literature analyses existing value chains, provides insights into how countries have upgraded in the aquaculture value chains and gives recommendations on the role of domestic regulation and public sector support in promoting upgrading (Prusty et al., 2011; Ponte et al., 2014). A third strand focusses on a related strand of indirect governance through the rise of private certification standards within aquaculture value chains (Tran et al., 2013) and raises the issue of fragmentation of regulation between states, the private industry and the NGOs. Finally, an important, and often neglected, strand of research brings gender into the analysis of GVCs (Kruijssen et al., 2018). This research highlights the absence of disaggregated gender data, the gendered dynamics of value chains and the gender norms regulating non-market means of chain governance.

A third body of literature that spans aquaculture is related to the environmental impacts of intensive, monocultural farming of fish (Dierberg and Kiattisimkul, 1996; Naylor et al., 2000; Jayanthi et al., 2018). One strand locates the impacts of aquaculture on the land surface on which they are set up. These describe the salinization of soil, the contamination of ground water due to seepage and the loss of topsoil and fertility that result. A second describes the impacts of aquaculture on the surrounding environment such as the loss of mangroves, the depletion of fresh water, impacts of excessive loadings of solids, oxygen-consuming organic matter, and nutrients on water body ecologies. A third and very pertinent strand of literature locates the impacts of feeding wild-caught fish to farmed fish (Naylor et al., 2000) and attempts to unpack the paradox of aquaculture that it is 'a possible solution, but also a contributing factor, to the collapse of fisheries stocks worldwide' (*ibid.* p. 1017). The public impact of this aspect of aquaculture has led to the transition of the industry such that land-grown food, for example, soy, is now being promoted in replacement diets of farmed fish (Fry et al., 2016). With farmed fish being projected to grow at 124% until 2020, the authors estimate that the 65 million metric tons of aquaculture feed needed to supply this industry will have huge impacts on environmental health.

A fourth body of literature deals with the social impacts of culture fisheries and draws on a wide range of approaches (Szuster et al., 2003; Ahmed et al., 2010). Some use a political economy approach (Adduci, 2009) to unpack how class formations and resistance movements are shaped by and respond to shrimp farming. Others use a political ecology approach (Saguin, 2016) to look at the dynamics of capitalism working through commodity frontiers. Yet others (Veuthey and Gerber, 2012) use the Marxian tradition of enclosures as a means of investigating dispossession and unequal exchange in global trade. A relatively small strand of literature (Ahmed et al., 2010; Pant et al., 2014; Toufique and Belton, 2014) draws on detailed empirical data and combine quantitative and qualitative methods to interpret the impacts of aquaculture on poverty and food security at local and national levels. Literature related to crop booms (Hall, 2003, 2011) draws upon the phenomenon of boom-bust cycles of export-oriented cash crops. These studies detail the complex transformations of crop patterns, land-use change, state governance, small and marginal farmer participation and migration during crop-booms. Finally, a collection of papers on aquaculture (Bush et al., 2019) shine a spotlight on the emerging trends in aquaculture. This collection responds to themes related to the multi-polarity of production, trade and consumption, the diversity and scale of production and trade, the dynamics of transformation, the performance and equity of value chains and processes of technical and institutional innovation (*ibid.*).

Over the last decade, a number of influential publications (Hazell et al., 2007) on poverty reduction

strategies have 'renewed the focus on the role of smallholders in agriculture, and the importance of upstream and downstream linkages, as well as non-farm activities' (Béné et al., 2016, p. 177). The publication of the World Bank's World Development Report responded to questions about 'what agriculture can do for development, what instruments can maximise this contribution, and how agricultural policy can best be implemented' (Hall, 2009, p. 603). Responses to these calls have produced literature that I have broadly categorised into four themes. In evaluating these contributions, two papers (Bene et al., 2016) and (Bush et al., 2019) present gaps in the literature and suggest arenas for further research. These highlight two questions related to the area of agrarian political economy that shapes the approach to culture fisheries research. One of these arenas, as stated by Bene et al., (2016), are that 'many questions remain concerning who benefits, and at what costs to whom' (*ibid.* p. 187), and two, Bush et al., (2019) state that investigating 'who has what, who does what, who gets what, and what do they do with it?' has the potential to yield deeper and more finely nuanced interpretations of which groups gain or lose from the process of aquaculture development and why' (*ibid.* p. 433).

### References:

- Adduci, M. (2009), "Neoliberal Wave Rocks Chilika Lake, India: Conflict over Intensive Aquaculture from a Class Perspective", *Journal of Agrarian Change*, Vol. 9 No. 4, pp. 484–511.
- Ahmed, N., Allison, E.H. and Muir, J.F. (2010), "Rice fields to prawn farms: a blue revolution in southwest Bangladesh?", *Aquaculture International*, Vol. 18 No. 4, pp. 555–574.
- Béné, C., Arthur, R., Norbury, H., Allison, E.H., Beveridge, M., Bush, S., Campling, L., et al. (2016), "Contribution of Fisheries and Aquaculture to Food Security and Poverty Reduction: Assessing the Current Evidence", *World Development*, Vol. 79, pp. 177–196.
- Bush, S.R., Belton, B., Little, D.C. and Islam, M.S. (2019), "Emerging trends in aquaculture value chain research", *Aquaculture*, Vol. 498, pp. 428–434.
- Campling, L. and Havice, E. (2018), "The Global Environmental Politics and Political Economy of Seafood Systems", *Global Environmental Politics*, Vol. 18 No. 2, pp. 72–92.
- Dierberg, F.E. and Kiattisimkul, W. (1996), "Issues, impacts, and implications of shrimp aquaculture in Thailand", *Environmental Management*, Vol. 20 No. 5, pp. 649–666.
- Fry, J.P., Love, D.C., MacDonald, G.K., West, P.C., Engstrom, P.M., Nachman, K.E. and Lawrence, R.S. (2016), "Environmental health impacts of feeding crops to farmed fish", *Environment International*, Vol. 91, pp. 201–214.
- Guillen, J., Natale, F., Carvalho, N., Casey, J., Hofherr, J., Druon, J.-N., Fiore, G., et al. (2019), "Global seafood consumption footprint", *Ambio*, Vol. 48 No. 2, pp. 111–122.
- Hall, D. (2003), "The International Political Ecology of Industrial Shrimp Aquaculture and Industrial Plantation Forestry in Southeast Asia", *Journal of Southeast Asian Studies*, Vol. 34 No. 2, pp. 251–264.
- Hall, D. (2011), "Land grabs, land control, and Southeast Asian crop booms", *Journal of Peasant Studies*, Vol. 38 No. 4, pp. 837–857.
- Jayanthi, M., Thirumurthy, S., Muralidhar, M. and Ravichandran, P. (2018), "Impact of shrimp aquaculture development on important ecosystems in India", *Global Environmental Change*, Vol. 52, pp. 10–21.
- Kruijssen, F., McDougall, C.L. and van Asseldonk, I.J.M. (2018), "Gender and aquaculture value chains: A review of key issues and implications for research", *Aquaculture*, Vol. 493, pp. 328–337.
- Navghan, M., Kumar, N.R. and Gawa, S. (2017), "Value Chain Analysis of Farmed Shrimp in Navsari

- District of Gujarat”, *International Journal of Pure & Applied Bioscience*, Vol. 5 No. 6, pp. 352–357.
- Naylor, R.L., Goldburg, R.J., Primavera, J.H., Kautsky, N., Beveridge, M.C.M., Clay, J., Folke, C., et al. (2000), “Effect of aquaculture on world fish supplies”, *Nature*, Vol. 405 No. 6790, pp. 1017–1024.
- Pant, J., Barman, B.K., Murshed-E-Jahan, K., Belton, B. and Beveridge, M. (2014), “Can aquaculture benefit the extreme poor? A case study of landless and socially marginalized Adivasi (ethnic) communities in Bangladesh”, *Aquaculture*, Vol. 418–419, pp. 1–10.
- Ponte, S., Kelling, I., Jespersen, K.S. and Kruijssen, F. (2014), “The Blue Revolution in Asia: Upgrading and Governance in Aquaculture Value Chains”, *World Development*, Vol. 64, pp. 52–64.
- Prusty, S.K., Mohapatra, P.K.J. and Mukherjee, C.K. (2011), “Sustainable Growth Strategies for Indian Shrimp Industry”, presented at the System Dynamics Society, <https://www.systemdynamics.org>, Washington, D.C, p. 29.
- Saguin, K. (2016), “Blue Revolution in a Commodity Frontier: Ecologies of Aquaculture and Agrarian Change in Laguna Lake, Philippines: Aquaculture and Agrarian Change in Laguna Lake, Philippines”, *Journal of Agrarian Change*, Vol. 16 No. 4, pp. 571–593.
- Szuster, B.W., Molle, F., Flaherty, M. and Srijantr, T. (2003), “Socio-economic and environmental implications of inland shrimp farming in the Chao Phraya delta”, p. 20.
- Toufique, K.A. and Belton, B. (2014), “Is Aquaculture Pro-Poor? Empirical Evidence of Impacts on Fish Consumption in Bangladesh”, *World Development*, Vol. 64, pp. 609–620.
- Tran, N., Bailey, C., Wilson, N. and Phillips, M. (2013), “Governance of Global Value Chains in Response to Food Safety and Certification Standards: The Case of Shrimp from Vietnam”, *World Development*, Vol. 45, pp. 325–336.
- Franco, J., Vervest, P., Feodoroff, T., Pedersen, C., Reuter, R., and Barbesgaard, M. (2014), “The Global Ocean Grab: A Primer”, Transnational Institute, 2 September, available at: <https://www.tni.org/en/publication/the-global-ocean-grab-a-primer> (accessed 24 April 2019).
- Veuthey, S. and Gerber, J.-F. (2012), “Accumulation by dispossession in coastal Ecuador: Shrimp farming, local resistance and the gender structure of mobilizations”, *Global Environmental Change*, Vol. 22 No. 3, pp. 611–622.



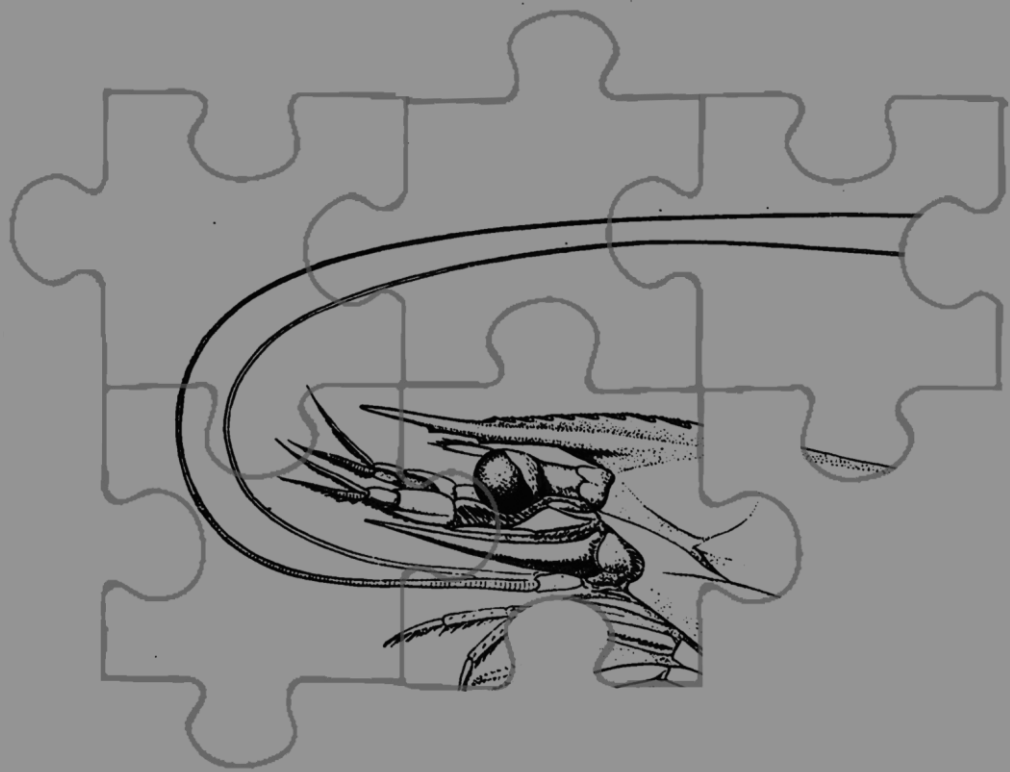


# Locating the caste economy of Chilika shrimp

## *A study of Balugaon traders*

India is a caste economy which means that caste regulates access to and mobility from participating in the economy. This paper shows how dominant caste traders have, over a period of five decades, used their caste networks, as well as their nexus with the state, to structure Lake Chilika's shrimp economy in their favour. However, this might be now changing post 2016, highlighting the shifting nature of caste in India.

*Varsha Priyadarshini*



## 1. Introduction

Increasing trends in intensive shrimp aquaculture across the Global South to meet the rising global demand of shrimp in Far Eastern and Western nations has often been characterised with ushering in extensive but disproportionate growth and aggravating inequalities. This has been achieved through a restructuring of traditional modes of fishing and related value chains. Characterised by distinct social groups, political and economic institutions, norms and networks, the shrimp value chains in countries like Thailand, Vietnam, China, Philippines, Bangladesh and India (which together account for almost 90% of the global shrimp produce) function amidst complex socio-ecological dynamics. One such case of intensive shrimp aquaculture is explored in this paper through an examination of the emergence of local fisheries traders from the Brahmin-Karan castes in Balugaon, a township bordering Lake Chilika.

Through an analysis of the nature of their participation in the shrimp value chain and by situating the socially embedded networks they are integral to, this paper makes a case towards the caste-mediated realities of informal production and employment in India. It focuses primarily on the unequal socio-economic growth among the local caste groups of Balugaon involved in the shrimp industry through an understanding of the different forms of intergenerational mobility achieved by the trading families as opposed to members from the traditional fishing caste groups. It also explores the reasons for the entry of men from the fishing communities into fish trading in the Balugaon godown area and the perceptions of Brahmin-Karan traders on this. In a more contemporary context, where the state's move to demolish culture enclosures (gherris), reorganises the existing social relations of production through a breakdown of the informal networks, this study captures the changing role of the traders and other drivers such as middlemen as they reorient themselves to stay relevant in the market and maintain their livelihoods.



Historically, the lake's resources were managed by the traditional fishing communities who through their occupational dependency<sup>1</sup> on the lake held the customary rights and the entitlements to utilise the resources. They did so by paying royalties to local kings of Parikuda and Khallikote (Samal & Meher, 2003). These groups are categorised as Keuta, Kandara, Khatia, Tiara, Gokha and Nolia according to the type of fishing they carry out (Samal & Meher, 2003; Das, 2018). Fishing was catch-based and its distribution was facilitated by the networks forged by the fishing communities and later by the fishing cooperatives. Other caste groups tended to keep away from fishing owing to the taboo of being a lower caste occupation. This mutually agreed upon rule of users of resources eventually found its way towards having a legal sanction by the state. In 1942, a lease system assigning the fishing communities exclusive rights to fishing areas within the Chilika Lake was put in place by the state. This leasing system was based on two fundamentals (Nayak & Berkes, 2011) which aimed at protecting the customary rights of the fishers:

1. the lease was offered to fishing villages/ communities/cooperatives and not to

individuals;

2. the lease would be given only to fishing communities.

These fundamentals started to slowly erode during the 1970s owing to the global surge in demand for shrimps and the international backing being provided to countries through financial help to practice shrimp culture. Subsequently, the government regulations towards the aforementioned lease policy of the lake started changing. This meant marking out exclusive areas of the lake specifically for intensive shrimp aquaculture. But being extremely capital intensive in nature, it demanded for huge initial investment at various stages of production along the value chain. The lack of assistance by government-run credit institutions created the space for the rise of several market players to forge relations with the fishers through the lending of credit. These positions often came to be occupied by the higher or dominant caste groups of the state, marking an entry of people from non-fishing castes into the fishing economy. Such changes amidst a backdrop for a push to privatise the lake through a transferring of rights, by leasing the waters, changed the

---

1 Fishing communities in the lake are involved in the fishing activity through the medium of traditional caste-based occupations. On account of the fishing being carried out by a number of caste groups in the area, this paper utilizes the term communities to indicate a community of fishers by caste. While this study has not engaged with the dynamics of caste within the fishing communities, and has instead focused on the networks of traders from the dominant castes, it is important to remember that the traders occupy the dominant location in India's caste structure.

Common Property Resource (CPR) nature of the lake. This in turn not only changed the socio-political dynamics between the fishing communities near the lake, it also began to endanger an otherwise fragile ecosystem. Throughout the decades of intensive aquaculture (1970s-2015), the fishing communities in Chilika have resisted this change and have been marginalised in multiple ways. This has been brought about through their entrapment in debt cycles, slow dissolution of unions and power of the cooperatives, losing rights to the commons (lake resources) by de facto and de jure privatization, creation and preservation of informal modes of engagement and lack of political will to regulate the 'illegal shrimp enclosures' (gherris) in the lake. This has ultimately led to an occupational displacement and outward migration of the fishing communities (Samal, 2002; Samal & Meher, 2003; Griffin & Mishra, 2009; Aducci, 2009; Nayak & Berkes, 2011; Das, 2018).

Thus, Chilika represents a highly contested common resource, riddled in a complex dynamic of social, political and ecological underpinnings which is constantly undergoing a restructuring as fishing and non-fishing groups negotiate with the state. This study provides insights into one such major restructuring that took place post 2000s. However, the paper remains focused on the micro context of Balugaon and hence

recognises its limitations in commenting on general trends seen across the broader Chilika economy.

## 2. Methodology

The data for this study is drawn from a short fieldwork conducted during February 2019, when I conducted in-depth interviews of 15 godown owners at private wholesale market space in Balugaon; henceforth referred to as the godown area<sup>2</sup>. Fisher people who worked in the area were also interviewed to contribute towards an understanding of their relationship with the traders and the functioning of the market space. Further, informal interviews of a few key informants who belonged to the town of Balugaon, but aren't involved in the shrimp trade was invaluable in getting information about assets of the traders and the general perception about the shrimp trade in Chilika. Secondary literature based on previous research, policy documents and reports by the Chilika Development Authority (CDA)<sup>3</sup> was accessed to elucidate more on the history of conflicts and the political economy of fishing in the lake.

The article is broadly divided into three sections. The first section provides a general overview of the political economy of shrimp industry in Chilika, drawing from

---

2 The locals refer to the market as the "godown area".

3 The Chilika Development Authority is a Government of Odisha authority created in 1991 under the

available literature and secondary sources to summarise the conflict over the lake's lease polices, resistances against privatisation and involvement of state in the industry. The second section elaborates the rise of local Brahmin-Karan caste traders, lateral entry of traders from the fishing communities and the patterns of intergenerational socio-economic mobility achieved by them. The third section looks into the present market organisation, scale of work in the godown area at Balugaon and reorientations made by the traders to continue with the trade, in response to the crumbling social networks, which had held together the informality of the shrimp economy for decades owing to the demolition of the gherris by the Government of Odisha post 2015.

### 3. Political Economy of Shrimp Aquaculture in Chilika: An Overview

Chilika Lake covers an area of 1000 sq km cutting across three districts of Odisha,

namely Puri, Khurda and Ganjam. It is the largest brackish water lake in India and houses a variety of flora and fauna, which thrives in this nutrient rich ecosystem. It is connected to the Bay of Bengal through a ridge which allows sea water to flow into the lake, giving rise to variations in its salinity. This makes the ecosystem quite unique and highly productive, both as a fishing ground as well as a biodiversity hotspot. The villages surrounding the lake are largely inhabited by fishers from traditional fishing castes and other communities involved in agriculture. Fishing in Chilika prior to 1970s was based on a common sharing of lakes resources by the fishing communities. Post-independence, through government assistance and in accordance with the lease policy of 1942, multi-level committees/cooperative systems were set in place to look after the effective management of fishing resources. In 1959, The Central Fishermen Co-operative Marketing Society

Forest and Environment Department with an objective of conserving the ecology of Chilika.

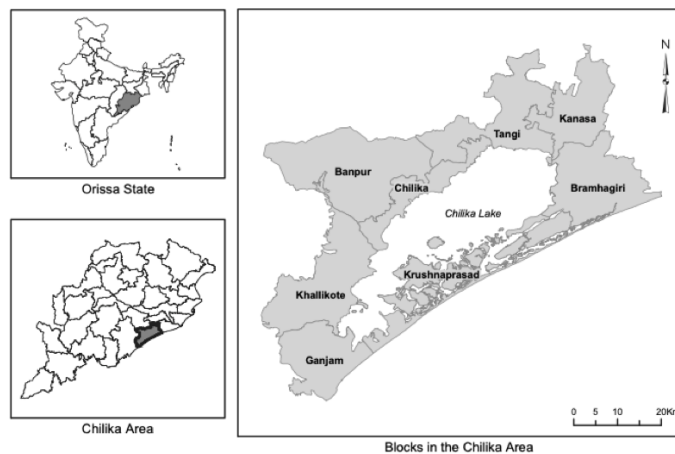


Image 1: Location of Chilika Lake, Odisha (Source: Mishra and Griffin, 2009)

Ltd. (CFCMS) was formed to regulate all the fishing activities in the villages around Chilika. At the village level, the CFCMS devolved powers to the Primary Fisherman Cooperative Society (PFCS), which took over as the key community/village-level institution with regard to fisheries management in Chilika. The traditional village institutions that were responsible for the overall village management continued to provide guidance to the PFCS and monitored fishery-related matters. The State Government of Odisha, through different directorates leased out all the demarcated fishing areas to the CFCMS, which in turn allocated them to village level PFCSs. The lease system along with the cooperative system provided a strong institutional foundation to the use and regulation of common property resources in Chilika. The cooperatives were also involved in ensuring the marketing of the produce which involved regulating and maintaining transactions through a transparent pricing policy. Acquiring credit facilities through state institutions to the fishers also came under the purview of the village-level cooperatives. There has not been substantial research focusing on social relations and conflicts pre-1970s as the conflict between fishers and non-fishers manifested most prominently in the decade leading up to liberalisation in the 1980s—this is believed to have produced the most significant

consequences in the region.

### 3.1 Entry of Non-Fishing Communities

The 1970s marked the rise of significant changes in Chilika fisheries as global surge in demand for shrimp brought several investment opportunities to Chilika. It was around this time that local people from non-fishing caste groups began to realise the potential of Chilika fisheries and started investing at several points in the now widening shrimp value chain. Here the widening indicates an increase in investments (both public and private) at the production level to assist the fishers in aquaculture, as well as the increasing necessity for different groups to aid the marketing process in absence of state support. Traders, transporters, packers and handlers, middlemen, fish/shrimp cleaning staff, ice-makers, crate/thermocool box-makers were beginning to emerge from within the local economy. The Government of Odisha in the late 1980s, riding along the wave of the Blue Revolution<sup>4</sup> also encouraged the growth of shrimp aquaculture. However, state funding could not match the required scale of capital investment and as a result, culture practice was introduced in a highly inefficient and unorganised manner. A detailed report regarding the mechanisms of culture during 1980s and its socio-economic and ecological impact was presented by the Das Committee

---

4 Blue Revolution was launched in India during the 7<sup>th</sup> Five-year plan (1985-1990) with the aim of increasing the productivity of fisheries. It brought about an exponential growth in aquaculture practices.

Report of 1993, titled The Report of the Fact Finding Committee on Chilika Fisheries to the Odisha High Court. This had led to a 1993 Odisha High Court ruling upholding the rights of traditional fishers to have sole access to the lake's resources. This judgement would not have been possible without the continuous efforts of a peoples' movement<sup>5</sup> which was actively garnering support for the cause of the fishers during the 1990s.

But even before the movement started, prior to the 1990s, the cooperatives had a tough time functioning amidst rising conflict over resource use and the loose monitoring of the lease policies. Samal and Meher (2003) show that state-run credit institutions were failing to assist the fishers in procuring large-scale loans and since, indirect credit agents have established themselves as the primary lenders in the economy. This led to a decline of the PFCS which no longer had any significant power to act against the entry of other players into the Chilika fisheries. Moreover, as culture fisheries caught the attention of the fishers, their need for capital intensified. The Chilika Matsajibi Mahasanga (CMM) (the fishers union) which was formed in 1964 had recognised the slowly proliferating network of non-fishing caste groups and struggled to ensure access to credit for the fishers while simultaneously holding onto the lease rights given to them in the 1942 Act.

Fishing traders, such as the ones interviewed for this research, came to the forefront in such a scenario when cooperatives were losing their hold in the fisheries. They entered the market as drivers who could invest capital in an area where state funding, regulation and governance was largely inept. This was also the phase which saw the entry of the 'commission agent'<sup>6</sup> (middleman) as well who brokered deals between the fishers and the traders. But a major bone of contention for the newer players was securing access to utilise the lake's resources without facing significant roadblocks from the fishers. Thus, began the lobbying for a change in lease policies to accommodate the non-fishing groups legally into the fishing economy, and the illegal subleasing of the lake's waters for shrimp enclosures by fishing groups, albeit in a limited manner (Samal 2002; Pattanaik, 2007). Thus, the political economy of fishing and marketing structure of the Chilika shrimp produce had begun to change to facilitate aquaculture practice by private capital even before the trade liberalisation in 1991. A de facto privatisation of the lake was taking shape which was expedited through several legislations in the 1990s to meet the cause of political leaders, bureaucrats, local entrepreneurs and the absentee landlords who were seeking to capitalise on the brackish water potential of the lake.

5 More details will be mentioned in the later section.

6 Detailed on in the later sections

### 3.2 The 1990s: A Push to Privatise and the Resistance to Preserve

In 1991, the Government of Odisha issued official orders to divide the Chilika resources into Capture and Culture categories. The new law allowed for Chilika Lake waters to be leased to non-fishing groups, which introduced the possibility for a de jure privatisation of the lake (Samal 2003). This was seen as a result of the constant push to repeal the 1942 Act and to guarantee rights for the non-fishing groups as well. The law was to bring in two fundamental changes in the leasing policy:

1. The leases could now be procured legally by non-fishing groups and private actors;

2. The lease prices were to be hiked to a rent of 10% of the existing amount per year starting 1992.

A deal between the Government of Odisha and TATA business group was also shaping up during this time to allow 1400 hectares<sup>7</sup> of land in Chilika for shrimp cultivation and to set up an aquaculture unit under a subsidiary called TATA Aquatic Farm Ltd. In response, resistance began as a group of Utkal university students going by the name 'Meet the Students' sought to bring together the different local groups to fight the privatisation

of the lake. It was through their informal meetings and discussions that Chilika Bachao Andolan was formally launched in 1992. The movement raised some key issues which had been points of conflict in the last two decades. Primarily it sought accountability from the state towards the governance of the lake's resources and the fate of the fishing groups whose only source of livelihood was Chilika. The movement also questioned the priorities of the state which had been trying to break up the lease rights in favour of private capital without providing adequate assistance to the fishing communities. The movement was not only seeking social justice, it was simultaneously rallying for the environmental cause as well (Nayak & Berkes, 2010). The Kholamuhana PFCS challenged the new lease policy in the Orissa High Court which was responded to in the 1993 judgment<sup>8</sup>. It affirmed the rights of the traditional fishers towards the use of common property resources by establishing that leases cannot be sold to private agents/corporate players. But it also ordered the maintenance of a 60:40 capture to culture ratio in the lake. This legal passage for aquaculture allowed for furthering of more capital-intensive projects in the lake.

Although the order was revoked in 1994, fishing communities realised the remarkable

7 'Chilika Bachao Andolan: An illustrative case study for teaching', [http://www.mcrg.ac.in/Toolkit/inside\\_pgs/case\\_study.html](http://www.mcrg.ac.in/Toolkit/inside_pgs/case_study.html)

8 'Kolamuhana Primary Fishermen...VS State of Orrisa', <https://indiankanoon.org/doc/1874851/>



difference in incomes between capture and culture processes. Thus, began the de facto third-party sublease to various other market players who would give minimal compensation for the lease (Das, 2018). Gradually, the new market players called the 'absentee landlords' which included politicians, bureaucrats, local entrepreneurs and export companies, started to control the entire process of production and distribution through heavy financing, muscle power and political support. It is often termed as the 'shrimp mafia' because, despite the Supreme Court's ruling in 1996 calling for a ban of shrimp aquaculture in the lake, they have continued to build networks to facilitate the aquaculture process. In 1999, the CMM sought to forcefully demolish the illegal gherris which resulted in a clash with the police; four protestors were reported dead in 1999<sup>9</sup> as a result of state violence. This was a turning point in the resistance as the Andolan's mobilisation weakened and fear of state forces prevented any large-scale gatherings. However, pressure against sharing rights over Chilika continued in other forms throughout the next decade in the form of demonstrations and political mobilisations among the fishing groups that form a major electoral base in Chilika. But the strength and force with which the Andolan had put a check to entry of bigger capital and aquaculture in the lake during the 1990s could not be

reproduced. Till date the ban on intensive aquaculture at Chilika persists, legally. But time and again, throughout the next decade (2000-2010), Government of India has introduced Bills to allow non-fishing caste groups to use Chilika resources while remaining silent on the continued culture practice in the lake. It still remains an open secret that 'shrimp dollars', that is the revenue/profit earned through capture fisheries in Chilika, remains the biggest source of income for everybody but the fishers involved in the business.

### 3.3 The 2000 Onwards: Proliferation of Illegal Shrimp Aquaculture

The Chilika Regulation Bill was tabled in the Legislature in 2001 was aimed at reserving 30% of fishing area for fishers and leasing the rest out to non-fishing groups. It was once again seen as a move to favour the shrimp businesses<sup>10</sup>. After facing strong resistance from fishers' groups against it, the bill was sent for review to a select committee. The government kept trying to table the bill in several sessions but it remained pending for decades as each time the fisher groups protested the bill remained stalled. But such resistances and lack of political intent to put regulations in place only allowed for illegal aquaculture to proliferate and the shrimp mafia to accumulate wealth (Das, 2018). Thus, began another round of de-facto privatisation

9 'Shrimp farming at Chilika Lake, Odisha, India', <https://ejatlas.org/conflict/fisherfolks-of-chilika-lake-odisha-india>

10 'A battle for fishing rights', <https://frontline.thehindu.com/other/article30206398.ece>

of the lake (Aducci, 2009) with much larger force, in terms of competition and capital investment. The fundamental motive touted for allowing culture practices into the lake was to uplift the fishing communities, ensure food security and ensure further employment in the sector<sup>11</sup>. However, time and again this move has been criticised for having failed significantly, more so in the Chilika region than anywhere else. The entry of private capital has led to the occupational displacement and out-migration of the fishing communities owing to below subsistence income from capture fisheries; this is because of a chain of negative socio-economic and ecological effects that culture fisheries produced in Chilika (Samal and Meher, 2003; Das, 2014). Fishing groups have been exploited by middlemen throughout the decades by trapping these communities in a chain of indebtedness and taking advantage of the resource-led conflict in the area which puts the fishing groups at even more risk (Iwasaki & Shaw, 2008).

The shrimp gherris have caused siltation, blocked water channels, decreased the salinity of water, affected the migration of fish juveniles and caused choking of the sea mouth. All of which reduced the ecological productivity of the lake, affecting the catch produce as well (Mishra & Griffin, 2010). Hence, to engage in capture fisheries became

extremely unproductive for the fishers, as there was neither significant landings from capture fisheries available even in ideal seasons for fishing, nor did they fetch higher price in the market as distribution became more and more concentrated towards culture fisheries. Even though the shrimp business situated itself comfortably in the Odisha economy as one of the most profitable market ventures earning crucial revenue for both the state and private capital, it has done so at the expense of fishing communities and the ecological health of the Lake. It has no doubt brought in the 'shrimp dollars' for a section of the locals, but the process has been highly unequal and unregulated (Samal & Meher 2003).

However, in a major turn of events, and in a major blow to the proliferating networks, since 2015 the state along with Chilika Development Authority (CDA) has been on an undertaking to remove and demolish the illegal gherris by force<sup>12</sup>. The reason for this sudden move could be several as different players in the Chilika fisheries perceive the move differently—which will be a point of focus in the later section. The official reasons as cited by the Government of Odisha primarily involve the lens of environmental degradation of the lake. This marks a major shift in the state's narrative from ignoring

11 'Odisha Fisheries Policy 2015', [https://investodisha.gov.in/download/Odisha\\_Fisheries\\_Policy\\_2015.pdf](https://investodisha.gov.in/download/Odisha_Fisheries_Policy_2015.pdf)

12 'Chilika Lake (2017-18) Ecosystem Health Report Card', [https://www.chilika.com/documents/publication\\_1598905743.pdf](https://www.chilika.com/documents/publication_1598905743.pdf)



the serious impacts of shrimp aquaculture to recognising that it is the rampant presence of shrimp gherris in the lake that has led to the decline in productivity and biodiversity of the lake. The CDA document<sup>13</sup> detailing on the Health report of Chilika Lake for the year 2017-18 notes:

‘The ecological health, biodiversity and fishery productivity of Chilika was threatened due to monopoly from certain group of people for monetary benefits which were promoting prawn and shrimp gherris. The illegal gherris which has occupied almost entire shoreline of Chilika Lake has drastically impacted the lake biodiversity, hydrology and fishery productivity. In last 2 years, Chilika Development Authority has freed around 151 km<sup>2</sup> of lake area which was under the illegal prawn gherris’ (ibid. p.5).

In 2017, the Odisha Regulation of Fishing and Fisheries in Chilika Act<sup>14</sup> which was co-drafted by the authorities of the CDA<sup>15</sup> was approved by the state cabinet. It is unclear how the Act pans out in the course of events but for the time being it is still under review.

Given decades of resistance against the state authorities and managing life amidst highly precarious conditions of work, local fishing communities do not trust the political intent of the state any longer. The Government of Odisha has faced considerable amount of pressure, ever since the 2000s, from not only the resisting fishers’ groups but also environment conservationist groups against the presence of aquaculture in the region. Hence, the switch from denying the presence

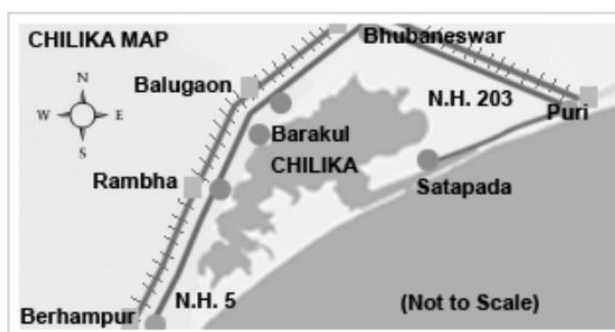


Image 2: Location of Balugaon

(Source: <https://visitodisha.org/Chilika>)

of aquaculture in the lake to straight out destroying gherris opens up the possibility of enormous changes in Chilika fisheries. This move has ushered in another restructuring of the Chilika shrimp economy which will be explored in the later sections of the paper.

13 ‘Chilika Lake (2017-18) Ecosystem Health Report Card’, [https://www.chilika.com/documents/publication\\_1598905743.pdf](https://www.chilika.com/documents/publication_1598905743.pdf)

14 ‘Odisha to make new law for protection of fishermen interest in Chilika’, <https://www.outlookindia.com/newsscroll/odisha-to-make-new-law-for-protection-of-fishermen-interest-in-chilika/1107914>

15 The Bill was not passed by the Assembly. The state cabinet approved the introduction of the Act in 2017 and it was sent for review. However, what happened in the review is unclear. There is ambiguity maintained around it which is why there is also no trace of the bill online. Several news reports and magazine articles of 2017 refer to the Act to draw their conclusions around fishing in Chilika.

## 4. Emergence of Fish Trade in Balugaon

This section delves into a specific analysis of the local traders from a town named Balugaon around Chilika, their role and their growth story from the shrimp economy in Chilika. Balugaon is a small market town located on the west bank of Chilika Lake in the Khurda district of Odisha. Currently it houses one of the biggest privately owned wholesale fish markets in Odisha; henceforth referred to as the Godown area. The emergence of the godowns dates back to the year 1969 when a group of upper caste men, from the Brahmin-Karan caste groups, bought a huge expanse of land<sup>16</sup> adjoining the lake from a wealthy family who was allegedly under the patronage of previous kings. The group primarily belonged to the agrarian economy, pooled their resources from selling their agricultural land, steadily built networks with fishing groups and simultaneously developed infrastructure to gradually shift towards fish trade. The business took firm shape in the mid-1970s. Their association was eventually formalised as a fish traders organisation under the banner 'Kalijayi Mashya Byabasayi Sangha' (KMBS) in 1982.

From building small sheds to clean and sort

the produce until further transportation in the initial days, the marketplace grew to accommodate 200-300 godown/rooms of varying sizes, primarily built by the association<sup>17</sup>. They expanded the process of distribution by setting up networks with port towns and urban centres in Odisha and the neighbouring states. With the introduction of shrimp aquaculture from late 1970s, this network intensified in terms of infrastructure-building, reach and management, as shrimp was processed for exports directly to port towns or through processing units. They held monopoly over distribution of the produce from the central part of the lake for several years, especially until the 2000s post which the number of big independent players providing significant capital for aquaculture multiplied. The traders faced competition from export companies who sometimes formed their own connections with the fishing groups via middlemen. Moreover, competition from within the local non-fishing caste groups also increased as men from the Khandayat<sup>18</sup> caste also entered the fish trading business in Balugaon.

Another restructuring of the Chilika shrimp economy also happened when a few members of the fishing communities and fishing castes<sup>19</sup> joined the fish trading

16 The exact area of the land bought is unknown.

17 As claimed by the traders.

18 The largest forward caste group in Odisha.

19 The fishing caste groups in the region come under the Scheduled Caste category in India. They have

business in Balugaon and became members of the trader's association. This crucial transformation in the caste composition, as being predominantly within the domain of the upper caste traders to now being accessed by other groups considered lower within India's caste order within the godowns meant that socio-political and economic hegemony of the upper-caste Hindus<sup>20</sup> came to be compromised. The probable reason behind such economic mobility gained by traders from the fishing communities could be attributed to the illegal subleasing of the lake's waters. This might have provided the new fisher-turned-traders enough capital to establish their own networks of trade. Some traders interviewed on the field spoke about how their fathers were involved in marketing of fish as part of cooperatives until 1980s. Here the passing down of connections made by previous generations of fishers, as well as having varying amounts of capital, became vital social and monetary capital to enter into the trade. The growing knowledge surrounding the inevitable growth of shrimp export business in Chilika based on the continuous produce from culture, which was hitherto unseen in capture fisheries, would

also have propelled the fishers to invest in fish trading. However, given the informal and illegal nature of shrimp aquaculture in Chilika, much of the above remains under speculation. In spite of some amount of social mobility, traders from the fishing communities occupy only a miniscule part of the whole composition of Balugaon traders.

Currently, as per the traders, the Balugaon trader's association, the KMBS, includes everyone from upper caste men to Muslim traders.<sup>21</sup> But the majority of them are from the Brahmin-Karan and Khandayat caste groups. The mere presence of diverse castes and religious minorities in fish trading does not indicate equitable share in the market nor does it have an indication on the scale of their business. The older traders have bigger networks built through decades whereas the newer section of traders came to occupy the space almost after thirty-odd years since the Brahmin-Karan group of traders began the business. This huge gap in entry dictates ways in which the traders occupy, manage and gatekeep their trade. A comparative analysis of the socio-economic mobilities and scale of revenue from the trade between the

---

been a historically marginalised group within the Indian society on account of being formerly treated as untouchable. Being outside of the Hindu varna-jati system which categorised communities based on their occupation (karma i.e. work) within a system of hierarchy, fishing has been considered an 'impure' occupation relegated to the lowest in the hierarchy. Due to social segregation based on caste lines, fishing communities have continued to reside in localities specific to their caste and occupation.

20 Referring to the categories of Brahmin, Karan and Khandayat caste groups which are the twice born (dvija) caste groups.

21 The author, however, did not come across any Muslim trader.

older Brahmin-Karan traders and traders from fishing castes or other religions could not be carried out for the current study as only two of such fishing caste traders were interviewed. However, such an analysis is necessary as it acts as an entry point into understanding ways in which export based shrimp aquaculture has produced the 'upliftment' that it was fundamentally aimed at. For the most part, the older Brahmin-Karan traders deny the presence of caste-based hierarchy in their business and believe everybody enters business on their own merit and capital. They often pointed out the diversity in their marketplace as a sign of being an inclusive space where they looked out for each other as well as the fishers. The fishing community traders too did not explicitly mention any forms of discrimination based on caste—however, what remains central to Chilika fisheries ever since the 1990s is an overall fear among the fishing groups of being involved in illegal activity (such as subleasing or being involved in shrimp aquaculture) and the suppression of their voices through intimidation and power. This points to the power differentials in the interaction of different groups with the state— while the upper caste traders have enjoyed immunity for decades, the recently entered fishers-turned-traders continue to feel threatened. Against such a scheme of events, the author notes that any enquiry into caste-based dynamics shared within the Chilika fisheries would need to be mindful of the history of resistance and loss of power of fisher unions generated through both covert

and overt forms of violence.

Despite the increase in competition among the traders from different caste groups and the increasing pressure from entry of bigger capitalist players, the location of the marketplace aids the Balugaon traders in critical ways. The area outlines the Chilika shore ensuring immediate procurement of produce from the boats and effectively cuts down the costs on transportation. The older first-generation traders take immense pride in how much “development” they have brought to the area and the fishing communities, in conditions where state action proved to be inadequate. As one trader explains:

“This was all barren land. We collected money and brought the land in 1969. It took 20 years to develop it. We got the electricity line and the main road you see was also built by us. Some ice factories were also set up under our guidance. We procured nets and better boats for the fishermen. Lot of funding needs to go into this business. The government does not believe in assisting us in that sense, so it befalls on us to shoulder all these responsibilities, so that all of us have some livelihood...”

The development activities in Odisha post the 1980s largely centred around mining and management of natural resources, which was primarily captured by the landed groups of Brahmin and Karan upper castes. They, during the 1950s, had secured control of the

administrative and bureaucratic apparatus of the state (Adduci, 2009). The emergence of Balugaon traders is linked to this process as access to knowledge about an emerging economy and a simultaneously access to capital through agriculture-based incomes proved crucial to the 'sudden' entry of non-fishing caste groups into fishing in Chilika. Direct or indirect links of kinship in the political arena or the bureaucratic system added to the expansion of their networks. This is demonstrated in the manner in which they boast about acquiring state-run public goods (especially during the 1970s) like electricity and road connections for the area. Thus, an occupational reorganisation happened through the evolution of caste-based networks into an economy which had previously been constituted by only fishing communities.

## **5. Patterns of Socio-Economic Mobility Amongst the Traders**

The following section will examine mobility patterns as experienced by the Brahmin-Karan caste traders and the fishing caste traders. There is no denying that every trader from the upper caste group has entered the shrimp trade with the idea of having a profitable business. However, many did not pass on the trade unto their second generation (sons); most of whom have moved onto working in the IT sector in major metropolitan cities of Bangalore, Hyderabad and Mumbai. The reason behind an occupational shift

according to the traders was based purely on the diminishing returns from the shrimp business. As a trader notes, "Chilika has lost its capacity now. It doesn't give us that much produce and profit is very low. This is now a dying business. It is good that my kids have settled in metro cities". Post 2010s, Chilika has been characterised by growing environmental concerns over its decreasing salinity, weed infestations, change in inflow and outflow of water and overall reduction in area for capture fisheries. This has in turn caused a drastic reduction in produce from culture fisheries as well. Hence, the rising environmental concerns combined with the ban of aquaculture in Chilika since 2016 makes the trade unstable as well as illegal. Thus, we see only a small percentage of the next generation of traders involved in the shrimp trade as opposed to the widespread appeal it had when the Brahmin-Karan traders shifted from their agrarian roots into shrimp business in the 1970s. While there could be several other reasons for the loss of appeal into fishes trading, such as the rising competition from not only bigger capitalists but also from traders from the fishing castes and other religious minorities, I refrain from making such generalisations since this would require more concrete evidence of how the traders perceive this loss of authority over the marketplace.

In terms of gains through the trade, mobility through education is very prominent among the traders. Even though the first-generation

traders have barely passed secondary education, the second generation primarily holds an engineering degree or are MBA graduates, many of whom, if involved in the fishing trade, are often in search of a more secure job. This marks the ability to make an informed choice about more valued professions, in terms of social status and spatial location. The migration chiefly to metro cities or major urban centres in Odisha presents itself as a case of perceived social mobility assisted by acquiring different lifestyles and cultural markers of an upward class—this social mobility in the lanes of Balugaon is highly valued upon. This form of mobility has not only impacted their household but also reshaped the way the town's economy has grown. The consumptive patterns of the traders and their next generation is reflected in the growth of major car and bike showrooms in a town which otherwise falls behind in other developmental marker such as health and education.

The daughters of the traders rarely share space in the work force. The traders expressed contentment with the fact that they are “well settled” (married) and often residing in neighbouring cities of Berhampur, Bhubaneswar or in some cases bigger cities like Hyderabad or Bangalore. Most have a minimum of senior secondary education but nothing higher was pursued, or allowed to be pursued. None of the daughters were engaged in any forms of remuneration based

livelihood activities and the traders took immense pride in this aspect as it signified a stable income earned by the male “head” of the family. While the strength of trade is seen through the ways in which the sons inherit the business or use it as a backbone to move away to other occupations, wealth through trade is used to position daughters in social locations which maintain their maternal status. This further enhances the family's social standing within the Balugaon society.

Private property (land), houses and fishing equipment were common assets to all the traders. While many were reluctant to dwell into any substantial talk about their assets, informants from the town helped the author locate some houses and other property in town. While it cannot be generalised to everybody, the few houses that the author saw were very distinct from the neighbouring houses or the ones in the locality. They were spread across the town or in the neighbouring tehsils. The houses were often multi-storied and villa like and some had spaces built for livestock as well. One of the traders owned an English-Medium High School in the town. These traders are infamous for holding up “golden shrimp dollars” in “underground lockers” as the rumours go.

Popular perception around the lives and assets of the traders also involves the standpoint of tax evasion. While the extent to which the traders have accumulated property isn't uniform, it is safe to say the



traders happen to hold a socio-economically high position within the town. Owning schools and overarching villas within the town, the traders have contributed to both the growth of the town's economy as well as the growing, highly visible inequality as they gained in the socio-economic front.

However, no definitive difference in socio-economic mobility was found between the Brahmin-Karan trader group and the fishing castes trader group, as everyone seemed to exhibit similar trends with respect to the education of sons and daughters, marriage of daughters and the occupational affinity towards the IT sector in urban locations. But a significant detail pertaining specifically to the fishing caste traders is their shift into bigger houses built on the peripheries of the fishers' locality. Within the market space, while the traders did not exhibit any overt forms of segregation based on caste, the same could not be said for housing. Given the segregated housing situation that I observed, it is clear that even if the traders from the fishing castes have gained economic mobility, their caste proves to be the decider of their social location.

Nevertheless, a look into the lives of the trading families does establish that shrimp aquaculture did benefit the dominant caste communities but much of it was achieved at the expense of the fishing groups. The miniscule population among the fishing caste traders who have experienced upward mobility did so at an extremely slow pace.

Caste based hierarchies not only dictate the nature of access a particular community has to resources, it also hinders the growth and presence of perceived 'lower' groups in certain spaces. While it became socially acceptable for upper castes to enter into an economy which they traditionally shunned on account of considering it a low livelihood option within the Hindu social order, thus, highlighting the mobility within the varna system that they enjoy, the fishing castes still find it difficult to enter trading spaces in larger numbers. This imbalance in entry to positions which are inherently wealth-generating within the same economy are an outcome of the region's caste-ordered society. Empirically, the over-representation of traders from upper-caste groups points to how caste dictates which social group was able to benefit from Chilika lake's shrimp culture fisheries. While it is common knowledge that the capitalist economy runs on the dictat of who possess capital, research surrounding social barriers to entry and social groups with predominant access to capital would go a long way to establish the relationship between the hierarchy mandated by the caste-based social order and economic process.

### 5.1 Role of Middlemen

Shift into capital-intensive shrimp aquaculture in Chilika allowed for several intermediaries to enter the supply chain of the shrimp industry. These included

middlemen, traders, transporters, packers and handlers, ice-makers, processing plants, export firms, crate/thermocool box makers and fish/shrimp cleaning staff. Among them, the most powerful driver who was responsible for forging relations between the fishers and the traders or export companies was the middleman. Locally they are termed as the “commission agents” because they cut a commission (some amount of money) from the money that the traders or the export firms pay to the fishers after they deposit their produce in their godown or transport it to the firm. Their primary role is to connect the trader or the export firm with the fishers, provide them with capital which the agent received from the trader/firm and forge an understanding that the produce will be deposited to the particular trader/firm who assisted the fisher. The money provided is essentially the investment required to undertake aquaculture and hence gets utilised in buying equipment for culture and repairing boats (Samal & Meher, 2003; Das, 2018). The caste profile of the men is unknown because of the discreet nature of their work but key informants suggest they belong to the Khandhayat caste group and often reside in the town or nearby villages. Samal & Meher (2003) had identified these agents as ‘fishermen belonging to sound economic and social background’ (ibid. p. 3324). During the 1990s, when intensive aquaculture gained pace in Chilika and there was huge scope for connecting incoming investors with fisher groups, the middlemen

through their access to both parties (i.e. the fishers and the bigger investors) worked individually to form networks. Previous research mentions them as being anonymous drivers in the value chain as the nature of their work and means of their connections/networks formed—remained informal and undocumented. Initially, they lacked the capital required to invest in the process and hence relied on being middlemen. They have been critiqued heavily for pocketing a major part of the wages that would otherwise go to the fishers and hence are seen as a huge deterrent towards the upliftment of the fishing communities (Iwasaki & Shaw, 2008). This has been a trend witnessed across the global south in countries like Bangladesh, Thailand, Vietnam, India and Philippines, which saw exponential rise in shrimp aquaculture and exports but without significant state support. Hence, a lot hinged upon the middlemen who facilitated the fisher groups/ shrimp farmers’ access to credit, fishing infrastructure (feed, pumps, nets, graders, boats) and expand their knowledge about markets and technology surrounding culture practices (Goss et al, 2000; Islam, 2008; Belton, 2016). Thus, their presence became crucial to the functioning of the informal shrimp economy especially when distribution is under private control. In almost all contexts they are often held responsible for exploiting the fishers as they pocketed a significant amount of money that flows in from higher above the value chain.



During the fieldwork the traders alleged that they no longer engage with commission agents and have henceforth started dealing with the fishers directly. The reduction in aquaculture in the lake, they say, was a huge turning point to ensure such a dramatic alteration in the shrimp economy. However, some traders admitted that some of the traders in the area were themselves involved as commission agents had moved onto more established roles like being traders, once they had enough money to invest in godown and wage labour. The author cannot confirm in surety if middlemen have actually disappeared because there are high chances that the traders and fishers would deny the presence of middlemen to avoid any confrontation with higher authorities. But given that capture fisheries does not have as high a turnover as culture there are high chances that the firms and traders could have set networks bypassing the middlemen.

## 6. Shrimp Production in Chilika Today

This section will be detailing on the current scale of activity in the godown area drawing on interviews and an ethnographic account of the space from the research conducted in 2019. Mechanisms of restructuring of the trade by the godown owners, which were intensified post the demolitions in 2015 will also be explored, along with a reading of the

state's role in revamping the shrimp economy post 2015.

The State has been the pivot around which the shrimp aquaculture industry began, flourished and declined in Chilika. The lack of political intent to regulate the aquaculture practices in Chilika, in spite of the 1996 Supreme Court ruling calling for a ban, opened up several loopholes which were captured by the dominant castes/classes to accumulate wealth. Much of the shrimp economy functioned under intimidation and fear-mongering for decades as the fishing groups had to either join hands with the 'shrimp mafia' through third party sub leasing or be impoverished as culture produce overtook capture and let a trail of waste which in turn hindered capture-based fisheries. There has been a constant pressure on the government to remove the de facto privatisation of the lake and legitimise the rights of the fishing communities to use the resources of the lake since the 1990s. The fishing groups have always viewed the state with much scepticism, given their violent struggles in the 1990s and the apathy of the state throughout the 2000s. Even though the scale of Chilika Bachao Andolan (CBA) could not be met post 1999, they have continued to put pressure on the state throughout the 2000s by sporadic marches, filling petitions in the High Court order<sup>22</sup> and mobilisations

---

22 'Chilika Fishermen set to battle prawn mafia themselves' <https://udayindia.in/2011/05/21/chilikas-fishermen-set-to-battle-prawn-mafia-themselves/>

whenever the Chilika Regulation Bill (CRB)<sup>23</sup> was to be tabled in the Assembly. This did keep the CRB stalled for decades but no long term move to enact the ban on aquaculture could be charted by the fishers group. Thus, such a move by the state to demolish the gherris in 2015 is unprecedented; the state's actions are rather stark in comparison to how it has acted over the 25 odd years of resistance against aquaculture and entry of non-fishing castes into the Chilika shrimp economy.

The 'sudden' appearance of political intent in 2015 comes off as uncharacteristic.

The motivation behind such a drastic measure taken by the state as cited by the authorities themselves has been the need to rejuvenate the biodiversity of the lake which has been under constant decline since unchecked culture practices became rampant on the lake. Pressure from environmental NGOs could have aided the process too because being a RAMSAR<sup>24</sup> site, Chilika also draws heavy international attention to the lake. The CDA has repeatedly paid attention to conducting a regular 'Health analysis' of Chilika post 2010, which focus chiefly on rejuvenating the biodiversity of the region, water quality, oxygen levels and capture fishery data. Another driver which stands to gain from the rejuvenation of the lake's

biodiversity and could have lobbied for a change in Chilika ecosystem is the tourism Industry. Being a tourist spot, this move also opens up the possibility for investment and reinvestment of capital into the burgeoning sector of tourism in Chilika. Spots like Satapada Picnic Spot, Nalabana Island and Bird Sanctuary, Rajhans Island etc, which rely heavily on a cleaner Chilika, attracting migratory birds during winter and house Irrawaddy Dolphins, are places where returns to capital can be guaranteed. On the other hand, as per the local traders' allegations, this ban is a politically motivated process aimed at clearing grounds for entry of bigger corporate players into shrimp economy which cannot be denied either. Hence, there are several other players who have the possibility of having a stake in the lake which makes the current restructuring of Chilika shrimp economy even more complex.

### 6.1 The Godown at Balugaon

The godown area functions as a marketplace for onsite sale and a storage space for produce until further transport. Previously it operated as a processing unit as well which was primarily engaged in cleaning and packaging of shrimps. The area is not marked by any boundary and of late, the activity is

---

23 The Chilika Regulation Bill was first tabled in the Legislative Assembly in 2001. But the fisher groups had opposed it as the bill sought to secure rights to the lake's resources for the non-fishing castes. It is yet to be passed by the Assembly.

24 The Convention on Wetlands is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

concentrated only in select godowns with much of the place bearing a deserted look. The traders mention that the produce is from capture fisheries sources and not from culture especially since the 2015 gherri demolition drive. The details of the godown activity below are primarily in relation to shrimp from capture fisheries and are limited in scale in terms of produce and income/wage when compared to output from culture fisheries. There was huge disparity in the produce being collected among the godown owners. Many traders with lower scale of activity commented on the nature of the produce collected in the godowns with higher scale of activity and often imply that the ban and drive for demolition is an eyewash by the government. The actual reason behind some traders having larger quantities of produce can be attributed to multiple variables, from higher investment in capture fisheries to connection with culture gherris. Being a highly secretive setting, it is unlikely that anybody would be open to comment with surety about the nature of the trader's connections. But high level of activity was witnessed only in two godowns of Brahmin-Karan traders, while all the other godowns had medium to low range of produce. Hence, as the ban on aquaculture persists and the government crackdowns on trespassers, the bypassing of the demolition of the gherris is possible only by a select few traders.

## 6.2 Godown Activity

Once the shrimp produce arrives from the lake, it is dumped into the porch of the respective godown. Two to three men who are employed by the trader start separating the catch/culture produce according to the species. The labour employed in the godowns is usually manual workers from the traders' extended family networks or connections through friends, most of whom reside in the neighbouring villages or in Balugaon. The produce is weighed and the owner or an agent keeps the record of the quantity and the type of fish/shrimp. The intensity of the activity depends on the scale of the produce that has come in. Select species of fish and shrimp in specific quantities are kept for onsite sale and rest is packaged with ice in thermocol boxes and stored until further transport. Smaller branches of larger ice factories are built around the area to ensure immediate supply of ice to the godowns. These are shabby looking sheds with a constantly working ice-making machine, worked on by two-three workers. There hasn't been any genuine technological advancement in the ice-machines as they are mostly manual. Cleaning of the produce, if required, is done manually by groups of independent fisherwomen who sit around the area. Trucks or autos carry the packaged produce majorly to the railway station, which then transports the produce to major cities and towns across Odisha and to Kolkata, Chennai, Bangalore, Delhi and Mumbai. Trucks also transport the packaged produce to the processing

units which send it to their own export firm units or separate export firms. The produce goes to USA, Japan, West Europe, Middle East and South East Asia, via Kolkata and Visakhapatnam ports. The exact income of the traders cannot be specified as they chose to remain ambiguous about it. Going by the interviews, the traders said they currently earn Rs 1000-2000 per day, depending on the produce that arrives after giving out wages to the labourers, fishermen and if required the fisherwomen. The fishermen get money per kg or on the shrimp count, after the traders cuts off his share from the produce. The share is usually Rs 10-Rs 12 per kg of fish/shrimp. It varies according to the species and quantity. On an average the fishermen earn around Rs 500-Rs1000 on a good catch day. This usually fluctuates based on season, area of the lake and types of gear used. The laborers employed at the godown take a daily wage ranging from Rs 300-400. The fisherwomen involved in cleaning earn an average of Rs 200-Rs 400 per day, often as independent cleaners. They do not have any connection with the traders but in case a bigger order arrives from nearby restaurants or for local use, the fisherwomen are paid by the traders to clean for that particular order. Wages based on produce by aquaculture could not be identified, but it should ideally be higher than the current wage amount owing to the constant large-scale supply that culture fisheries ensure.

### 6.3 Decline of the Local Trade

Every trader made it a point to emphasise on the difference in activity that I witnessed in 2019 and the business activity in the godowns during 2000-2010. The latter was the period when revenue from culture fisheries was exponentially high especially with the cultivation of the Black tiger shrimp (*Peneus Monodon*). It is the predominant high value species of shrimp grown in Chilika gherris. It has high demand in the export market and grows quickly in the brackish waters. But with the demolition of gherris, the quantity of tiger shrimps plummeted and doing fish business has not been the same since. The traders had to lay off a considerable amount of their labour force to minimise the costs. Previously most traders employed a minimum of 30 people to meet the requirements of the sale and packaging on site. One or two men were employed to stay in the boat along with the fishermen, 10-15 men to help at the godown to unload, weigh, package and sell the produce, 10-15 women to clean, behead and wash the shrimps and 2-3 people to keep the accounts. The labour employed has shrunk to 5-6 people, which is approximately three fourths of previously employed workers. The workers have moved out of Balugaon looking for work as wage labourers in other industries or are currently unemployed. Women involved in cleaning were from the fishing communities who currently work independently within the marketplace or elsewhere or are unemployed. The scale of activity within the godown also reduced as

processing units (who sometimes double down as export firms) started to upscale their business with improved machinery. So as opposed to de-headed and cleaned shrimps, the godowns were now asked to supply headed shrimps to the processing units. This would suggest that the women employed for cleaning shrimps at the godown could now find an opening at the processing plants. But this is under speculation and much depends on location of the processing plant, policies of employment of the processing plant and gender relations prevailing within the fishing families.

Thus, the local traders functioned independent of the state and set their own terms of employment, determined their working hours, set the wages and looked after employee's welfare in their own terms. However, they were now facing competition from several fronts. The strong caste network of the Brahmin-Karan traders was loosening albeit on a small scale. On one hand, traders from other social locations began to enter the trading business and on the other, the bigger capital players were expanding and the number of traders entering the wholesale market was increasing. As the fight over a resource-dependent industry, which was also facing serious ecological depletion continued, the state sought to finally implement the ban on aquaculture through demolition of gherris. The traders allege that the demolitions by the state is an unequal and politically motivated process as some drivers with political backing

continue to practice aquaculture in gherris towards the eastern bank (i.e towards the sea).

These networks could be of higher ranked bureaucrats, politicians and businessmen from across the state who too had a share in culture fisheries from the 1980s. But majorly the traders connect the demolitions to states' role in pushing for formalisation through entry of corporate capital into Chilika. This outlook towards the demolition of gherris could be coming from the traders' own sense of loss and fear of losing out completely to bigger capital in coming years.

Other than the traders, the fishers associated with the traders too voiced their complaints against the move. The limited number of fishers the author talked to rue the fact that the state had to wait for decades to remove gherris and when it did, the move cut down on their incomes very drastically as capture fisheries too is on a decline given the accumulated waste from shrimp culture leading to water pollution and closing up of a Chilika mouth. They believe if the state were to truly help them it should have had the oversight to plan the process and provide for the unemployment and loss of profits the demolition of gherris have generated. These fishers, on account of being connected to the local traders, also feel the effect of reduction of profits of the traders in their wages. This stands in sharp contrast to the

current CDA Health report<sup>25</sup> which notes, 'The local fishermen have realised the long-term benefits of gherry eviction in enhanced fish catch and livelihoods.' (ibid. p.5)

#### 6.4 Produce from Andhra, Paradeep and Digha

In spite of the gradual decline in the volume of trade, fieldwork shows that the traders have held on to their trade through different forms of readjustments, one among them is capitalising on the inherent value generating potential of the brand called "Chilika". Advancement in transportation through construction of the National Highway 5, ice availability and the advantaged geographic location of Balugaon has ensured that the town has become a key stopover for fish/shrimp from Andhra Pradesh, Digha (West Bengal) and Paradip (Odisha). The produce on arrival is repackaged with ice and depending on the market gets transported across to the major urban centres in Odisha, Delhi, Chennai and Mumbai. The traders ensure that the shipment sent from their godowns gets marked as a Chilika product ensuring that a major value addition happens at this stage as the fish/shrimp gets rebranded as being a "Chilika" produce. The brackish water nature of the lake distinguishes the

produce to be having a higher value and is often marketed as a symbol of home-grown luxury food, especially in Odisha. To an already high-value nature of shrimps, such value addition by capitalising on consumer preference for a "brand"<sup>26</sup> (that is Chilika) plays a major role both in sale and marketing of the commodity. This is done specially to meet the growing domestic demand for shrimps because for decades shrimp from Chilika was primarily meant for the export industry. Shrimp demand in the domestic Indian market has grown rapidly with a rising middle class, growth of luxury hotels, increased tourism and changing consumption patterns in urban locations. This demand has been tapped in to by the local traders. While the quality of the product usually differs, the traders do get their way around selling the produce to various sellers both on-site and through packaged shipments. Moreover, there is no tangible way to differentiate between Chilika produce or produce from elsewhere as the high value shrimp, often belong to the same species of *Peneus Monodon*. Considerable ambiguity is maintained about the origin of the produce. Local and consistent buyers if any would make sure to ask the sellers if the produce was from "Andhra or Chilika". Bargaining for the produce would

25 [https://www.chilika.com/documents/publication\\_1598905743.pdf](https://www.chilika.com/documents/publication_1598905743.pdf)

26 Starting out of 'Falcon Chilika Fresh' retail store by Falcon Marine Exports limited across urban locations in Odisha is seen as an indicator of using "Chilika" as a brand name. But the retail shop does not necessarily get all its sea food from Chilika Lake. It sources from several locations across India.



sometimes involve conversations like, “Why are you selling Andhra fish/shrimp as costly as Chilika ones?” or “From where will you get so much Chilika shrimp now in the market. This must be from Andhra. You should reduce the price”. As product differentiation is often based on word of mouth, the traders can rely on market produce from elsewhere and rebrand it as Chilika produce. While much of the data is based on on-site observations, a few traders admitted that given the limited produce from Chilika due to aquaculture ban, the traders had to look for ways to adjust their loss of profits as well as meet the growing demand in the domestic market. Hence, the stopover of the produce from elsewhere at Balugaon proves crucial to ensuring that the traders maintain their networks and forward linkages they had with other parties across Indian urban centres.

### 6.5 Why the Sudden Move to Demolish the Gherris?

Even though the motivations behind state actions to demolish the gherris remain unclear, there is no doubt that the informal system which was so tight knit in the shrimp industry at Chilika is undergoing a gradual shift. While the move to regulate the lake is a welcome change towards maintaining an ecological balance, it remains to be seen which socio-economic group would be able to influence the state’s approach to Chilika fisheries. This is due to the fact that though the state in the case of Chilika has rarely played the role of

a regulator, it has been crucial in paving the way for several reorientations to happen in the production and distribution process to favour a particular kind of class and caste group to profit from the shrimp economy. The shrimp economy has always operated within delicate circumstances because of the ban on culture and threat of resistance from the fisher groups. Eventually the socio-political conflicts multiplied into socio-ecological conflict (Nayak, 2014) and this increased the precarity of the industry even more. Among the select groups which benefitted and enjoyed considerable freedom under the state’s watch had been the local business groups, such as the godown owners of Balugaon. But that has been on a steady decline. The state, it appears could no longer play the role of an enabler for the ‘absentee landlords’ to persist in the shrimp economy—this has been made possible by the continuous struggle by the CMM or lobbying by players from other industries or bigger corporates looking to reinvest capital into the Chilika shrimp economy. The regulatory policies meant for the CPR has been kept out of public scrutiny ever since the CRB of 2001. However, this move towards a stricter regulation of the lakes resources could potentially expand the investments pouring into Chilika, if not into the fishing frontier but into other sectors such as tourism and for biodiversity conservation.

A major figure missing out from the debate around regulation and the move to re-introducing formal systems of governance into



the lake is the fate of the fishing communities. As mentioned, the abrupt nature of demolition did not bode well with the fishers in Balugaon as adequate systems were not in place to renew capture fisheries. Streamlining the fisheries in Chilika would not only require banning aquaculture but also assisting the fishing groups in breaking informal systems of credit—something which was essentially the first loophole which had allowed non-fishers to take control over the means of production from the fishers. So, the state's accountability towards the fishing groups is yet to take any concrete form because in spite of the talk and show around destroying gherris, Chilika fishers continue to function in uncertain and precarious conditions or continue to look for work elsewhere.

## 7. Conclusion

Chilika's shrimp industry at first glance presents itself as a case of loose regulation and a conflict-prone economy. Through several restructurings, shrimp aquaculture at Chilika has been driven from early 1980s to 2015 predominantly by private capital. Starting with the lobbying for change in lease policies of the lake (which were reserved solely for the fishers) and its subsequent failure owing to fishers' resistance, Chilika fisheries fell prey to outside entry through indirect means. At the local level, the Brahmin-Karan underwent an occupational shift from an agrarian economy into fish trading through securing a solid network of contacts on the

basis of their proximity to the administrative and bureaucratic processes. Simultaneously, bigger capitalistic investors expanded their business to assist culture at Chilika aided by loose implementation by the state towards the ban on aquaculture as ordered by the Supreme Court in a 1996 judgement. This set off a series of mechanisms such as the proliferation of indirect credit systems and de facto privatisation of the lake which further impoverished the fishers and rendered the cooperatives powerless. As the fisher groups experienced large-scale occupational displacement, outward migration and indebtedness, a smaller population of locals and the bigger export firms profited from the massive revenue generated from shrimp exports.

In the case of the local traders at Balugaon, this wealth generated from the good shrimp business years (roughly between 1980-2010) in turn promoted an upward mobility among the younger generation. They thrived to gather several other forms of capital to manage an occupational shift towards more secure jobs. This process of accumulation for the traders took forms of visible spatial and asset inequality. The fishing communities continue to be powerless, marginal players in the shrimp economy. While the next generation of traders could achieve educational mobility banking on the shrimp business, the fishing communities continue to reel under generational poverty, as the next generation moves out to other coastal areas,

looking to continue fishing or work as migrant wage labourers. The social mobility achieved by the local traders stands in stark contrast to the fishing groups who despite the promise of upliftment through export-based culture fisheries hardly experienced any form of socio-economic growth. The paper elucidates how, in a caste embedded society like India, one's occupation is not purely an outcome of choice even today. It points out ways in which the traders, through pre-existing social and economic capital on account of being higher up in the social hierarchy, could venture out into an emerging industry when capitalistic modes of production were slowly taking roots in post-colonial India. It also exhibits the ability to shift occupations through generations as the Brahmin-Karan families in Balugaon shifted from holding agricultural land to shrimp business and now onto another emerging economy i.e., the IT sector. Such upward social mobility was not witnessed in the fishing groups, and when it did, it occurred in a miniscule scale. Although fisher groups did enter trading showing upward mobility, the shift was possible after almost 30-odd years after the Brahmin-Karan group of traders. This makes a case for ways in which capitalist systems of organising production in the Global South are not separate from social systems of hierarchy. Rather they intersect at various points to give systems of production a newer shape.

The state's role in assisting the persistence or termination of such a system becomes

paramount as is seen in the case of Chilika. The state had ignored the proliferating illegal gherris on Chilika waters for many decades, despite repeated pressure from fisher groups to implement the ban. But the move to finally forcibly demolish gherris in 2015 immediately signalled a restructuring of the economy, guided by the state. The ecological degradation of the lake on account of shrimp culture was finally acknowledged by the state and was cited as the primary reason for implementing the demolition of gherris. Considerable pressure from different groups could have facilitated the process, viz the tourism industry, the conservationist NGOs or bigger corporate players, including the constant backlash from the fishers' groups. But what remains central is that social relations within the shrimp economy at present are changing, either making way for formal entry of bigger capital into the shrimp industry or assisting the entry of capital into other sectors within the lake, such as tourism, while traditional fishers either move out of the economy or make do with lesser wages post-gherri demolition and the collapsing capture fisheries. The state is yet to enact any substantial help towards bringing the fishers into the forefront of the restructuring, a group whose poverty alleviation was supposed to be the core of the aquaculture project. The local traders, on the other hand, after losing out on their share of profits from the culture fisheries started laying off a huge section of the labour employed in their godowns. To stay afloat in the fishing trade, they started

banking heavily on the exotic potential of the brand name of 'Chilika' and its 'Brackish water nature' to rebrand produce from other states like Andhra Pradesh, or port towns of Digha and Paradeep into Chilika produce, which in turn fetches them higher value in the domestic markets. The middlemen or 'commission agents' who had formed the link between the fishers and the traders/processing plants sought out a gradual exit after culture produce dropped, as informed by the local traders.

To conclude, shrimp aquaculture in Chilika has deprived the local fisher groups from any form of upward mobility, entrapping them in a series of conflict, debt and exploitative relations with non-fishing caste groups. The current conservation agenda and strive to implement the ban on aquaculture cannot work in a vacuum, detached from the cause of the fishers. Unless the state actively engages with the decades old question of conflict over CPR and empowers the cooperatives through providing access to credit and strict monitoring of lease polices, there are high chances that the present de facto privatisation of the lake would make way for another round of de jure privatisation.

### 7.1 Scope for Further Research

There are several points in the paper that point to the need to conduct deeper and finer research on the social relations of shrimp production. A gendered analysis of the role and lives of fisherwomen who occupy several occupational roles in the market as well as the household would help capture the role of women in an otherwise male-dominated field. A comparative analysis of the socio-economic mobilities and scale of revenue from the trade between the older Brahmin-Karan traders and traders from fishing castes and other religions would assist to further enquire into the inequality produced through shrimp aquaculture and also assist in understanding the relations the diverse group of traders share in the marketplace. The ambiguity around the mechanisms used by middlemen in the shrimp economy still exists and this could be an area of enquiry as well. A survey of the numerous processing units around Chilika and an understanding of the labour practices and conditions of work is highly required to fully grasp the value chain of the shrimp economy.

### References:

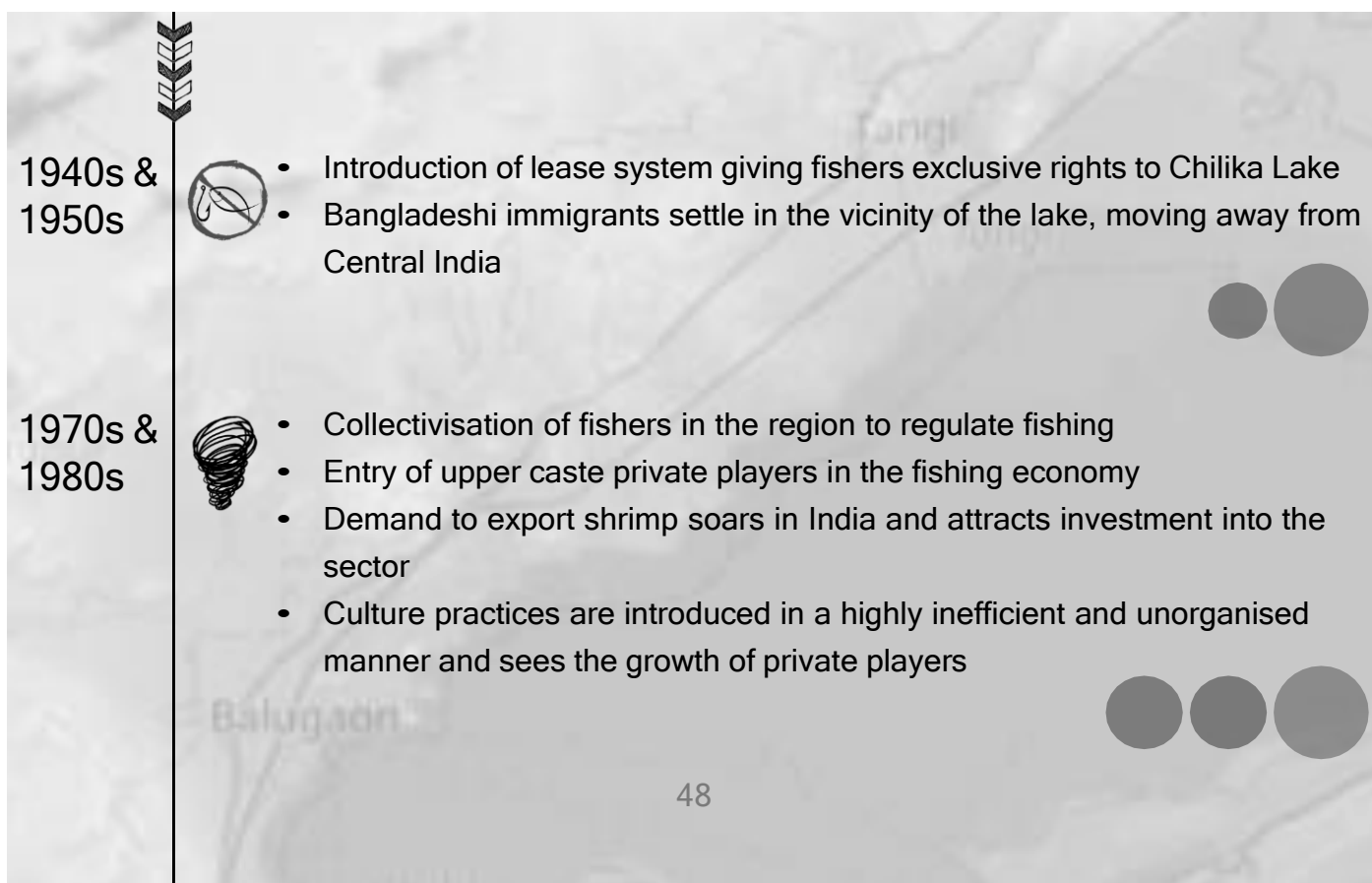
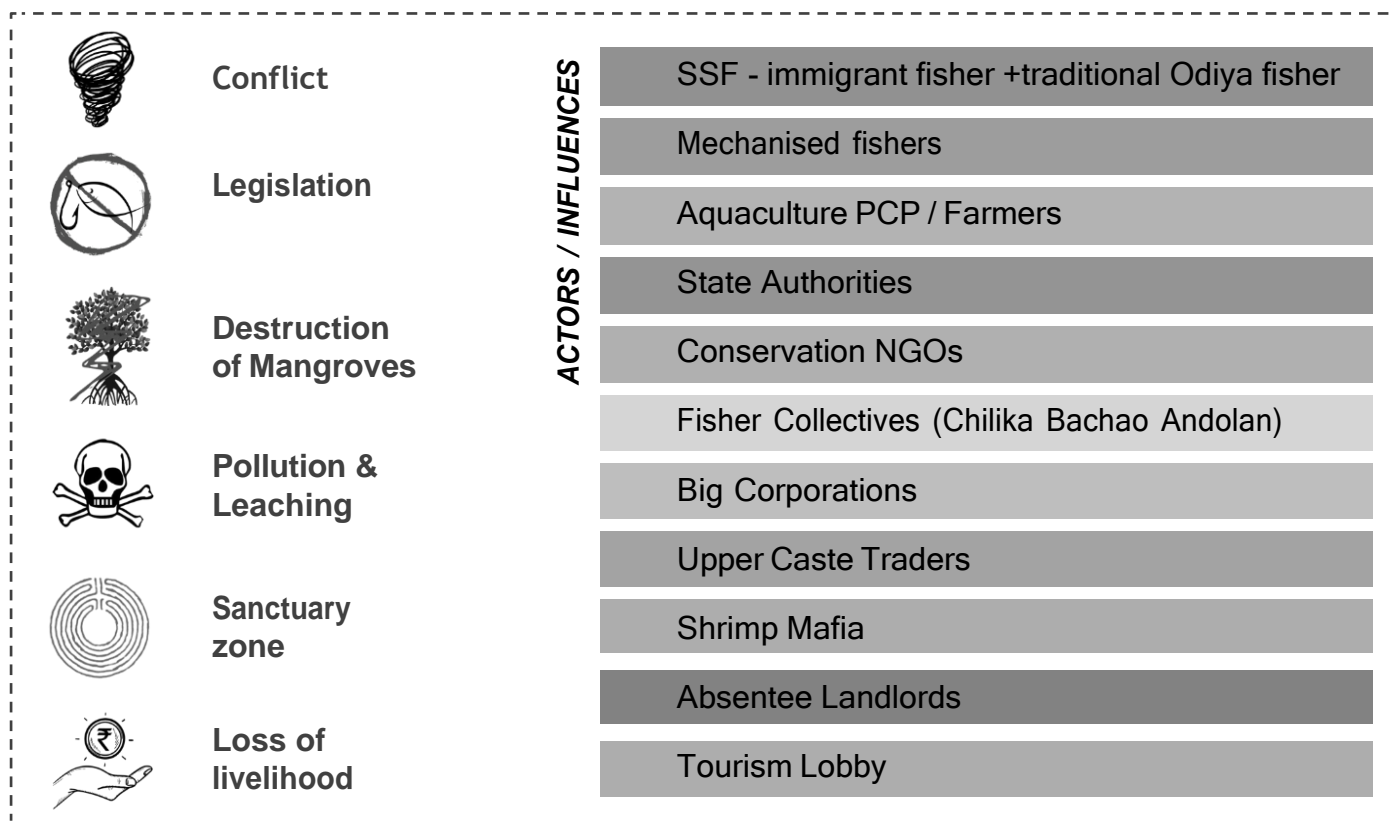
- Adduci, M., 2009. Neoliberal wave rocks Chilika Lake, India: conflict over intensive aquaculture from a class perspective. *Journal of Agrarian Change*, 9(4), pp.484-511.
- Belton, B., 2016. Shrimp, prawn and the political economy of social wellbeing in rural Bangladesh. *Journal of Rural Studies*, 45, pp.230-242.
- Das, L.K., 2014. Privatisation of CPRs and the Informal Sector. *Economic and Political Weekly*.

- Das, L.K., 2018. Social movements-judicial activism Nexus and neoliberal transformation in India: revisiting save Chilika movement. *Sociological Bulletin*, 67(1), pp.84-102.
- Granovetter, M., 1985. Economic action and social structure: The problem of embeddedness. *American journal of sociology*, 91(3), pp.481-510.
- Goss, J., Burch, D. and Rickson, R.E., 2000. Agri-food restructuring and third world transnationals: Thailand, the CP Group and the global shrimp industry. *World Development*, 28(3), pp.513-530.
- Harriss-White, B., 2003. *India working: Essays on society and economy (Vol. 8)*. Cambridge University Press.
- Islam, M.S., 2008. From pond to plate: towards a twin-driven commodity chain in Bangladesh shrimp aquaculture. *Food Policy*, 33(3), pp.209-223.
- Iwasaki, S. and Shaw, R., 2008. Fishery resource management in Chilika lagoon: a study on coastal conservation in the Eastern Coast of India. *Journal of Coastal Conservation*, 12(1), pp.43-52.
- Mishra, S.R. and Griffin, A.L., 2010. Encroachment: a threat to resource sustainability in Chilika Lake, India. *Applied Geography*, 30(3), pp.448-459.
- Nayak, P.K., 2014. The Chilika Lagoon social-ecological system: an historical analysis. *Ecology and Society*, 19(1).
- Nayak, P.K. and Berkes, F., 2010. Whose marginalisation? Politics around environmental injustices in India's Chilika lagoon. *Local environment*, 15(6), pp.553-567.
- Pradhan, D. and Flaherty, M., 2007. National initiatives, local effects: trade liberalization, shrimp aquaculture, and coastal communities in Orissa, India. *Society & natural resources*, 21(1), pp.63-76.
- Pattanaik, S., 2003. Tradition, Development and Environmental Movement of The Marginalised: A Study of Fishing Community's Resistance in Orissa. *Indian Anthropologist*, 33(1), pp.55-70.
- Samal, K.C., 2002. Shrimp culture in Chilika lake: case of occupational displacement of fishermen. *Economic and Political Weekly*, pp.1714-1718.
- Samal, K.C. and Meher, S., 2003. Fishing communities on Chilika Lake: comparative socio-economic study. *Economic and political weekly*, pp.3319-3325.
- Sekhar, N.U., 2007. Social capital and fisheries management: the case of Chilika Lake in India. *Environmental management*, 39(4), pp.497-505.

# Locating the Caste Economy of Chilika Shrimp: A Study of Balugaon Traders



## KEY





1990 to 1995



- Indian economy is liberalised
- Lease Policy is introduced to permit culture production and allows for non-fishers to operate on the lake. This gives rise to ‘absentee landlords’ operating
- TATA group signs a deal with the state to invest in culture fisheries



1995 to 1999



- The Supreme Court bans culture shrimp gherris in the lake. The ban is never implemented and shrimp production from culture sources increases
- The decade ends with the death of 4 fishers while protesting for the implementation of the court orders and the rise of local “Shrimp Mafia”



2000s



- The Chilika Regulation Bill is tabled to reserve only 30% of fishing area for fishers and lease the rest out to non-fishing groups
- The bill is never passed and this gives rise to a second round of privatisation and the proliferation of illegal shrimp aquaculture
- Notices of ‘illegal immigrant’ given to 1551 Bangladeshi families in coastal villages
- This decade sees a boom in shrimp production



2010 onwards



- Shrimp production from culture sources begins to decline. The ecology of the lake is severely affected
- The Chilika Development Authority (CDA) demolishes illegal shrimp gherris
- The demolition and conservation drive see a downturn in the market. There is a decline in employment, and in catch and related work in the post harvest sector
- A reorganisation of the value chain begins with dominant actors in the region losing their control over the sector





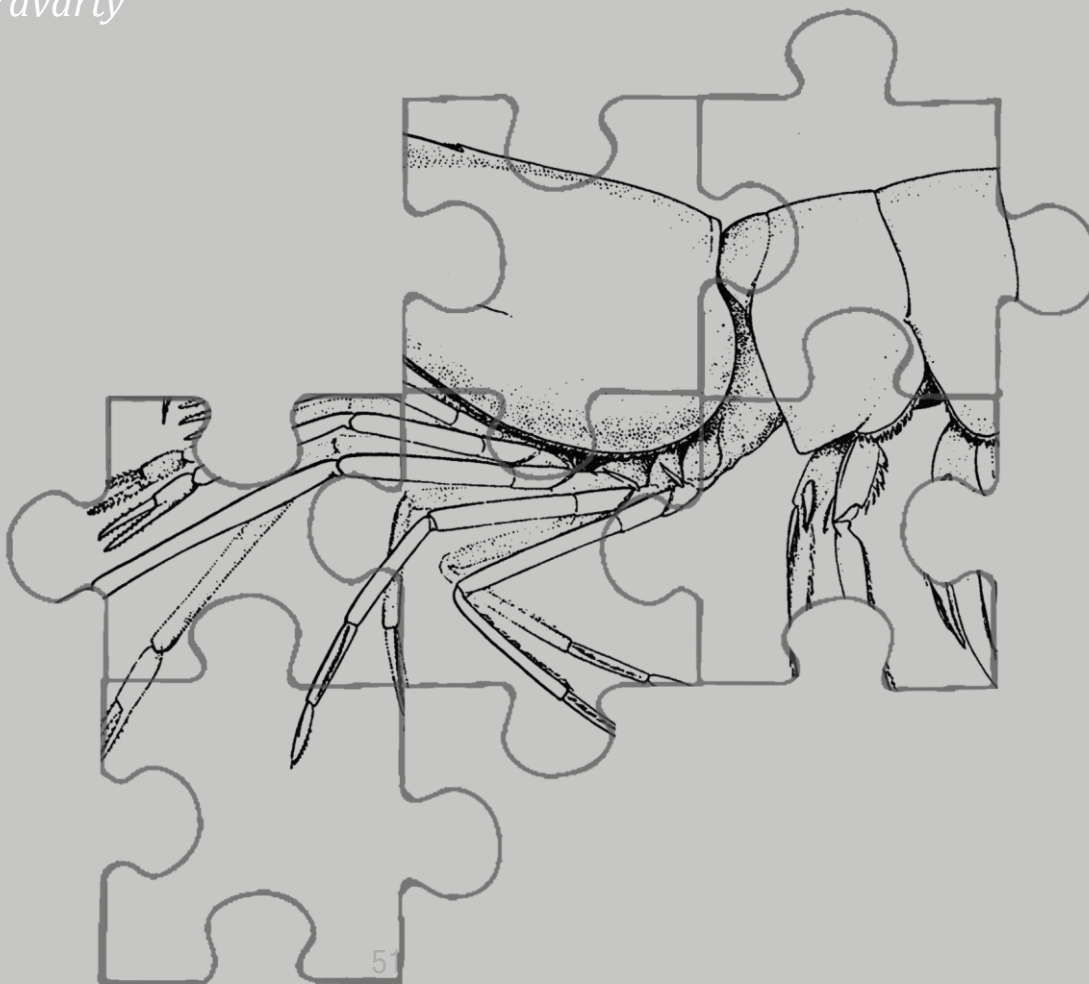


# Who wins when shrimp booms?

*Examining the transition to the Blue Economy in India.*

In 2019, India became one of the world's highest producers of Pacific White Shrimp. This was achieved within a decade of the species being introduced in the country. This paper examines the shrimp boom under the 'Blue Economy' development framework which has been embraced enthusiastically by the Indian state. The article unpacks the exploitative shrimp production model and problematises the seemingly conflict-free transition to sustainability as portrayed by the Blue Economy.

*Siddharth Chakravarty*



## 1. Introduction

By the end of 2019, global aquaculture production is set to exceed capture fisheries for the first time in history. While culture<sup>1</sup> fisheries encompass a diversity of species, produced for both domestic and foreign markets, and farmed in fresh, brackish and marine waters, the global trade is dominated by three species—shrimp, salmon and carp (FAO FishStat, 2016). Of these, shrimp is the most valuable traded commodity and India's shrimp exports-sector has rapidly grown with exports adding USD 4.8 billion in foreign exchange by the end of 2018 (MPEDA, 2018). Within a decade since the species was introduced in 2009, the country has become a world leader in shrimp production. This growth story is primarily driven by the introduction and promotion of an introduced species, the Pacific White Shrimp (*L.vannamei*). In global trade, the rise of shrimp has been promoted because of its foreign exchange earning potential and its scale neutrality (Hall, 2003). With India having utilised only 13% of land suitable for brackish water farming, projections at the state level indicate that the shrimp boom in India is only at its nascent stages. It is the possibility of this untapped potential that is driving India's third Blue Revolution, with plans to boost the production of capture and culture fisheries (NFDB, 2018).

India's export-oriented intensive shrimp aquaculture lies at the intersection of agrarian and fisheries sectors. Geographically, shrimp farms bridge the area between the land and the sea; they are located on land but are operationally dependent on the sea. They also incorporate former small-scale and marginal farmers into global commodity circuits while at the same time impacting small-scale and marginal fishworkers. As such, shrimp aquaculture brings together the sectors of agriculture and fisheries in the following ways. First, it acts as a pressure valve in relieving the exhaustion of fisheries by transitioning production from capture fisheries to culture

---

<sup>1</sup> I use culture fisheries interchangeably with aquaculture in order to contrast it to capture fisheries. All references exclude farmed aquatic plants, non-food fish and the trade in aquatic animals.

fisheries (Longo et al., 2019). Second, by bolstering private investment in the sector and incorporating farmers into a self-employed entrepreneurial growth model, it responds to calls to promote smallholder farms to drive growth from below (World Bank, 2007). Third, it offers one pathway to resolving the productivity crisis of the agricultural sector by offering farmers and the agri-food industry a crop diversification option (Fry et al., 2016).

A combination of these three trends, while specific to the Indian context, also reflect the changing landscape of food policy-making globally. As a result, this paper is interested in using shrimp production in India as an entry point into investigating how capitalist agriculture is changing. The question asked is this: Who wins when shrimp production booms? I examine this by examining the two poles that shape the shrimp industry: national policy making at one end and at the other, petty commodity production (PCP).<sup>2</sup> At the risk of falling into the category of methodological nationalism, I use the national arena at one pole because agrarian policy-making lies firmly within the domain of the state. Historically, it has always been the state which has allowed for the reproduction of capitalist

relations through its policies (Baglioni and Campling, 2017). However, I deterritorialise the nation-state by using the overarching framework that approaches food as being central to mediating global value relations (Araghi, 2003) and thus a source of surplus value for capitalism. The overall attempt is to bring culture fisheries production into the larger literature of food regimes and use the Blue Economy<sup>3</sup> (BE) development framework as a means to examine the peasant question<sup>4</sup> today.

By doing so, the paper makes a number of findings. The first points towards capitalism's scramble to control the last commodity frontiers under the veil of the BE. This scramble, while cloaked under the narrative of sustainability and biosphere stewardship, points to the continuation of exploitation and dispossession that have dotted capitalism's history. This leads to the second finding that in adopting the BE framework, the Indian state is paving the way for this resource redistribution to be undertaken. Thus, while socially and environmentally just transitions to sustainability envisage a reduction in inequality and poverty, the on-going transition does little to address these. This point re-

---

2 I use PCP here to indicate 'an economic activity in which the household is the unit of production and consumption, a unit combining capital and labour in gendered roles'(Harriss-White, 2018, p. 357)

3 The term Blue Economy refers to the development of oceanic economic activities in an integrated and sustainable way ((World Bank, 2017)

4 Here I use 'peasant question' in relation to investigating 'the extent to which capitalism is or is not transforming agriculture, the impact of such transformation for accumulation, and the consequences for rural politics' (Akram-Lodhi and Kay, 2010, p. 315)

energises the debate on the centrality of the state—Araghi's (2009) visible foot-in guiding the invisible hand of the market. The third is that households engaged in the petty commodity production (PCP) of shrimp have been rendered vulnerable by the production strategies of export-oriented shrimp. Their condition resemble Fernandes' (2018) observation that as opposed to the violent dispossessions in the form of land-grabs and enclosures, neoliberal agrarian restructuring is also constituted of 'incremental, under-the-radar process[es] of erosion of the capacity for social reproduction' (ibid. p. 159).

The paper is arranged as follows:<sup>5</sup> Section 2 explains the fieldwork methodology and introduces the field site. Section 3 describes the shrimp production process. Section 4 elaborates on the findings from my fieldwork, after which I pose questions related to food and the role of the state in reproducing capitalist relations. Section 5 establishes the centrality of food as being crucial to mediating global value relations and explores the ongoing shift in policy-making from agro-food to seafood. Finally, Section 6 introduces the historical role of the state in reproducing capitalist relations and maps the emerging Blue Economy in India. I conclude with implications and areas for further research.

## 2. Methodology and Field Site

The central aim of the paper is to examine the two poles that shape the Indian shrimp industry: national policy-making at one end and at the other, petty commodity production. Shrimp production as a part of the culture fisheries portfolio allows me to locate the Blue Economy as a development framework that is foremost interested to revive global accumulation via the provision of cheap (sea) food<sup>6</sup>. To do this, a combination of primary and secondary research was used. Secondary research was used to understand the policy-making pole by parsing through data related to the Blue Economy. This included studying the global drivers of the policy across a range of FAO annual reports related to agriculture, fisheries and aquaculture. This also included studying documents issued by the Government of India's (GOI) Ministry of Agriculture and Farmers' Welfare, the Ministry of Animal Husbandry and Fisheries, Ministry of Shipping, Ministry of Road Transport and Highways related to agriculture, fisheries and culture fisheries. This was repeated for information at the State level of West Bengal. The research was also undertaken through documents such as annual reports and vision-setting dossiers from the bureaucratic and educational institutions dealing with

---

5 This version is a modified version of the original dissertation. Refer to Box 1 and Box 2 respectively of this publication for the literature review and the Blue Economy context of Shrimp production.

6 For more readings on this shrimp in relation to the BE framework please visit the 'General Literature and Resources' section of this publication.



culture fisheries. In addition, I attended two workshops in 2019: one in New Delhi conducted by the National Platform for Small-Scale Fishers (Inland) and the second by the Coalition for Environmental Justice in India.

district. The field site was chosen for several reasons. Firstly, West Bengal is estimated to have a third of the country's proportion of land suitable for brackish water aquaculture making it particularly suitable for aquaculture study (NFDB, 2018). The state is dominated by



Image 1: The location of the shrimp ponds is along the canals, formally used to drain flood water from the low-lying plain areas. (Source: Kaelyn Maehara, 'By The Water' film)

The primary research was undertaken in July 2019 for three weeks in the village of Baguran Jalpai in West Bengal, located in the Kanthi subdivision of Purba Medinipur

a majority of small and marginal landholdings on which shrimp production is being undertaken. Since the field site lies in a flood zone, the topography allows for the rapid



expansion of the industry at minimum costs and demands of infrastructure from the state are negligible (see Image 2). As a consequence of these factors, West Bengal presents an insight into the complexities of this industry as evidenced by the convergences of the agri-food, the aqua-feed, the capture fisheries and the subsistence peasantry sectors. Prior to arriving at the field site, secondary research was undertaken electronically. This included online research from government and industry websites as mentioned above, as well as email exchanges and telephone calls with prospective participants.

A decision was made to visit the village in July since it is when the shrimp cycle changes over. This allowed for an observation of the harvest, the cleaning of farm ponds, the preparation for the next cycle and an opportunity to observe various processes related to stocking, farming and selling. The sample selection was made to examine two dynamics: one, to understand the on-farm process that resulted in the conversion of paddy fields to shrimp farms and two, to understand what the immediate off-farm socio-ecological impacts were. In line with this, a decision was made to approach a minimum of six participants who had been engaged in shrimp production for a period of at least six years. Alongside this, it was also decided to interview a minimum of two participants who shaped the production process, both upstream and downstream. It was decided to deploy a combination of empirical and interpretivist methodologies

and research was undertaken using a combination of ethnography, semi-structured interviews and questionnaires, while a snow-balling technique was deployed to find potential participants.

As a result of the above methodology, a total of 22 interactions (See Table 1) were conducted.

### 3. The Production Process

The success in the production process in nature-based industries such as shrimp aquaculture requires turning nature into commodities (Irrázaval and Bustos-Gallardo,

Sector	Number of Participants	Utilised in Paper
Shrimp PCP	13	9
Fishworker	3	0
Farmer	2	0
Retailer	1	1
Exporter	1	1
Agro-Food Industry	1	1

Table 1: Fieldwork participant breakdown

2019). The commodification process, in this case the growth of a shrimp from the larval stage to an adult at harvestable size, is not defined alone by the interventions made by the farmers in the production process. Nature too resists this commodification and 'intensifies the biological and physical challenges....generating and exacerbating a broad spectrum of bio-physical instabilities' (Baglioni and Campling, 2017, p. 2447). For example, the presence of the White Spot Virus, a commonly occurring virus in intensively farmed shrimp, can be seen as an example of nature's instabilities to the



commodification process. Thus, how this ecological contradiction is confronted in turn shapes how the capital and labour relationship is organised. Drawing on this, Baglioni and Campling (2017) write that since the production process ultimately shapes how the entire chain is organised, ‘the question of how capitalist production works through and against labour and nature remains crucial to GVC analysis of natural resource industries’ (ibid. p. 2447, italics in original). This section describes the production process, the one that follows analyses the capital-labour relationship.

### 3.1 Participation

The production process is evenly comprised of PCPs (49%) and labour employment (51%); the PCPs are either owners of their land or have leased someone else’s land but work on the farms themselves, while the labour are in informal and seasonal employment relations reflecting more pure capital-labour relations. While the capital-labour relationship demands a study of its own, my focus here is on the PCPs. Drawing from Maiti et al.(2019), I represent the main features of their participation in Table 2 below.

Respondents to my interviews said that they are unable to leave the village between the months of February and October and they sleep in hutments on the farm through these months. Some of them also reported psycho-social impacts from the process with the use of words like stress, tension and palpitation

(dhak dhak) which indicates that the work is also emotionally intensive.

### 3.2 The Production Process

The entire region’s cycle is driven by the constraints of weather and water temperature, thus restricting the production to two cycles undertaken between the months of February and October. The cycles switch over in late June and early July. The winter months between October and February are too cold for the production to be undertaken.

Description	Representation Percentage (Of a pool of 500 participants)
PCP	49
Engaged in Production only	94
Small & Marginal Land-holding	93
Engaged for over 14 years	78
Engaged within the last 4 years	21.6
Producing Pacific White Shrimp	87
Work Hours >10 hours/day	97

Table 2: Shrimp PCP related data (Source: Maiti et al. 2019)

The production process begins by either converting one’s own land or leasing a plot of land which has to be paid for in advance. A one-time investment is then needed to prepare the land which involves excavating a pond, preparing it for farming and investing in fixed assets/equipment needed to run the operation. Once this has been done, the farmer enters into a verbal agreement with a local retailer who provides the technical help and the chemicals to prepare the pond, which is a process of two weeks. Post this, the farmer sources the shrimp larvae (seed)



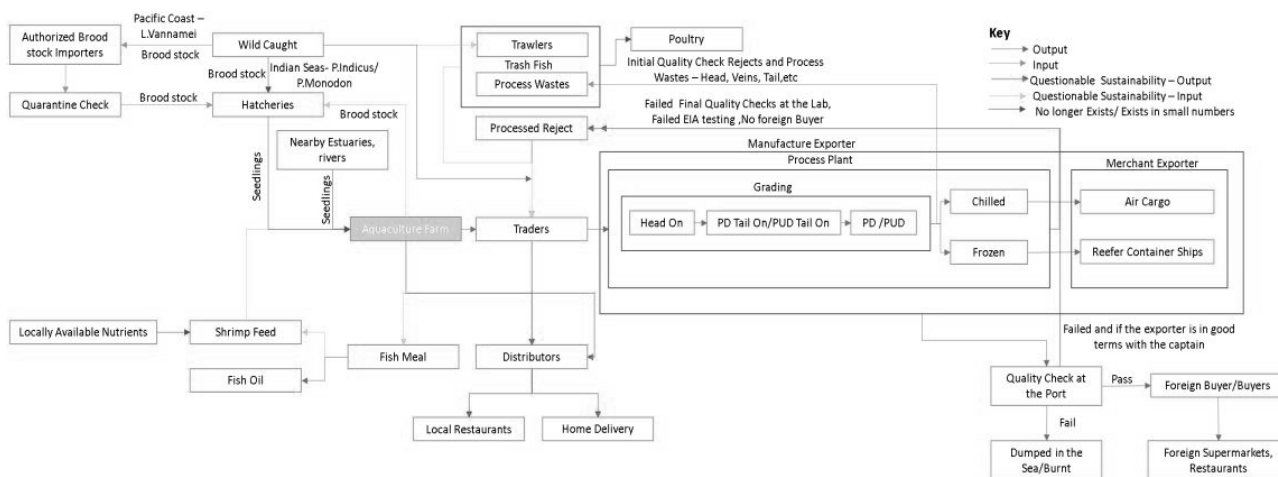


Image 2: The shrimp value chain in India (Source: Immanuel, 2019)

and based on his experience and with help from the retailer, commences the production process. This process in addition to being labour intensive requires the farmer to monitor various parameters of the pond and the shrimp, maintain logs and troubleshoot if things begin to go awry. Once the shrimps have reached the size of 20 grams<sup>7</sup>, the farmer calls buyers who then make offers to the farmer depending on the market rate at the time. If the farmer agrees to the rate, the buyer sends a team to harvest the shrimp which is then taken to a processing plant for their onward journey up the value chain. In some cases, the farmer decides to wait until longer if he has the possibility of earning a higher rate in the coming days; something that depends on his reading of the market. Immanuel (2019) in studying the shrimp production process in Tamil Nadu developed a comprehensive understanding of the aquaculture value

chain. The mapping produced by him (Figure 3) reflects the broader processes of the upstream and downstream linkages of the production process in West Bengal.

#### 4. Risk-Aversion, Downward Pressures and Production Strategies

The previous section laid out the overall contours of the production process. To understand the capital-labour relationship in the shrimp production process, this section explains the existing process as undertaken by PCP. The persistence of PCP, in the history of capitalism and especially so in the face of the globalisation of agricultural production, has renewed the interest of many scholars in agrarian studies (Akram-Lodhi and Kay, 2009); (Lerche, 2013). In a recent contribution to this debate, Harriss-White (2018) sums up both the debates when she discusses the awkward politics of PCP in India's development. My

<sup>7</sup> As opposed to the capture and culture of BT prawns in which the pricing increases with the prawn size, the PWS industry is settling at a uniform size between 18-22 grams.

entry into investigating the existing PCP in shrimp is not to advance this debate but to note that in India 'PCP exists and expands alongside other forms of capitalist production relations' (ibid. p. 360).

#### 4.1 The Input Squeeze

As far as the fact the PCP embodies an element of capital, all the respondents I spoke to mention a complete reliance on external finance to run their operations. In the wider study of Purba Medinipur district, (Maiti et al., 2019) report an overwhelming 98% reliance by the farmers on informal credit mechanisms. Informal credit mechanisms take two forms. When it comes to cash advances for securing the land, purchasing capital equipment and the seed occasionally, the farmer directly relies on moneylenders. The credit rate was described as being three to five percent per month which is exorbitantly high compared to formal credit rates. For the inputs such as feed and chemicals, the farmers indirectly access credit through the extension of feed and chemicals along with the technical expertise from the retailers. Both the farmers and the retailer I spoke with mentioned the marking up of the Maximum Retail Price, particularly for feed, to exercise interest on the material advanced. While the farmer blamed the retailer for an arbitrary fixing of the input price, the retailer explained his calculations based on the history of the farmers; what their success rate at production was, how much land they owned, if they were able to pay a down payment in cash upfront

etc. Farmers also mentioned how the inflation had raised input costs over the years, which in addition to the marking up of interest, was putting them under added duress. Learning from research in other agro-food PCP, a means of compensating for this often involves farmers 'lowering [their] food consumption and intensifying [their] labour effort' (Harriss-White, 2018, p. 362). Some of the farmers mentioned others who had been unable to repay their loans and had abandoned the village.

#### 4.2 The Output Pinch

Once the farmer has successfully produced his shrimp to the market size, he begins making calls to buyers in the region. Most of the farms in the region achieve the market size of their product inside a window which is only a few weeks wide. This in turn means that farmers are generally aware of the prevailing rate and can make the decision once the buyer informs them of it. Farmers most often will offer the retailer the first option of their sale if the retailer can pay the going rate. If he can, the retailer arranges for a harvest team to visit the farmer and then sells it ahead to a buyer. If not, then the farmer sells his product to a different buyer and pays the retailer back in cash. It is also with this sale that the farmer pays off the cash advances taken from the moneylenders and uses the rest to invest in the production costs of the next cycle. Once a sale is completed, the farmer prepares his pond for the second cycle as mentioned above in the production process. Farmers at

this stage did mention three aspects of the pinch they face. One is that the region is dominated by three buyers and one retailer meaning that the choice available to them when selling is extremely limited. Farmers also reported that one of the buyers was a member of the Seafood Export Association of India (SEAI), the exporters' body which dictates the rates depending on the demand in the export market. The second is that the market is extremely volatile<sup>8</sup> which means that decisions to either sell or wait until a higher rate is offered are completely a matter of judgement. The third is that the disease risk in the business is very high; the most commonly uttered word while describing the selling process was 'gamble' (jua).

#### 4.3 The Awkwardness of the PCP

The existing production of shrimp sees both an input squeeze and an output pinch, which implies that the mechanism for exercising this downward pressure is achieved by actors who locate themselves at strategic nodes in the chain (Baglioni et al., 2017). On the input side, the retailers and the moneylenders exercise high interest rates while on the output side, the buyers exercise a price monopoly—thus in combination exercising a double pincer move. More so, this particular situation is exacerbated by the fact that at least two of the buyers are also agents for multi-national

feed companies, in addition to running retail outlets. While interviewing this arm of the industry remains a further endeavour, this reflects findings from studies done by Aga (2018) on the 'roles of agro-commercial capital in preventing accumulation by PCP but also maintaining small-scale (often fragmented) production' (Harriss-White, 2018, p. 364). The manner in which local commercial capital has managed to secure both monopoly and monopsony control over the production process reflects how 'production and circulation are intertwined [and are] fundamental to India's capitalist economy' (ibid. p. 369).

#### 4.4 Offloading Risk

Caste and gender are two of the foundational elements of Indian capitalism and lend structure to the functioning of capitalism in India. While the exercising of power relations through caste (such as the absence of landholding and restriction of job opportunities) and gender (the exploitation of family labour and the absence from decision-making) are definitely at play in the extraction of surplus value in the section above, it does not explain why these power hierarchies do not manifest as pure capital-labour relations in the production process. Through this research, it appears that the reason why PCP is preferred over pure capital-labour relations

---

8 Farmers report that if the export market is down, buyers will often suppress the rates since they have the ability to store the product until the market revives. On the other hand, given the monopoly that the buyers enjoy, even when the export-demand is high, farmers narrate instances of barely making back their investment.

is that in the face of ecological contradictions of shrimp production, it allows for capital to offload its risks to PCP. Due to the risk of disease, made frequent because of poor regulation, in addition to the high income elasticity of shrimp demand which renders the market volatile, the production process is a high-risk endeavour.

In following Starosta's (2010) classification of small, general and enhanced capital, the shrimp PCPs represent the small firms which

exploit or exploit cheap labour<sup>9</sup>. However, (Quentin and Campling, 2018) add that 'small firms survive because normal ones are not interested in concentrating in the 'low-profit' functions of the value chain' (ibid. p. 42). To this, I would add that in the commodification of nature to produce shrimp, small firms survive because normal ones are unwilling to undertake the high-risk functions at the production stage. In fact, the awkwardness of PCP works to the advantage of normal firms. When the farmer is able to successfully

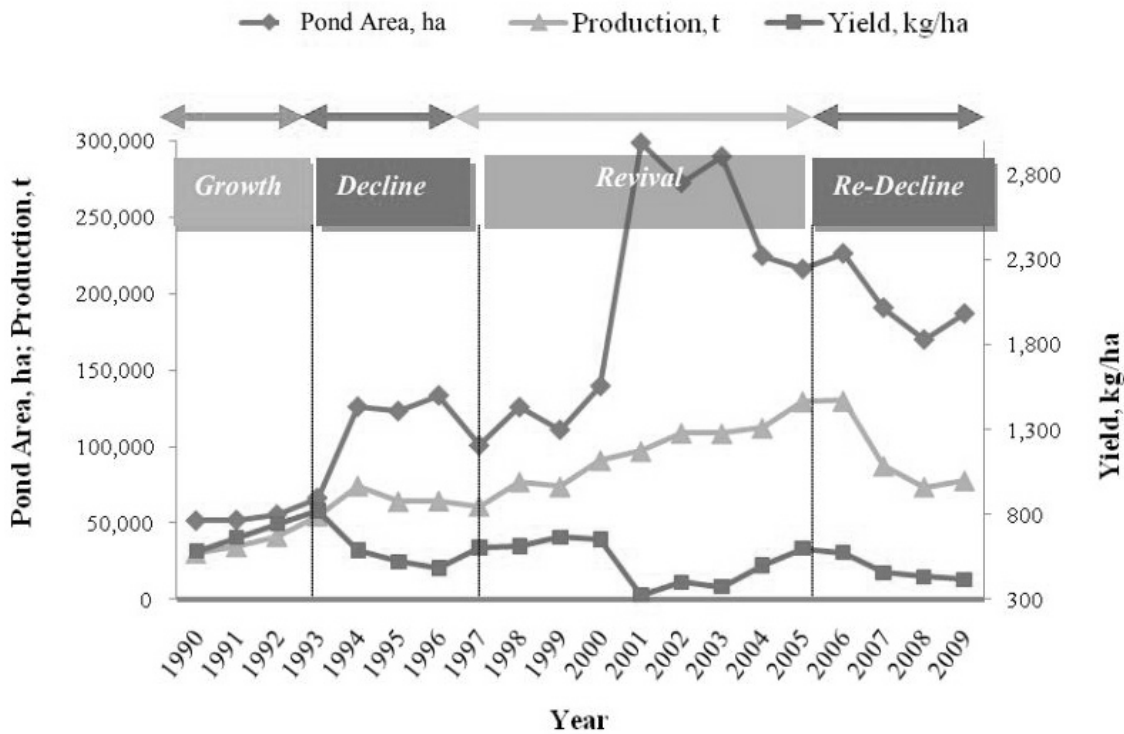


Image 3: The boom-bust phenomenon of the Indian shrimp industry (Source: Prusty et al. 2011)

'manage to extend their lifespan through systematic valorisation at a rate of profit below the general one' (Starosta, 2010, p. 447). This is possible due to the ability to self-

produce a shrimp crop, he does so at a rate of profit below the general one and is thus able to pass on the surplus to the buyers; here the PCP plays the role of Labour since the returns

<sup>9</sup> For a more thorough discussion on the links between power-relations and exploitation see (Harriss-White, 2018)

to the investment accrue downstream based on the farmer's exploitation. However, when the farmer is unable to successfully produce a shrimp crop, he is made to bear the costs of the risk; here the PCP plays the role of Capital since the loss is offloaded onto him and he enters a cycle of debt. Given the frequency of risk in the production process (see Image 4), it is precisely the ability of PCPs to be treated as labour when profits are to be made and for them to be treated as the capital when losses are to be offloaded that make them a constitutive feature of shrimp production.

As opposed to pure capital-labour relations in which capital is constantly trying to discipline the labour indeterminacy in the face of ecological indeterminacy (Baglioni and Campling, 2017), the presence of PCP in shrimp production allows for the resolution of the indeterminacy to be resolved through the process of self-exploitation and risk-offloading. However, the larger factors that allow for these strategies to have become a constitutive element of India's capitalism derive from the downward pressure on the production process for surplus extraction and the composition of the Indian state as a constellation of social relations. We move to examine both of these in the next two sections.

## 5. Mediating Global Value Relations

### 5.1 Why food?

This section locates the centrality of food in mediating global value relations to add

context to the strategies employed to extract value and offload risk in the shrimp production process. I use the analytical concept of food regimes as they facilitate an inquiry into the specificities of 'profound changes in social relations across the whole spectrum of activities related to the production and consumption of food' (Friedmann, 2004, p. 125). While the contemporary food regime can be seen as a project to 'extend capital accumulation well beyond national borders on a global scale' (Akram-Lodhi and Kay, 2009, p. 214), its features bear continuity from the colonial food regime, a continuity which was briefly interrupted by the developmentalist food regime. I follow Araghi's (2009) periodisation of the food regimes here since he uses the centrality of food in tracing the global division of labour and examines relations which 'include the politics of the state relations, the world market, colonization and imperialism, and the (often geographically separated) labour regimes of absolute and relative surplus value production' (ibid. p. 49).

Marx's theory of value is vital to understand the role that cheap food plays in capitalism. By unpacking commodity fetishism, Marx was able to see how it concealed the historical process 'that gave rise to the system of commodity exchange' (Araghi, 2003, p. 61). The value of labour power was determined by 'the value of the goods the workers must consume to replenish their capacity to work' (ibid. p. 44). To generate a profit, the owner of the means of production, thus had to

be able to generate higher value from the commodities produced by the labour than the value needed by the labour to reproduce themselves. This could be achieved in two ways: One, by increasing the productivity of labour through the extensification of the working day (working more hours) and through the intensification of the working day (adding machinery), thus raising the absolute surplus value. And two, by raising the relative surplus value by either cutting down the subsistence needs of the labour or by reducing the 'value of the commodities that are consumed by workers' (ibid. p. 45). Food thus became foundational to the accumulation strategies of capitalism.

Seen from the perspective of global value relations, the raising of the global surplus value depended on both the raising of absolute surplus value (such as through technical innovation) and the raising of relative surplus value (such as through coercive peasant labour). The colonial expansion of capitalism brought the tropical regions into the global food regime through the 'export-led exploitation' (Bagchi, 2009, p. 83). The period between 1917 and 1973 forms the developmentalism food regime in which global capitalism preferred to foster capitalism within national boundaries as a strategy to counter the rise of socialism. Finally, the global food regime that emerged

in the 1970s was a project that renewed the focus on agriculture's role as one essential to raise global 'rate of relative surplus value for capital' (Akram-Lodhi and Kay, 2009, p. 216). This was 'the restructuring of global value relations via the political construction of a new food/agrarian regime on the grave of national developmentalism' (Araghi, 2003, p. 61).

## 5.2 Why seafood?

Projections for expanding seafood production stem from the need to feed 10 billion people by 2050 (see more on this in the policy context provided in the 'General Reading and Resources section), especially in the face of challenges on account of the fall in global agricultural productivity and the impacts of climate change on agriculture. While food productivity has been plateauing for a few decades, financialisation<sup>10</sup> has exacerbated this trend by sapping the productive economy dry. This is because of the combination of speculative finance, the short-term profit horizon and the lag in creating assets made imperative the need to honour short-term profits for speculating investors. Cumulatively taken, falling productivity has directly and financialisation has indirectly amplified the 'inflationary impact of the slowdown in labour productivity growth, in agriculture especially' (Moore, 2012, p. 226). Thus, colonial liberalism and postcolonial liberalism are tied not just

---

10 Financialisation refers to the broad processes of debt-led consumption while globalisation refers to 'the intensification of transnational economic and financial flows' (Durand and Gueuder, 2018, p. 128)



by the centrality of food in mediating global value relations, but also by the crises that are created when food productivity falls. The only difference is that the colonial enterprise had the ability to expand into new commodity frontiers, a point to which I now turn.

World-systems theory (Wallerstein, 1983) lent insight into the global division of labour under capitalism. Labour productivity was divided between the core and the periphery, with the former engaging in capital-intensive activities and the latter in labour-intensive ones, thus leading to the constant draining of value from the periphery to the core. Dunaway (1996), in examining the incorporation of mountain ecosystems into the world-systems theory, concluded that the capitalist system is 'a restructuring in which a mode of production develops by exploiting natural and human resources (ibid. p. 355). In expanding this school of thought, Moore (2010a, 2010b) describes how capitalism, right from its start, was built on the appropriation of human and extra-human nature. In doing so, Moore reinterprets capitalism 'as an ecological regime that reproduces itself through new commodity frontiers' (Campling, 2012, p. 256). Baglioni and Campling (2017) interpret commodity frontiers as zones in which capitalism is reproduced 'based on the appropriation of nature through the labour process' (ibid. p. 2443).

Throughout capitalism's history, each time a stable regime was threatened by an accumulation crisis, it would seek new

commodity frontiers. As (Moore, 2010a, 2010b) writes the Dutch, the British and the Americans incorporated human and extra-human nature into their regimes of accumulation through successive rounds of expanding colonisation. In doing so, capitalism initially engages in the process of 'commodity widening or the conquest of space' (Saguin, 2016, p. 4) followed by the process of 'commodity deepening or the conquest of time' (ibid.). While the first process involves the physical conquest of territories and then enrolling the cheaply available socio-ecological surpluses to deliver productivity gains, the second process involves the application of socio-technological innovation to enhance falling productivity by attempting to speed up nature. Stable regimes of accumulation rely on the successful ability to obtain energy, raw materials, labour and food cheaply; when their supply is threatened it becomes imperative to find new ecological frontiers to commodify.

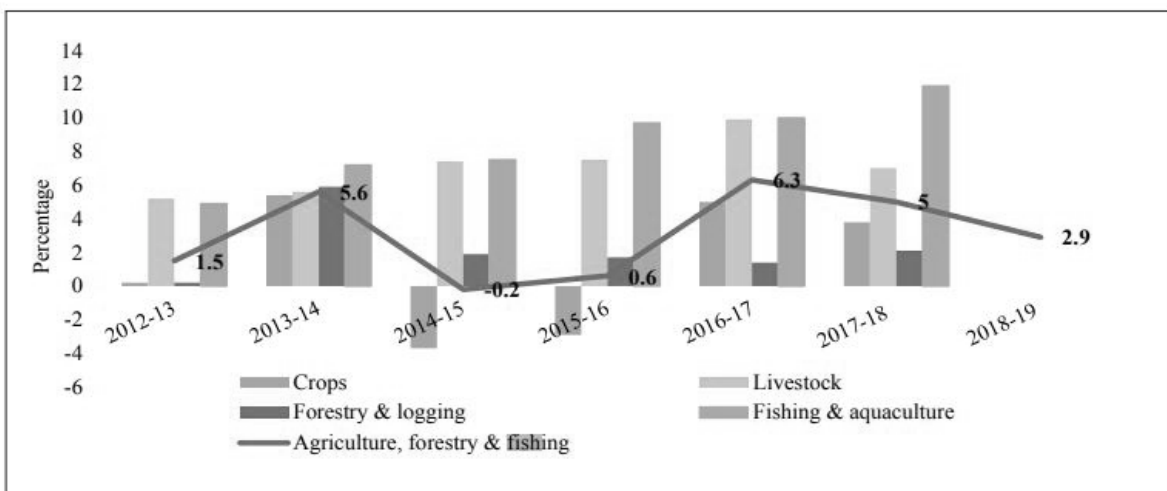
The financial crash and the boom in commodity prices before and since 2007-2008 are indications that the current regime of global accumulation is in crisis. Global growth has been slowing and with labour productivity falling on one end and food productivity declining on the other (Moore, 2012), absolute and relative surplus for capitalism are in decline. Seen from the point of view of commodity frontiers, this crisis signals the inability of 'the regime's capacity to deliver strategic inputs in a way that reduces



(...) the system-wide cost of production' (ibid. p. 225). While the colonial enterprise in the eighteenth century was faced with a similar situation, it had the ability to expand and deepen frontiers. But given 'the exhaustion of capitalism's longue durée regime of cheap ecology' (ibid. p.226) the ability to expand into new frontiers is no longer an option. The only option that remains is to control and deepen existing frontiers; I infer that these

frontier deepening processes related to food are seen in the thrust by global capital to boost culture fisheries. Related to this scramble, Barbesgaard (2018) explains how under the financialisation of nature and the changing regulations of capture fisheries the 'commodification and marketization of maritime and coastal resources is unfolding' (ibid. p. 14). Similarly, the coming together of agro-food, aqua-feed, capture fisheries,

**Figure 1: Growth Rate of GVA in Agriculture & Allied Sectors (2011-12 prices)**



Source: Central Statistics Office, Ministry of Statistics & Programme Implementation (MoSPI)

Image 4: Growing share of fisheries, mainly driven by aquaculture, in Gross Value Added in the Indian Agricultural Sector (Source: Economic Survey 2018-19, Ministry of Finance, Government of India).

processes are currently underway in the form of the Blue Economy.

The Blue Economy represents a scramble to control the remaining frontiers in the coming together of hitherto unrelated economic actors and sectors related to finance, energy, commerce, trade, biotechnology, mining, food, waste, security and climate change (World Bank, 2017). On the other hand, the

trade and distribution corporations under the Keystone Dialogues with the motto 'Connecting science with industry leaders for biosphere stewardship' shows that the scramble is already underway.

In examining the confluence of financialisation and the closure of frontiers, Moore (2012) writes that, 'without a yield revolution, cheap food is done for, and with it the promise of a significant revival of world accumulation' (ibid.

p. 246). While it is too early to claim that the yield revolution in culture fisheries will revive global accumulation, it is definitely possible to say that capitalism is interested in this sector precisely because it offers higher productivity growth. According to the FAO's report titled *Future of Food* (2017), culture fisheries will be expanded 'through intensification, species diversification, expansion into new areas (such as offshore marine waters), and the introduction of innovative, more resource-efficient technologies' (ibid. p. 37). Research already estimates that approximately 15 billion tonnes of finfish could be grown every year—over 100 times the current global seafood consumption (Gentry et al., 2017). This seemingly untapped potential of culture fisheries has become an avenue for global capitalism to revive profitable accumulation. However, the overarching demands of capital to control the culture fisheries frontiers to deepen them can only be met through the juridical-legal role of the state. The next section turns to the state's role.

## **6.The Neo-Regulationist State - Evolving to Reproduce Capitalist Relations**

The previous section ended with the proposition that contemporary capitalism needs access to spaces that can be used to speed up commodification. In the context of this paper, this implies that capitalism needs land for the extensification of culture fisheries—paddy fields to fish farms—and

the intensification of fisheries—from capture to culture fisheries. This is essentially a process of redistribution; the contemporary expression of primitive accumulation which is 'a deepening of advanced capitalism predicated on the destruction of more traditional forms of capitalism' (Sassen, 2010, p. 24). This section is focussed on tracing the evolution of the Indian state as it undertakes mechanisms that facilitate this upward redistribution of resources.

Land in Britain's transition to capitalism was at the centre of Marx's concept of primitive accumulation. The act of separating the peasant from their means of production—the creation of enclosures—was the 'essential moment of the emergence of the capitalism' (Vergara-Camus and Kay, 2017, p. 243). The demarcation of enclosures required the drawing and policing of its boundaries which invariably involved the alteration of social relations; a coercive process that could only be undertaken through the 'intervention of a hegemonic power, one that can generate a measure of consent, as well as enact measures of coercive force' (Buck, 2014, p. 57). Thus, the state and its juridico-legal capacity emerged as the markers and enforcers of enclosures leading to the institutionalisation of private property rights, whereby 'the law itself (became) the instrument of the theft of the people's land' (ibid.)

In order to explain the processes that have facilitated the transformation of the world into a unified, global agricultural marketplace

(McMichael, 2009), it is vital to reformulate the state as 'institutionalizations of historically specific class, racial, and gendered power struggles within the wider context of world market competitive imperatives' (Marois, p. 311). By doing so, it becomes clear that 'the political and coercive nature of capitalism is institutionalized through a particular private property rights regime and specific forms of class interventions through the state' (Vergara-Camus and Kay, 2017, p. 244). Neoliberalism, as the contemporary expression of capitalism, has intensified the commodification of land, labour and markets which have in turn amplified the vitality of securing access to these resources. Their demands for the privatisation of land, the protection of biotechnology and the facilitating of financialisation have become deeply intertwined modern-day enclosures; 'Capitalism came to life via enclosures and it continues to live through enclosures' (Araghi, 2009, p. 120).

In the immediate post-independence period, southern states such as India were able to focus on national development. This developmentalism era saw the state as the crucial link between the agrarian and industrial sectors based on the model of structural transformation. With the rise of the post-colonial neoliberal food regime however, the role of food was unhinged from its national base and reinstated to the position of mediating global value relations. Thus, the Indian state went from being the centre of

promoting peasant and landlord capitalism in the rural countryside to being one which was more 'responsive to the requirements of international financial capital' (Patnaik, 2012, p. 32). As Patnaik (ibid.) points out, the state, with the consent of big Indian capital, shifted from a model of autonomous development to global integration, thus serving a different set of class relations. Overall policies adopted to facilitate financial globalisation have led to the stagnation of peasant agriculture through the adoption of policies that imposed 'an income deflation which curtailed the purchasing power of the masses' (ibid. p. 35).

Rather than marking the liberalisation juncture as the start of the decline of agricultural productivity, the roots to the crisis are found in the Green Revolution (GR) period between the 1960s and 1970s (Jakobsen, 2018). Given that this section is interested in linking the role of the state with agrarian policy-making, a study of the GR lends insights as India transitions to a Blue Revolution (BR) under the guiding hand of the state. Studies examining the productivity of Indian agriculture show that by the time India had formally liberalised, the GR staple crops of wheat and rice were already in productivity decline, unless enhanced by agro-chemical inputs (ibid.). Moreover as Aga (2018) shows, the 'expanding market for agricultural inputs has opened opportunities for upwards mobility, income diversification, and enrichment for farmers however limited and tenuous' (ibid. p. 671). In addition, as Jackobsen (2018) points

out, the dynamics of the rural countryside are shaped beyond just the state; in fact the manner in which the 'landed agrarian elites and dominant middle-caste farmers worked against the developmental state's attempts at progressive reform in agriculture [.....] meant that Indian neoliberalism was shaped to their interests' (ibid. p. 7). And once they had accumulated from the rise in productivity and the opportunities that the GR presented them with, 'the agricultural bourgeoisies diversified out of farming and turned to industrial and agricultural investments' (ibid.).<sup>11</sup>

India's agrarian economy is extremely hierarchal with pre-capitalist landlords and capitalist farmers at the apex, PCP in the middle and finally, the large masses of the labouring poor at the bottom (Lerche, 2013). As a constellation of social-relations the state is ever-transient; the post-independence India saw it enter in an alliance with domestic and international capital to protect and foster capitalist agriculture and ISI industrialisation. By the 1970s, the state became outward-oriented in response to demands to raise agricultural growth and liberalise its markets, at once responding to the demands of global capital and domestic elites. Thus the

transitions to the Blue Economy to which we now turn must be seen as a combination of neoliberal state policies from above and demands from the unequal power-relations in the countryside from below.

### 6.1 The Blue Economy in India

The Bharatiya Janata Party came to power in 2014 and soon after three crucial aspects of development planning related to the nation-state were changed. The Planning Commission, which had been in place since Independence, was replaced by the Niti Aayog—a MITI styled meritocratic agency with close links to the Prime Minister's Office. Five year plans, which had been the backbone of development planning, were extended to thirty years in line with the SDGs approach to envisioning long-term development. Finally, the task of planning was handed over from the bureaucracy to external consultancy firms and governance was shifted from local bodies (panchayats) to para-statal bodies<sup>12</sup>. Overall, this indicates a shift in democratic and federal, bottom-up decision-making to a technocratic, centralised top-down one.

With this architecture in place, Prime Minister Modi introduced the party's flagship

11 This diversification would reflect the informal credit mechanisms in the shrimp production process, in a category broadly called Commercial Capital (Harris-White, 2018). One of the shortcomings of my research is that I have not had sufficient time to examine this sector.

12 While this is not a juridical shift, it reflects experience of unions and peoples' movements on the ground that are challenged by the extinguishing of former forms of resistance brought about in the after-math of the 73<sup>rd</sup> and 74<sup>th</sup> amendments to the Indian constitution aimed at decentralising governance.

programme Sagarmala<sup>13</sup> in 2016. The Sagarmala which literally translates to ‘string of beads on the sea’ is a coast-based industrial model that proposes to increase India’s GDP by 2% in the next 20 years. The central vision of this programme is to decrease costs for domestic and Import-Export (EXIM) trade in three ways. One, increase the efficiency of ports through modernisation and expansion of existing ports and the creating of new ports. Two, reduce costs of transport by creating a homogenous multi-modal transport system by bringing together roads, railways, rivers and pipelines. And three, speed up the circuit of production and exchange by locating industrial clusters on the coastline. The justification of the model is primarily to reduce transport costs and make India’s competitiveness in the global economy more attractive to domestic and international capital (Sharma and Chakravarty, 2017). A fourth component of this programme is titled ‘Coastal Community Development’ which comprises of imparting skill development training to fishworkers with respect to jobs in ports, the maritime industry and in industrial clusters, in addition to a slew of projects related to livelihood opportunities within and outside the fisheries sector.

While the examination of the Blue Economy in India is outside the scope of this paper (for a review see Sharma and Chakravarty, 2017), it is the livelihood opportunities within the fisheries sector that tie it in with the focus of

this section. Shortly before the Sagarmala was unveiled, the Cabinet Committee for Economic Affairs (CCEA) in December 2015 approved an umbrella scheme called the “Blue Revolution: Integrated Development and Management of Fisheries” (henceforth BR). With an initial outlay of INR 3000 crore between 2016-2020, ‘the Blue Revolution, with its multi-dimensional activities, focuses mainly on increasing fisheries production and productivity from aquaculture and fisheries resources, both inland and marine’ (www.dadf.gov.in). In the timeframe up to 2020, the aim of the BR is to increase fish production to a total of 15 million metric tons. In addition to this, the Fisheries Infrastructure and Development Fund (FIDF) has been created to inject another INR 10,000 crore into fisheries development by bringing together the National Bank for Agriculture and Rural Development (NABARD), National Cooperatives Development Corporation (NCDC) and all scheduled Banks (FIDF Guidelines, 2019). The focus, while being centred on bringing more area under culture fisheries, also links to infrastructure, upgrading and value-chain connectivity.

Since 2016, in addition to these schemes, two parallel and contradictory evolutions in policy-making have been emerging. On one hand, policies related to fisheries have been introduced covering every single water body in the country (see Table 3). On the other hand are policies relating to the protection of

---

13 See <http://sagarmala.gov.in/> for more details of this programme

Policies implemented (Fisheries related)	Area brought under regulation
Coastal Aquaculture Act 2005	. 1.2 million hectares
National Policy for Marine Fisheries 2017	. Capture fisheries in the Indian EEZ
Draft National Policy on Mariculture 2018	. 0-12 NM in territorial waters across . 8118 km of the Indian coastline
Draft National Inland Fisheries and Aquaculture Policy 2019	. 191,024 km of rivers and canals . 1.2 million hectares of floodplain lakes . 2.36 million hectares of ponds and tanks . 3.54 million hectares of reservoirs . 1.24 million hectares of brackish water

Table 3: Policies related to culture and capture fisheries (Source: Various, GOI)

the environment, the acquisition of land and the securing of livelihoods (see Table 4)<sup>14</sup>.

In combination, they reflect a few inter-related themes. One, the logistics circuit of the Sagarmala programme is opening up commodity frontiers that hitherto could not exist at the scale at which they are now being imagined. Two, the access to these frontiers has historically been, and continues to be, accessed through the juridico-legal capacity of the state. And three, the Indian state's response to the scramble reflects the gravitational pull that capital value relations have on social change (Baglioni and Campling, 2017).

## 7. Conclusion

The attempt of this research was to use shrimp production in West Bengal, India as an entry point into investigating its role in global value relations. As culture fisheries expand in water-bodies that are fresh, brackish and salty, or

Policies diluted (Regulation related)	Effects of dilutions
Coastal Regulation Zone Notification 2019	Exposes sensitive zones to permanent structures
Land Acquisition Act 2013	Reduces guarantees for livelihood security State-level amendments have bypassed EIA and SIA requirements
Forest Rights Act 2006	Undermined by amendments in the Indian Forest Act 1927
Zero Draft of the Environmental Impact Assessment 2019	Pushing for commodification of forests, water, soil and minerals

Table 4: An example of some of the dilution of regulations which facilitate the expansion of culture fisheries through the state's juridico-legal capacity

even on agricultural lands that are exhausted from GR technologies, they reflect one of the central themes in the study of international agri-food systems; the 'question of meaning: the different values ascribed by different groups to different things' (Hall 2015, p. 410). For global capital, culture fisheries mean a chance to resume profitable accumulation. For states, culture fisheries mean meeting the demands being made of it from the multiple social relations that embody it. For the PCP, culture fisheries mean a chance to gain upward social mobility or simply a livelihood source as other options cease to exist. And yet, this paper has been unable to include the stories of those for who culture fisheries mean nothing but loss. This diverse group includes the landless who continue to live precarious lives as waged labour, the peasants whose lands have become salinized and barren, the fishworkers whose waters have become polluted and empty, the women and the children who have been

14 Since the writing of this research, the GoI has moved to introduce a further change to these policies by combining all of the various policies related to fisheries under one single policy called the 'Draft National Fisheries Policy, 2020'. The policy is at its drafting stages and is yet to be formalised.



plunged into bearing the burden of social reproduction. Shrimp production then is leaving behind many whose conditions most closely resemble what Fernandes (2018) refers to as the depletion of social reproduction. As opposed to violent dispossessions in the form of grabs, the shrimp production process highlights the 'depletion of capacities due to gendered, differential exposure to the currents of structural violence' (ibid. p. 158); to these, I add caste and access to land and boats. This on-going differentiation of the peasantry entails dynamics that are specific to the coastal region, given the confluence of livelihoods related to farming and fishing and form one pillar of future research.

In line with the global transition to the BE, this paper has highlighted the role that states play in facilitating these transitions. In borrowing from Araghi (2009), the state's visible foot is apparent once again in facilitating the resource redistribution, even while the mainstream continues to push the invisible hand of the market as playing 'a necessary role in eliminating inefficient producers' (ibid. p. 112). By examining the risk-aversion strategies of the shrimp production process, this paper shows how the elimination of PCPs from the process happens under a chain that is designed to work against them. More importantly, even as capitalism has approached the end of the regime of cheap ecology, a large-scale reorganisation of India's economic model is underway. As human and extra-human nature along India's water bodies become central

to reviving global accumulation, this shift reflects the emergence of a new regime of dispossession (Levien, 2017). Acknowledging that different regimes serve different class interests for different reasons in different periods (ibid.), the mapping of the political, economic, social, ecological, class, caste and gendered impacts is another area of work.

Friedmann (2016) wrote that 'when corporations talk of making industrial agriculture sustainable....it is much harder to convince people to oppose the system as a whole and support a better one' (ibid. p. 4). The biggest challenge in the transition to the Blue Economy is how difficult it is to challenge everything it promises; from healthy and nutritious food to decent work to ocean conservation to sustainability, the BE has it all. This paper has attempted to unpack the social, environmental and economic wins promised by the BE by bringing it into the larger literature related to food regimes and global value relations. In doing so, it has highlighted the exploitative capital-labour relations that continue to exist behind the optimistic rhetoric of triple wins. Supplementing this, the central role of food has been placed in relation to capitalism's historical and global exploitative march. In order to examine the rising prominence of culture fisheries more thoroughly, the examination of aquaculture GVCs, by incorporating the sectors of agri-food, capture fisheries and logistics, forms another pillar of work.



## References

- Adduci, M. (2009), "Neoliberal Wave Rocks Chilika Lake, India: Conflict over Intensive Aquaculture from a Class Perspective", *Journal of Agrarian Change*, Vol. 9 No. 4, pp. 484-511.
- Adhikari, B., Bag, M.K., Bhowmick, M.K. and Kundu, C. (2011), "Status paper on rice in West Bengal", Rice Knowledge Management Portal, 27 June, available at: <http://www.rkmp.co.in/research-domain/rice-state-wise/west-bengal/status-paper-on-rice-for-west-bengal> (accessed 6 January 2019).
- Aga, A. (2018), "Merchants of knowledge: Petty retail and differentiation without consolidation among farmers in Maharashtra, India", *Journal of Agrarian Change*, Vol. 18 No. 3, pp. 658-676.
- Ahmed, N., Allison, E.H. and Muir, J.F. (2010), "Rice fields to prawn farms: a blue revolution in southwest Bangladesh?", *Aquaculture International*, Vol. 18 No. 4, pp. 555-574.
- Akram-Lodhi, A.H. and Kay, C. (Eds.). (2009), *Peasants and Globalization: Political Economy, Rural Transformation and the Agrarian Question*, Routledge, London; New York.
- Akram-Lodhi, A.H. and Kay, C. (Eds.). (2010), *Peasants and Globalization: Political Economy, Rural Transformation and the Agrarian Question*, Transferred to dig. print. 2010., Routledge, London.
- Araghi, F. (2003), "Food regimes and the production of value: Some methodological issues", *Journal of Peasant Studies*, Vol. 30 No. 2, pp. 41-70.
- Araghi, F. (2009) 'The invisible hand and the visible foot: peasants, dispossession and globalization', in Akram-Lodhi, H.A., and Kay, C. (ed.) *Peasants and Globalization*. Oxon: Routledge, pp. 111-147.
- Bagchi, K.A. (2009) 'Nineteenth century imperialism and structural transformation in colonized countries', in Akram-Lodhi, H.A., and Kay, C. (ed.) *Peasants and Globalization*. Oxon: Routledge, pp. 83-110.
- Baglioni, E. and Campling, L. (2017), "Natural resource industries as global value chains: Frontiers, fetishism, labour and the state", *Environment and Planning A: Economy and Space*, Vol. 49 No. 11, pp. 2437-2456.
- Baglioni, E., Campling, L. and Havice, E. (2017), "The Nature of the Firm in Global Value Chains", in Baars, G. and Spicer, A. (Eds.), *The Corporation*, Cambridge University Press, Cambridge, pp. 314-325.
- Barbesgaard, M. (2018), "Blue growth: savior or ocean grabbing?", *The Journal of Peasant Studies*, Vol. 45 No. 1, pp. 130-149.



- Bardhan, P., Luca, M., Mookherjee, D. and Pino, F. (2014), "Evolution of land distribution in West Bengal 1967-2004: Role of land reform and demographic changes", *Journal of Development Economics*, Vol. 110, pp. 171-190.
- Béné, C., Arthur, R., Norbury, H., Allison, E.H., Beveridge, M., Bush, S., Campling, L., et al. (2016), "Contribution of Fisheries and Aquaculture to Food Security and Poverty Reduction: Assessing the Current Evidence", *World Development*, Vol. 79, pp. 177-196.
- Bernstein, H. (2014), "Food sovereignty via the 'peasant way': a sceptical view", *The Journal of Peasant Studies*, Vol. 41 No. 6, pp. 1031-1063.
- Bernstein, H., Crow, B., Johnson, H. and Open University (Eds.). (1992), *Rural Livelihoods: Crises and Responses*, Oxford University Press in association with The Open University, Oxford ; New York.
- Buck, M. (2014), "Policing the New Enclosures: On Violence, Primitive Accumulation, and Crisis in the Neoliberal Food System", in Wolf, S.A. and Bonanno, A. (Eds.), *The Neoliberal Regime in the Agri-Food Sector*, Routledge, New York, pp. 52-69.
- Busch, L. and Bain, C. (2004), "New! Improved? The Transformation of the Global Agrifood System\*", *Rural Sociology*, Vol. 69 No. 3, pp. 321-346.
- Bush, S.R., Belton, B., Little, D.C. and Islam, M.S. (2019), "Emerging trends in aquaculture value chain research", *Aquaculture*, Vol. 498, pp. 428-434.
- Chakravarty, S., (2019). *Coastal Economic Zones- A new regime of dispossession*. Course assignment, Department of Development Studies SOAS, London.
- Chakravarty, S., (2019). *Assess the view that globalisation has made the nation-state incapable of dealing with issues of agrarian development in the South*. Course assignment, Department of Development Studies SOAS, London.
- Campling, L. (2012), "The Tuna 'Commodity Frontier': Business Strategies and Environment in the Industrial Tuna Fisheries of the Western Indian Ocean: The Tuna 'Commodity Frontier'", *Journal of Agrarian Change*, Vol. 12 No. 2-3, pp. 252-278.
- Campling, L. and Havice, E. (2018), "The Global Environmental Politics and Political Economy of Seafood Systems", *Global Environmental Politics*, Vol. 18 No. 2, pp. 72-92.
- Campling, L., Havice, E. and McCall Howard, P. (2012), "The Political Economy and Ecology of Capture Fisheries: Market Dynamics, Resource Access and Relations of Exploitation and Resistance: The Political Economy and Ecology of Capture Fisheries", *Journal of Agrarian Change*, Vol. 12 No. 2-3, pp. 177-203.
- Campling, L. and Selwyn, B. (2018), in Nölke, A. and May, C. (Eds.), *Handbook of the International Political Economy of the Corporation*, Edward Elgar Publishing, available at: <https://doi.org/10.4337/9781785362538>.
- Cohen, P.J., Allison, E.H., Andrew, N.L., Cinner, J., Evans, L.S., Fabinyi, M., Garces, L.R., et al.



- (2019), "Securing a Just Space for Small-Scale Fisheries in the Blue Economy", *Frontiers in Marine Science*, Vol. 6, available at: <https://doi.org/10.3389/fmars.2019.00171>.
- de la Cruz, J. and Jansen, K. (2018), "Panama disease and contract farming in the Philippines: Towards a political ecology of risk", *Journal of Agrarian Change*, Vol. 18 No. 2, pp. 249-266.
- De Roy, S. (2013), "Impact of fish farming on land relations: Evidence from a village study in West Bengal", ResearchGate, available at: [https://www.researchgate.net/publication/287633920\\_Impact\\_of\\_fish\\_farming\\_on\\_land\\_relations\\_Evidence\\_from\\_a\\_village\\_study\\_in\\_West\\_Bengal](https://www.researchgate.net/publication/287633920_Impact_of_fish_farming_on_land_relations_Evidence_from_a_village_study_in_West_Bengal) (accessed 4 September 2019).
- DeVries, T., Holzer, M. and Primeau, F. (2017), "Recent increase in oceanic carbon uptake driven by weaker upper-ocean overturning", *Nature*, Vol. 542, p. 215.
- Dicken, P. (2009), *Global Shift: Mapping the Changing Contours of the World Economy*, 5. ed., reprinted., Sage Publ, London.
- Dierberg, F.E. and Kiattisimkul, W. (1996), "Issues, impacts, and implications of shrimp aquaculture in Thailand", *Environmental Management*, Vol. 20 No. 5, pp. 649-666.
- Dunaway, W.A. (1996), "The Incorporation of Mountain Ecosystems into the Capitalist World-System", *Review (Fernand Braudel Center)*, Vol. 19 No. 4, pp. 355-381.
- Durand, C. and Gueuder, M. (2018), "The Profit-Investment Nexus in an Era of Financialisation, Globalisation and Monopolisation: A Profit-Centred Perspective", *Review of Political Economy*, Vol. 30 No. 2, pp. 126-153.
- Durrenberger, E. (1997), "Fisheries Management Models: Assumptions and Realities or, Why Shrimpers in Mississippi Are Not Firms", *Human Organization*, Vol. 56 No. 2, pp. 158-166.
- Dutta, D., Das, C.S. and Kundu, A. (2016), "A geo-spatial study on spatio-temporal growth of brackish water aquaculture along the coastal areas of West Bengal (India)", *Modeling Earth Systems and Environment*, Vol. 2 No. 2, p. 61.
- Edelman, M., Oya, C. and Borrás Jr M, S.M. (Eds.). (2015), *Global Land Grabs: History, Theory, Methods*, Routledge, London.
- FAO (Ed.). (2009), *High Food Prices and the Food Crisis: Experiences and Lessons Learned*, FAO, Rome.
- FAO (2011) *Aquaculture Development: Use of wild fishery resources for capture-based aquaculture*, Rome: FAO.
- FAO (2016) *The State of World Fisheries and Aquaculture 2016 - Contributing to food security and nutrition of all.* , Rome: FAO.
- FAO (2016) *Fishery and aquaculture statistics*, Rome: FAO.
- FAO (2017) *The future of food and agriculture - Trends and challenges*, Rome: FAO.

- FAO (2018) *The State of World Fisheries and Aquaculture 2018 - Meeting the sustainable development goals.*, Rome: FAO.
- Fernandez, B. (2018), "Dispossession and the Depletion of Social Reproduction: Dispossession and the Depletion of Social Reproduction", *Antipode*, Vol. 50 No. 1, pp. 142-163.
- Foley, P. (2012), "The Political Economy of Marine Stewardship Council Certification: Processors and Access in Newfoundland and Labrador's Inshore Shrimp Industry: The Political Economy of Marine Stewardship Council Certification", *Journal of Agrarian Change*, Vol. 12 No. 2-3, pp. 436-457.
- Friedmann, H. (2004), "Feeding the Empire: The Pathologies of Globalized Agriculture", in Panitch, L. and Leys, C. (Eds.), *The Empire Reloaded*, Vol. 41, Merlin Press [u.a.], London, pp. 124-143.
- Friedmann, H. (2016), "Food Regime Analysis and Agrarian Questions: Widening the Conversation", presented at the Global governance/politics, climate justice & agrarian/social justice: linkages and challenges, Netherlands, pp. 1-19.
- Fry, J.P., Love, D.C., MacDonald, G.K., West, P.C., Engstrom, P.M., Nachman, K.E. and Lawrence, R.S. (2016), "Environmental health impacts of feeding crops to farmed fish", *Environment International*, Vol. 91, pp. 201-214.
- Gentry, R.R., Froehlich, H.E., Grimm, D., Kareiva, P., Parke, M., Rust, M., Gaines, S.D., et al. (2017), "Mapping the global potential for marine aquaculture", *Nature Ecology & Evolution*, Vol. 1 No. 9, pp. 1317-1324.
- Global Value Chains Initiative (2017), accessed 20 October 2020 at <https://globalvaluechains.org/concept-tools>
- Guha, A. (2015), "Acting Cleverly in the Comfort Zone of Power and Visceral Resistance: A Case of Land Acquisition in West Bengal, India", *Indian Anthropologist*, Vol. 45 No. 1, pp. 15-29.
- Guha, A. (2017), "Caste and Politics in West Bengal: Traditional Limitations and Contemporary Developments", *Contemporary Voice of Dalit*, Vol. 9 No. 1, pp. 27-36.
- Guillen, J., Natale, F., Carvalho, N., Casey, J., Hofherr, J., Druon, J.-N., Fiore, G., et al. (2019), "Global seafood consumption footprint", *Ambio*, Vol. 48 No. 2, pp. 111-122.
- Gupta, R. (2007), *Economic Development of West Bengal*, ICFAI University Press, Hyderabad.
- Hall, D. (2003), "The International Political Ecology of Industrial Shrimp Aquaculture and Industrial Plantation Forestry in Southeast Asia", *Journal of Southeast Asian Studies*, Vol. 34 No. 2, pp. 251-264.
- Hall, D. (2009), "The 2008 World Development Report and the political economy of Southeast Asian agriculture", *The Journal of Peasant Studies*, Vol. 36 No. 3, pp. 603-609.
- Hall, D. (2011), "Land grabs, land control, and Southeast Asian crop booms", *Journal of Peas-*

ant Studies, Vol. 38 No. 4, pp. 837-857.

Hall, D. (2011), "Where The Streets Are Paved With Prawns: Crop Booms and Migration in Southeast Asia", *Critical Asian Studies*, Vol. 43 No. 4, pp. 507-530.

Harriss-White, B. (2008), *Rural Commercial Capital: Agricultural Markets in West Bengal*, Oxford University Press, New Delhi.

Harriss-White, B. (2015), "Constructing Regions Inside the Nation", *Economic and Political Weekly*, Vol. 52 No. 46, pp. 7-8.

Harriss-White, B. (2018), "Awkward Classes and India's Development", *Review of Political Economy*, Vol. 30 No. 3, pp. 355-376.

Hoegh-Guldberg, O. et al. (2015) *Reviving the Ocean Economy: the case for action - 2015.*, Geneva: WWF International, Gland, Switzerland.

Immanuel, J., (2019). *Amidst evolving Human Geographies: Learning to walk against the tide.* MTP thesis, Centre for Technology Alternatives for Rural Areas (CTARA), Indian Institute of Technology Bombay, India.

Irarrázaval, F. and Bustos-Gallardo, B. (2019), "Global Salmon Networks: Unpacking Ecological Contradictions at the Production Stage", *Economic Geography*, Vol. 95 No. 2, pp. 159-178.

Jakobsen, J. (2018), "Towards a Gramscian food regime analysis of India's agrarian crisis: Counter-movements, petrofarming and Cheap Nature", *Geoforum*, Vol. 90, pp. 1-10.

Jasanoff, S. (2006), "Biotechnology and Empire:: The Global Power of Seeds and Science", *Osiris*, Vol. 21 No. 1, pp. 273-292.

Jayanthi, M., Thirumurthy, S., Muralidhar, M. and Ravichandran, P. (2018), "Impact of shrimp aquaculture development on important ecosystems in India", *Global Environmental Change*, Vol. 52, pp. 10-21.

Jorgenson, A.K., Austin, K. and Dick, C. (2009), "Ecologically Unequal Exchange and the Resource Consumption/Environmental Degradation Paradox: A Panel Study of Less-Developed Countries, 1970–2000", *International Journal of Comparative Sociology*, Vol. 50 No. 3-4, pp. 263-284.

Kobayashi, M., Msangi, S., Batka, M., Vannuccini, S., Dey, M.M. and Anderson, J.L. (2015), "Fish to 2030: The Role and Opportunity for Aquaculture", *Aquaculture Economics & Management*, Vol. 19 No. 3, pp. 282-300.

Kruijssen, F., McDougall, C.L. and van Asseldonk, I.J.M. (2018), "Gender and aquaculture value chains: A review of key issues and implications for research", *Aquaculture*, Vol. 493, pp. 328-337.

Lerche, J. (2013), "The Agrarian Question in Neoliberal India: Agrarian Transition Bypassed?: The Agrarian Question in Neoliberal India", *Journal of Agrarian Change*, Vol. 13 No. 3,

pp. 382-404.

- Levien, M. (2012), "The land question: special economic zones and the political economy of dispossession in India", *The Journal of Peasant Studies*, Vol. 39 No. 3-4, pp. 933-969.
- Levien, M. (2013), "Regimes of Dispossession: From Steel Towns to Special Economic Zones: Regimes of Dispossession", *Development and Change*, Vol. 44 No. 2, pp. 381-407.
- Longo, S.B., Clark, B., York, R. and Jorgenson, A.K. (2019), "Aquaculture and the displacement of fisheries captures", *Conservation Biology*, p. e13295.
- Ludden, D. (2005), "Development Regimes in South Asia", *Economic and Political Weekly*, Vol. 40 No. 37.
- Ludema, R.D. (2001) 'The Return of Dependency Theory: Is Primary Commodity Specialization Bad for Development?', *International Economic Review*, (September October), pp. 17-24
- Maiti, A., Shanker Chini, D., Bhattacharya, M., Kar, A., Bera, A., Dutta Kumar, T., Sar Kumar, U., et al. (2019), "Socio-economic and production characteristics of pacific white shrimp, *litopenaeus vannamei* (boone, 1931) culture in Purba medinipur, West Bengal, India.", *International Journal of Advanced Research*, Vol. 7 No. 6, pp. 1044-1052.
- Malm, A. (2016), *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming*, Verso, London New York.
- Marois, T. (2014), "Historical Precedents, Contemporary Manifestations: Crisis and the Socialization of Financial Risk in Neoliberal Mexico", *Review of Radical Political Economics*, Vol. 46 No. 3, pp. 308-330.
- McMichael, P. (2009), "A food regime genealogy", *The Journal of Peasant Studies*, Vol. 36 No. 1, pp. 139-169.
- McMichael, P. (2009), "Banking on Agriculture: A Review of the World Development Report 2008", *Journal of Agrarian Change*, Vol. 9 No. 2, pp. 235-246.
- Ministry of Agriculture and Farmers Welfare Department of Fisheries (2019) *Guidelines Fisheries and Aquaculture Infrastructure Development Fund (FIDF)*, New Delhi: Government of India Ministry of Agriculture and Farmers Welfare Department of Fisheries.
- Mohammed, E.Y. (Ed.). (2013), *Economic Incentives for Marine and Coastal Conservation: Prospects, Challenges and Policy Implications*, Routledge, Taylor & Francis Group, London.
- Mondal, M., Dandapath, K.P. and Shukla, J. (2013), "Mapping Dynamics of land utilization and its changing Patterns of Purba Medinipur District -W.B", *International Journal of Innovative Research and Development*, Vol. 2 No. 1, pp. 664-676.
- Moore, J.W. (2010a), "'Amsterdam is Standing on Norway' Part I: The Alchemy of Capital, Empire and Nature in the Diaspora of Silver," p. 36.

- Moore, J.W. (2010b), “‘Amsterdam is Standing on Norway’ Part II: The Global North Atlantic in the Ecological Revolution of the Long Seventeenth Century”, *Journal of Agrarian Change*, Vol. 10 No. 2, pp. 188-227. Moore, J.W. (2012), “Cheap Food & Bad Money: Food, Frontiers, and Financialization in the Rise and Demise of Neoliberalism”, *ResearchGate*, available at: [https://www.researchgate.net/publication/236660320\\_Cheap\\_Food\\_Bad\\_Money\\_Food\\_Frontiers\\_and\\_Financialization\\_in\\_the\\_Rise\\_and\\_Demise\\_of\\_Neoliberalism](https://www.researchgate.net/publication/236660320_Cheap_Food_Bad_Money_Food_Frontiers_and_Financialization_in_the_Rise_and_Demise_of_Neoliberalism) (accessed 6 September 2019).
- Münster, D. (2015), “Ginger is a gamble”, *Focaal*, Vol. 2015 No. 71, pp. 100-113.
- National Bank for Agriculture and Rural Development (2018) Sectoral Paper on Fisheries and Aquaculture, Mumbai: Farm Sector Policy Department NABARD Head Office, Mumbai.
- National Fisheries Development Board (2018) *Ushering Blue Revolution in India*, Hyderabad: National Fisheries Development Board.
- Navghan, M., Kumar, N.R. and Gawa, S. (2017), “Value Chain Analysis of Farmed Shrimp in Navsari District of Gujarat”, *International Journal of Pure & Applied Bioscience*, Vol. 5 No. 6, pp. 352-357.
- Naylor, R.L., Goldberg, R.J., Primavera, J.H., Kautsky, N., Beveridge, M.C.M., Clay, J., Folke, C., et al. (2000), “Effect of aquaculture on world fish supplies”, *Nature*, Vol. 405 No. 6790, pp. 1017-1024.
- International Institute for Environment and Development (2018) *No hidden catch: mainstreaming small-scale fisheries in national accounts*. [Online]. Available at: <https://www.iied.org/no-hidden-catch-mainstreaming-small-scale-fisheries-national-accounts> (Accessed: February 2019).
- Patnaik, P. (2012), “The Peasant Question and Contemporary Capitalism: Some Reflections with Reference to India”, *Agrarian South: Journal of Political Economy*, Vol. 1 No. 1, pp. 27-42.
- Pant, J., Barman, B.K., Murshed-E-Jahan, K., Belton, B. and Beveridge, M. (2014), “Can aquaculture benefit the extreme poor? A case study of landless and socially marginalized Adivasi (ethnic) communities in Bangladesh”, *Aquaculture*, Vol. 418-419, pp. 1-10.
- Perreault, T., Bridge, G. and McCarthy, J. (Eds.). (2015), *The Routledge Handbook of Political Ecology*, Routledge, London.
- Ponte, S., Kelling, I., Jespersen, K.S. and Kruijssen, F. (2014), “The Blue Revolution in Asia: Upgrading and Governance in Aquaculture Value Chains”, *World Development*, Vol. 64, pp. 52-64.
- Prusty, S.K., Mohapatra, P.K.J. and Mukherjee, C.K. (2011), “Sustainable Growth Strategies for Indian Shrimp Industry”, presented at the System Dynamics Society, <https://www.systemdynamics.org>, Washington, D.C, p. 29.



- Puthucherril, T.G. (n.d.). "Sustainable Aquaculture in India: Looking Back to Think Ahead", ResearchGate, available at: [https://www.researchgate.net/publication/305429545\\_Sustainable\\_Aquaculture\\_in\\_India\\_Looking\\_Back\\_to\\_Think\\_Ahead](https://www.researchgate.net/publication/305429545_Sustainable_Aquaculture_in_India_Looking_Back_to_Think_Ahead) (accessed 6 September 2019).
- Quentin, D. and Campling, L. (2018), "Global inequality chains: integrating mechanisms of value distribution into analyses of global production", *Global Networks*, Vol. 18 No. 1, pp. 33-56.
- Ramamurthy, P. (2011), "Rearticulating Caste: The Global Cottonseed Commodity Chain and the Paradox of Smallholder Capitalism in South India", *Environment and Planning A: Economy and Space*, Vol. 43 No. 5, pp. 1035-1056.
- Ramanna-Pathak, A. (2015), "Intellectual Property Rights Access to Genetic Resources and Indian Shrimp Aquaculture: Evolving Policy Responses to Globalization: IPRs, Access to Genetic Resources and Indian Shrimp Aquaculture", *The Journal of World Intellectual Property*, Vol. 18 No. 1-2, pp. 41-64.
- Ray, D.K., West, P.C., Clark, M., Gerber, J.S., Prishchepov, A.V. and Chatterjee, S. (2019), "Climate change has likely already affected global food production", edited by Jung, Y.H. *PLOS ONE*, Vol. 14 No. 5, p. e0217148.
- Raychaudhuri, A., Das, T.K. and Jadavpur University (Eds.). (2005), *West Bengal Economy: Some Contemporary Issues*, Allied Publishers in collaboration with DSA Centre, Dept. of Economics, Jadavpur University, Ahmedabad.
- Saguin, K. (2016), "Blue Revolution in a Commodity Frontier: Ecologies of Aquaculture and Agrarian Change in Laguna Lake, Philippines: Aquaculture and Agrarian Change in Laguna Lake, Philippines", *Journal of Agrarian Change*, Vol. 16 No. 4, pp. 571-593.
- Saha, D. (2015), "Background Paper on Gender and Poverty Analysis study for the proposed West Bengal Coastal Area Development Project", IFAD, Rome, available at: <https://doi.org/10.13140/RG.2.1.4953.4886>.
- Sassen, S. (2010), "A Savage Sorting of Winners and Losers: Contemporary Versions of Primitive Accumulation", *Globalizations*, Vol. 7 No. 1-2, pp. 23-50.
- Sathianandas T.V. (2016) *CMFRI Data Collection System for Marine Fish Landings Estimation*, Kochi: ICAR-Central Marine Fisheries Research Institute.
- Selwyn, B. (2019), "Poverty chains and global capitalism", *Competition & Change*, Vol. 23 No. 1, pp. 71-97.
- Selwyn, B. and Campling, L. (n.d.). "Value chains and the world economy: genealogies and reformulations", available at: [https://www.academia.edu/37556248/Value\\_chains\\_and\\_the\\_world\\_economy\\_genealogies\\_and\\_reformulations](https://www.academia.edu/37556248/Value_chains_and_the_world_economy_genealogies_and_reformulations) (accessed 6 September 2019).

- Sharma, I. and Chakravarty, S. (Eds.). (2017), *Occupation of the Coast - Blue Economy in India*, The Research Collective, New Delhi, available at: <https://in.boell.org/2018/04/26/occupation-coast-blue-economy-india> (accessed 4 September 2019).
- Society for Direct Initiative for Social and Health Action (2010) *Asserting Rights, Defining Responsibilities: Small-Scale Fishing Communities And Coastal And Fisheries Management Perspectives In East Medinipur Coast In West Bengal, India*, Kolkata: Society for Direct Initiative for Social and Health Action .
- Starosta, G. (2010), "Global Commodity Chains and the Marxian Law of Value", *Antipode*, Vol. 42 No. 2, pp. 433-465.
- Szuster, B.W., Molle, F., Flaherty, M. and Srijantr, T. (2003), "Socio-economic and environmental implications of inland shrimp farming in the Chao Phraya delta", p. 20.
- Toufique, K.A. and Belton, B. (2014), "Is Aquaculture Pro-Poor? Empirical Evidence of Impacts on Fish Consumption in Bangladesh", *World Development*, Vol. 64, pp. 609-620.
- Tran, N., Bailey, C., Wilson, N. and Phillips, M. (2013), "Governance of Global Value Chains in Response to Food Safety and Certification Standards: The Case of Shrimp from Vietnam", *World Development*, Vol. 45, pp. 325-336.
- Franco, J., Vervest, P., Feodoroff, T., Pedersen, C., Reuter, R., and Barbesgaard, M. (2014), "The Global Ocean Grab: A Primer", Transnational Institute, 2 September, available at: <https://www.tni.org/en/publication/the-global-ocean-grab-a-primer> (accessed 24 April 2019).
- UN. (2012), "UN GA Resolution 66/288. The future we want.", 9 November, available at: [https://www.un.org/ga/search/view\\_doc.asp?symbol=A/RES/66/288&Lang=E](https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/66/288&Lang=E) (accessed 8 September 2019).
- Veuthey, S. and Gerber, J.-F. (2012), "Accumulation by dispossession in coastal Ecuador: Shrimp farming, local resistance and the gender structure of mobilizations", *Global Environmental Change*, Vol. 22 No. 3, pp. 611-622.
- Wallerstein, Immanuel (1983) *Historical Capitalism*, Verso edn., London.
- Werner, M. (2018), "Geographies of production I: Global production and uneven development", *Progress in Human Geography*, p. 1-11.
- World Bank (Ed.). (2007), *Agriculture for Development*, World Bank, Washington, DC.
- World Bank. (2017), "The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries.", World Bank and United Nations Department of Economic and Social Affairs, available at: <https://openknowledge.worldbank.org/bitstream/handle/10986/26843/115545.pdf?sequence=1&isAllowed=y> (accessed 3 January 2019).

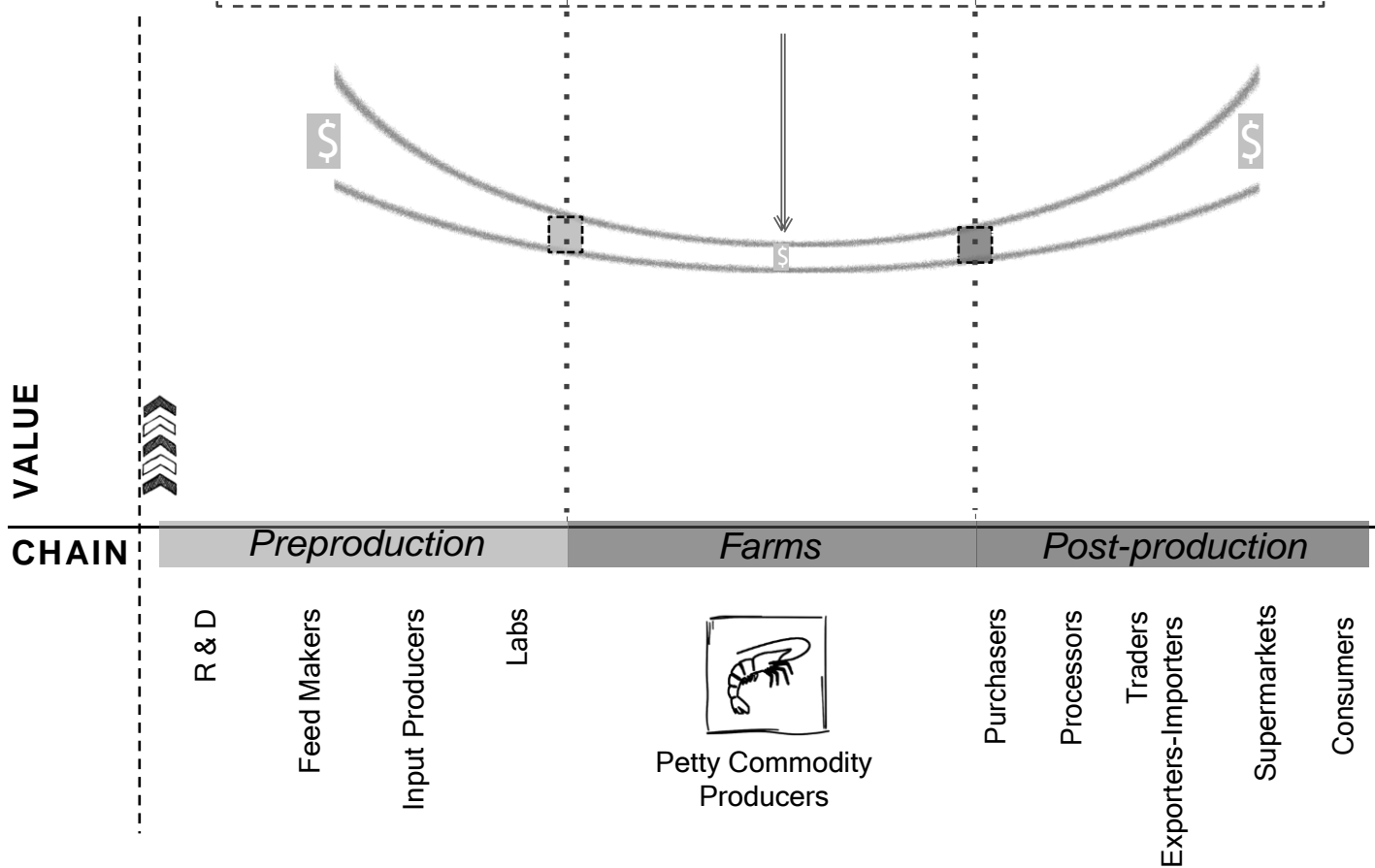


West Bengal:  
Baguran Jalpai

# Who Wins When Shrimp Booms? Examining the transition to the Blue Economy in India

## PRODUCTION PROCESS

The production process of shrimp is arranged in a manner that allows for risk-aversion so that returns to the investments are guaranteed. Since the act of growing shrimp is essentially one of converting nature into a commodity, investments have to contend with the ecological indeterminacy of nature. This is achieved by arranging the capital-labour relationship in two ways. One, the production is arranged via Petty Commodity Production, such that shrimp farmers act as labour when profits are made, and act as capital when losses are to be absorbed. And two, by mobilising power relations, value extraction happens at each side of the production process, that is an Input Squeeze and an Output Pinch is exercised.



## INPUT SQUEEZE

Almost all farmers operate their farms on the basis of informal credit borrowing. The credit borrowing can happen either through informal money-lenders or through a retailer who advances inputs and material to the farmer before and through the start of the shrimp cycle. Interest rates are very high (36-48% per annum) and the credit is often paid back by offering the retailer the first offer on the produced shrimp. On account of the low success rate of producing shrimp in every cycle, as well as the high credit rates, most farmers self-exploit themselves and household labour in order to produce the shrimp.

## OUTPUT PINCH

Once the farmer produces the shrimp, he offers the retailer he has taken an advance from the first offer of purchase. If this transaction goes through, the farmer will have paid back his loan, and can either invest in the next cycle; if he has been unsuccessful, the retailer will forward another round of credit, with higher interest rates. Similarly, farmers also call shrimp purchasers in the area to get the highest rate. However, the purchasers exercise a price control since they are able to provide the harvesting gangs, ice and transport, without which the farmer will be unable to harvest his produce. By controlling the price control here, a pinch is exercised on the farmers that curtails their margin of earnings.



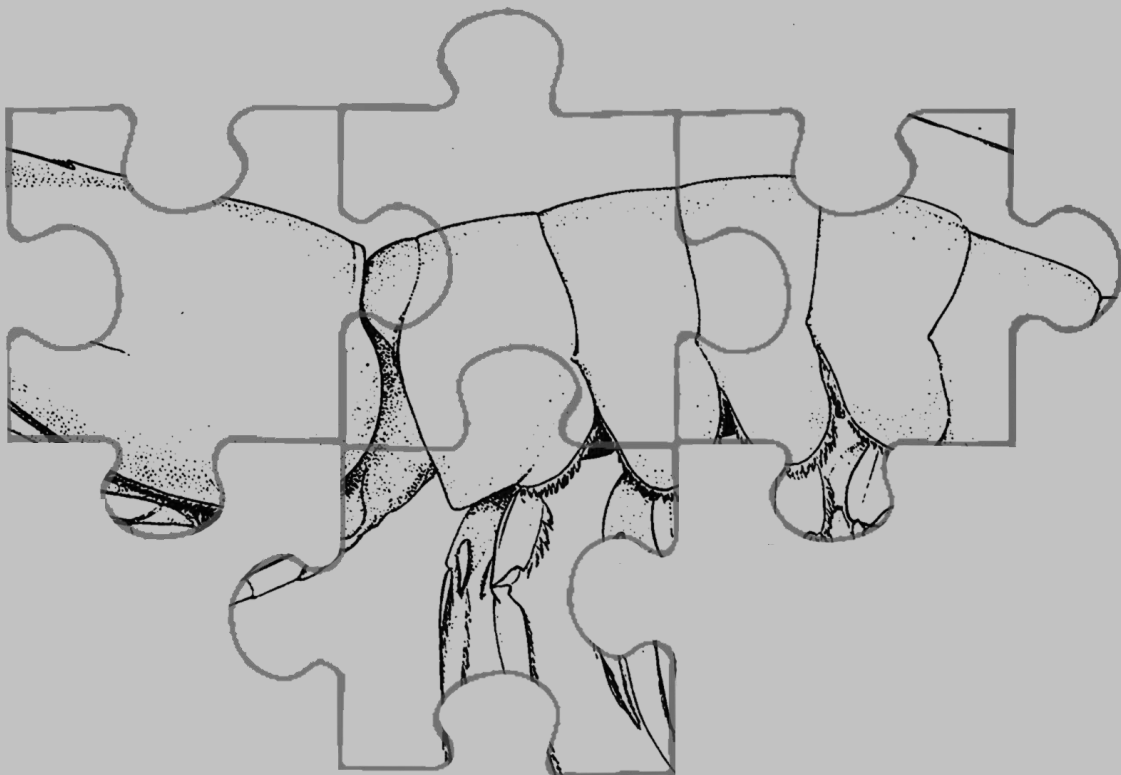


# Coastal Shrimp Aquaculture in India: Should the Farmers be Blamed?

## *The lineage of state interventions in shrimp aquaculture*

The liberalisation turn of the Indian economy is often signalled as the point at which export-oriented shrimp production through aquaculture became a necessity. However, examination of India's fisheries policies since independence reveals the nuts and bolts that were set up decades before liberalisation. This paper aims to bring to centre the role of powerful actors like that of the state, multilateral institutions and the research institutes that were and continue to be, the key actors in nurturing a suitable environment through a case study of Lake Pulicat, Tamil Nadu.

*Jeffrey Immanuel*



## 1. Introduction

One kg of medium sized shrimps costs about INR 500-600 in the urban markets.<sup>1</sup> One might have also enjoyed the shrimps at several unlimited grill buffet restaurants in the cities where the buffet on an average costs about INR 1000. Have we ever wondered how would it be economically feasible for restaurants to supply an unlimited BBQ of shrimps at that rate? Majority of us simply eat because we pay INR 1000 which is still a costly affair for the urban middle class. A variety of marine species land on our seashore everyday along the coast but the only seafood that are found on our restaurant menu cards are pomfrets, kingfish (surmai), Indian mackerel (bangda), shrimps/prawns and crabs. This got me thinking of their supply chains.

On the one hand we see that, globally, natural stocks of wild-caught seafood have remained relatively static since the late 1980s, while between 1961 and 2016 the average annual increase in global food fish consumption was 3.2% which outran the population growth at 1.6% and exceeded that of meat from all terrestrial animals combined – 2.8% (FAO, 2018). Aquaculture has been responsible for this uninterrupted supply of seafood and it has surpassed capture fisheries as a source of seafood at the global level for human consumption in 2014 (Anderson et al., 2017; Nadarajah and Flaaten, 2017; Tacon and Metian, 2018).

At the outset, the rise of aquaculture industry casts itself to be an unsophisticated supply-demand response to a problem in the markets, but the economy in which this unfolds does not operate in vacuum. The political economy within which the shrimp industry operates and which contributes to 73.21%<sup>2</sup> of India's seven billion dollar seafood export (MPEDA, 2020) has been known for its social

---

1 May vary depending on the place that you are living in

2 Calculated from farmed shrimp export details on MPEDA website. See [www.mpeda.gov.in](http://www.mpeda.gov.in)

and environmental conflicts across the globe (Páez-Osuna et al., 1998; Cruz-Torres, 2000; Anh et al., 2010) and also in India (Mukul, 1994; Jayanthi et al., 2018, 2019). The major objective of this article is to analytically unveil the key drivers of the shrimp aquaculture industry in India and reveal their role in appropriation and accumulation of natural capital, which has then been exchanged into dollars at sites far away from the places of aquaculture production.

Total global fish production (from capture and culture sources) is estimated to have reached 179 million tonnes in 2018 with a total first sale value<sup>3</sup> estimated at USD 401 billion. 82 million tonnes (46%) valued at USD 250 billion (62%) comes from aquaculture production (FAO, 2020) alone (Refer Figure 1) revealing the commercial nature of the species that are being produced under aquaculture globally.

The sector is dominated by the Asian continent which has produced 89% of the global total in volume terms in the last 20 years (FAO, 2020) to which China has contributed about 50-60% while India has contributed 6-8% over the years. Though China produces more than 50% of the aquaculture from Asia, its share in the international export market is only 6% while India leads the table at 23%, exporting more than 80% of its shrimp production (Televisory, 2019). China's focus on aquaculture expansion has been majorly for internal consumption while India's focus on aquaculture has thus far been purely for export purposes.

57% of India's fish production comes from culture fisheries of which an overwhelming 89% is from freshwater/inland aquaculture (FAO, 2019), most of which has been used for domestic consumption<sup>4</sup>. My research so far has been more concerned with the remaining

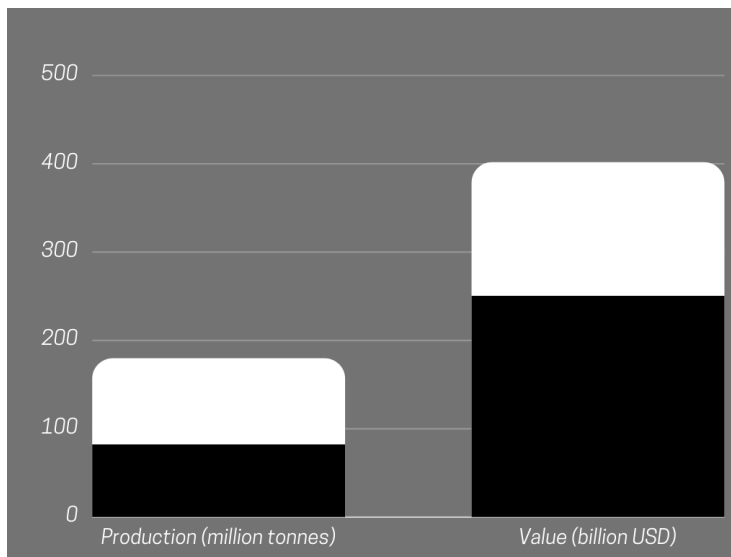


Figure 1: Capture vs. Culture: Production and Valuation

Data Source: FAO, 2020

3 The value at which the fish is bought from the fisher at the landing site or the fish farmer at the farm gate.

4 This has also been rapidly changing with the introduction of the Pangasius species replacing the carp species for inland aquaculture in India that has a better market within the urban centres (Belton et al., 2017) and



11%, the aquaculture industry in India that comes from the thin strip along its coast in the brackish waters, which contributes to about 50% of the export quantity and over 70% of the export earnings.

India displaced China as the leading supplier of shrimp to the US in 2016, the world's largest buyer of shrimp (Godfrey, 2016). In order to meet the demands of the international seafood markets, the individual farm owners at the local level converted their paddy fields to shrimped waters (Kagoo and Rajalakshmi, 2002) and also gave into intensification by using a chemical treadmill of inputs to increase their yield and return to labour (Edwards, 2015). The flow of export value has merely been a disguised form of loss of value from the local ecosystems, spirited away from the local communities while the aquaculture farmers, the middlemen and the seafood traders in the distant capitals turned significant profits.

While we acknowledge the truth in the above statement that the rich entrepreneurs at the local levels have made huge profits in response to the international markets and hold them responsible for the socio-ecological crisis, our comprehension of the industry must move beyond this. This paper aims to

bring to centre the role of powerful actors like that of the state, multilateral institutions and the research institutes that were and continue to be, the key actors in nurturing a suitable environment for unsustainable intensification by the farmers at the local level in the so called 'free market'. Emphasis has to be placed on the top-down policy making process and knowledge production of the post-colonial state and the research institutes which have actively enabled the environmentally destructive intensification; this enablement later worked in tandem with the capitalist expansion post India's formal liberalisation in 1991.

## 2. Research Methods and Structure of the Article

The research for this article was part of a larger study carried out during my Master's degree thesis requirement from April 2018 to June 2019. The field work was conducted in different places along the coastal districts of majorly Tamil Nadu . I also refer to some reconnaissance field visits from Kerala in the article. While I only write this paper, people who contributed to my understanding and knowledge of this paper include fishers, aquaculture farm owners and labourers, traders and middlemen, etc.<sup>5</sup> The research

---

also other countries within the Global South (Craze, 2019).

5 Unfortunately being a male researcher, getting access to gendered experiences of the presented findings within the timeframe of the different academic deadlines was not possible, as the people I interviewed were largely cis-het men.

methods included ethnographic field work, GIS mapping and document analysis. The data collected from different sources and methods were transcribed and triangulated.

The article is structured in the chronological order of my research and my thought process that has continued to evolve during and after the research. At first, I present the need to look beyond the capitalist expansion of the industry in the '90s post-liberalisation using the case of aquaculture from Lake Pulicat in Tamil Nadu. Later, I delve into the major events in the history of the aquaculture industry post-independence to demonstrate the lure of other powerful actors who set the stage for the socio-ecological crisis in the '90s and continue to do so to this day. This helps us in two ways; first to look at the actual cosmology of the problem rather than the superficial blaming of the aquaculture farmers for the concomitant crises and secondly, to vie for structural transformative responses rather than policies that address the issue only at skin deep.

### **3. The Need to Look beyond the '90s: Shrimp farming at Pulicat**

Several studies suggest that the Indian coastal aquaculture emerged during the '90s with the opening of the markets in 1991 (Mukul, 1994; Pokrant and Reeves, 2001; Krishnan and Birthal, 2002). While it is true that the structural reforms attracted several big private players to the fore, it was never the sole cause as perceived among the researchers. Through the case of shrimp farming in Pulicat, I present

the need to look beyond the forces of the market from the '90s to the post-colonial development processes that set the stage for the rise of the sector in the '90s.

Pulicat is India's second largest brackish water lake after Chilika Lake in Odisha. It spreads its area over the two southern states of Tamil Nadu (TN) and Andhra Pradesh (AP)—the larger northern part of the lake falls under the administrative jurisdiction of AP while the remaining southern part under TN. Though the larger part of the lake falls under AP, 36 of the 52 villages bordering the lake are situated in TN.

It had a water spread area (WSA) of 461 sq. km and a depth of 1.5 metres at the beginning of the twentieth century which has now shrunk so much that it hardly has a WSA of 350 sq. km and a depth of 1 meter (Raj, 2006). This has occurred largely due to the siltation in the lagoon and the encroachment by shrimp farms across its borders. The WSA also varies through the day depending on the tidal influence and through the year depending on the season and therefore, some villages become completely inaccessible during the monsoons.

The Pulicat Lake and its surrounding ecosystem fall under the Coastal Regulation Zone (CRZ) demarcated by the various CRZ notifications (1991, 2011 and 2019) enacted under the Environment Protection Act of 1986 and also the rules and guidelines for coastal aquaculture promulgated under the Coastal Aquaculture Authority (CAA) Act from 2005. The CAA authority was set up by the CAA

### Box 1: The historical PIL - S Jaganathan vs. Union of India

The CAA was created as mandated by the seminal judgement in the history of environment vs. aquaculture conflict cases in India - S Jaganathan vs. Union of India by the Supreme Court on December 1996. The judgement banned the practice of aquaculture in the CRZ areas by interpreting the CRZ 1991 notification. The notification allowed for setting up of industries that require “water front” or “foreshore facilities” in CRZ areas and the request was made by Kapil Sibal , the advocate who represented on behalf of the aquaculture farmers that the aquaculture industry requires the “water front”. The bench squashed the claim by saying that the aquaculture industry does not require the “water front” or “foreshore facilities” as the same water could be transported to distances using pipes. The CAA was supposed to be set up by January 1997 but it was finally established with the enactment of the CAA act, 8 years later in 2005.

The CAA was expected to compute the compensation for damage to the ecology by the shrimp farmers and implement the “Polluter pays Principle”, demolish the farms in the CRZ and take measures to reverse the ecological damage in consultation with institutions like NEERI and Pollution Control Boards according to the SC judgement. Rather it came out to be a mere licenser for hatcheries and farms, supplier and importer of brood stock with little or no intent of doing any damage control.

CAA evolved to become more of a disease and less of an environment regulating authority, different from what it was purposed for. Any intent for protecting the environment shown by the CAA now was to avoid cross contamination by using the same water and other contaminated inputs for culture and not for protecting the local ecologies or for compensating the villagers as mandated by the SC judgement. The legality of the CAA act itself has now been challenged by a private member’s bill at the SC and the case is ongoing.

act that was mandated by a Supreme Court (SC) judgement (Refer Box 1 for more information on the CAA).

According to the different legislations governing the coastal aquaculture, it is

- Mandatory for aquaculture farms of more than 5 ha to have an effluent treatment pond (ETP). There are also provisions to setup for a common ETP, if there are a cluster of farms located close to each other.
- No shrimp farms can be setup within 200 from the High Tide Line (HTL), no aquaculture can be setup or

constructed in the CRZ (Which zone) and no aquaculture farms can be constructed on seas, bays, estuaries, creeks, rivers and backwaters according to the SC judgement which ordered for the demolition of previously existing farms in the above mentioned areas. However, the CAA act allowed for previously existing farms to continue after registration and for newer ‘traditional aquaculture’ farms to be setup within the zones with no definition for traditional aquaculture.

- No aquaculture can be setup within 1000m from the Pulicat and Chilika

Lake according to the SC judgement while the act completely omits this mandate.

- Shrimp farms should be located at least 100m away from any human settlement in a village/hamlet of population less than 500 and beyond 300m from any village/hamlet of population over 500 while for major towns and heritage areas, it should be around 2km according to the guidelines provided by the act<sup>6</sup>.

The issue here is that the different legislations contest against each other and in relevance to Pulicat, there is no proper definition of the boundary of the lake or there were no existing accurate baseline maps to demarcate its boundaries. As mentioned earlier, the lake has a dynamic ecosystem that changes its surface area through the day and through the year. The base maps used in the Coastal Zone Management Plan (CZMP) decreed by the CRZ 2011 notification have left out 26 of the 36 villages around the Pulicat Lake in Tamil Nadu along with India's rocket launch centre at Sri Harikota in the northern part of

the lake (Immanuel et al., 2019). It thus has been convenient for the farmers to covertly navigate through the loopholes of these different legislations in practice.

### 3.1 Mapping the Pulicat Lake: Delineating the Illegalities<sup>7</sup>

In order to fill this gap and understand the boundaries of the lake, myself along with some local fishers mapped the lake from its starting in Andhra Pradesh to its end in Tamil Nadu. We also mapped the shrimp farms along the boundaries of the lake and overlaid the maps on the GIS platform. The local fishermen took their boats to capture visuals of the effluent release from the side of the lake though the farms were accessible by road on the other side. The product of delineation is shown in Figure 2<sup>8</sup> and the geocoded images taken during the mapping exercise are shown in Figures 3 and 4.

The analysis on GIS revealed that all the shrimp farms were located in the eco-sensitive zones of the lake and were highly resource intensive. The average area of the

6 As long as it is Not In My Backyard (NIMBY)

7 As mentioned in the earlier passage, the legislations are not clear and are open to subjective interpretation. I define it as illegality based on my understanding of the law and as demonstrated through the evidences of pollution in the following section. A previous abstract on the topic submitted for an academic conference in 2019 requested to change the word "illegality" to "ecosystem". I still consider it illegal but it is open for the readers to choose for themselves.

8 Only the Tamil Nadu part of the lake and Buckingham Canal is shown in the figure because the base CZMP map for Andhra Pradesh had not been released back then when this work was conducted and interestingly there were hardly any shrimp farms on the Andhra Pradesh part of the lake.

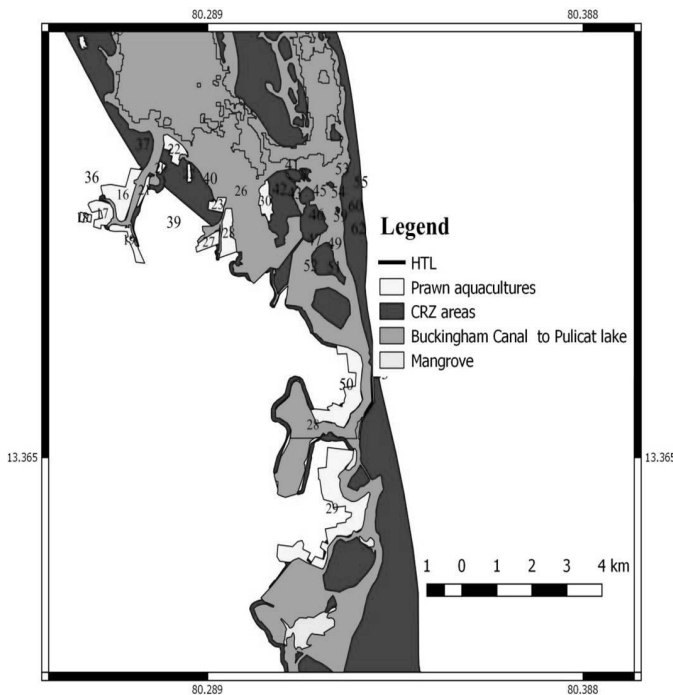


Figure 2 : Shrimp farms lying within the CRZ region in Pulicat

shrimp farms that were mapped was 34.1 ha. There were some shrimp farms as large as 316 ha and some as small as 1 ha. These numbers may not be the average size of the farm owned by an individual farmer but the size of the farms that are clustered together in the same region. From the interviews we had with the labourers in the farm, we found that the farms were owned by the rich and politically affluent people from the Chennai city, or by some local person from the nearby village or were encroached upon the poramboke<sup>9</sup> lands.

Figure 3 (from top left to right) shows the usage of power supply from the transformers, release of untreated water directly into the effluent channels, the residual chemicals

that are left behind after complete drainage of the pond and the last image shows the small hut where the labourer working in the farm resides. These labourers were largely migrants from the northern states like Bihar, West Bengal, Jharkhand, etc., who got paid around INR 18,000-24,000 per month. They continue to work in different nearby farms after the harvest. The image also shows the thorny bushes used to fence the farms, with a water channel filled with green eutrophicated water. Figure 4 (from left to right) shows an image of water being released into the drainage which directly empties into the lake, the improper disposal of chemicals used in the farm<sup>10</sup> and the release of water into the lake with the organic content of the untreated effluents. These images are just a few exemplars of the several other images that were captured and geocoded on the GIS platform

### 3.2 Exposing the Invisible Problem

As discussed earlier, the different legislations compete against each other on paper and in reality as evident in Pulicat, the compliance and enforcement of these regulations have been utterly neglected leading to a failure in governance. This deduction would imply a complete ban or removal of the shrimp farms from the coast and penalise the shrimp farmers for not complying with the existing regulations as mandated by the Supreme Court or as regulated by the CAA.

9 Traditionally village commons and coastal commons but now technically implied as derelict and available for development by the State.

10 Pink colour from Potassium Permanganate used to increase Dissolved Oxygen in the waters



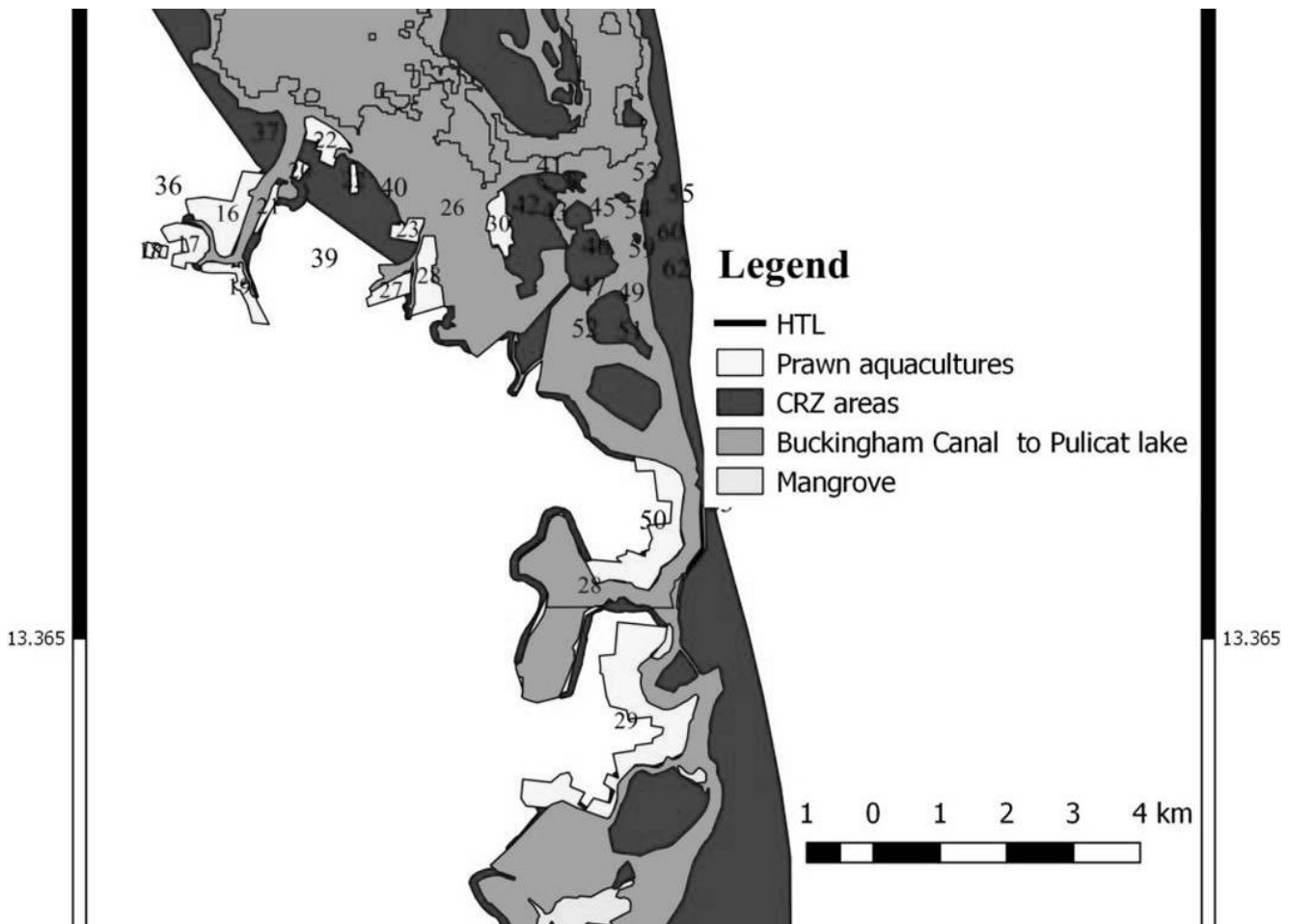


Figure 3: Shrimp farms in Pulicat (1) (Image Source: Author)



Figure 4: Shrimp farms in Pulicat (2) (Image Source: Author)



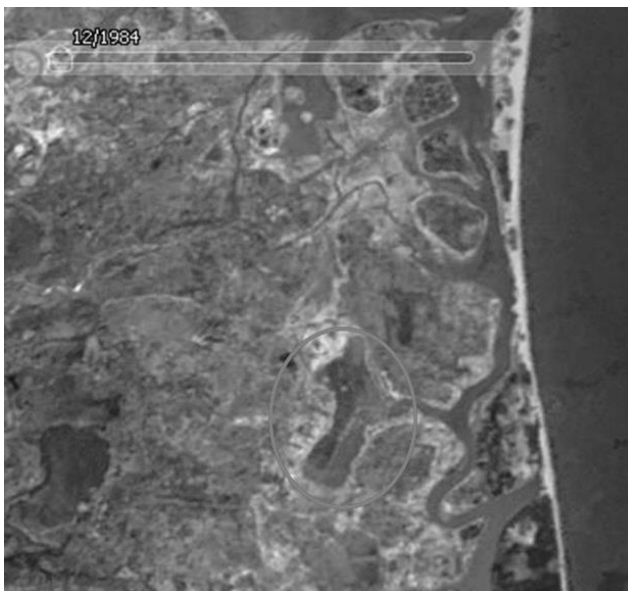


Figure 5: Google Earth Images from 1984 (left) to 2016 (right)  
(Image Source: Screen Capture from Google Earth)



Figure 6: Google Earth Image from 2004 (left) to 2018 (right) showing abandoned shrimp farms  
(Image Source: Screen capture from Google Earth)

It is also useful to notice that these different legislations that govern the aquaculture farms came after the '90s and are earmarked at the level of an individual farmer or a cluster of farm owners at the maximum. But later a simple google earth imagery historical data analysis revealed that the issue of shrimp aquaculture goes further beyond and cannot be done away with an effortless ban.

The CRZ notification first came in 1991, the SC judgement in 1996 and the CAA Act was enacted in 2005 but these shrimp farms in Pulicat have been extracting from these exact locations even from 1984 as shown in figure 5, which is the maximum we could trace back from Google Earth. The farmers encroached upon the nearby lands and continued to expand since 1984 in the study area. After





repeated cycles of cultivation, they abandon the lands owing to disease and degradation of the soil and move to the adjacent lands for cultivation (Jayanthi et al., 2019). Many such abandoned lands could be found in places where shrimp farms were once located along the east coast of India and also in Pulicat as shown in Figure 6.

#### **4. Histories from the Recent Past – a Chronological Compilation of Major Events of the Aquaculture Industry in India**

Numerous studies suggest that the Indian coastal aquaculture emerged as a sunshine sector in the nineties with the government’s new economic policy in 1991 (Mukul, 1994; Pokrant and Reeves, 2001). However, the question should be what exactly brought these shrimp farms in the first place even in the 80s that led to their reckless exploitation in the ‘90s? Coastal aquaculture was never carried out traditionally in places like Tamil Nadu and Andhra Pradesh which are now the leading producers of farmed shrimps, so it is not just a change in the means of production from traditional to modern or industrial forms. This puzzle at the middle of my research after documenting the evidence from Pulicat made me want to look further beyond the naïve blaming of the shrimp farmers for the socio-ecological crisis and map out the history of aquaculture in India from before the ‘90s.

In the following section, we document the major events during the post-colonial period that set the premise for the socio-ecological crisis in the ‘90s and its protraction thereof. The documentation analyses the role of the post-colonial developmental State and research institutions and their dependency on the multi-lateral agencies for facsimileing technologies<sup>11</sup> without cognizance of the local social context and needs through solicited international consultancies and finances. This then enticed the markets to capitalise on the opportunity during the late ‘80s and early ‘90s that have shaped the industry to what it is today.

##### **4.1 The Setting up of Technical Institutions (1947-1975)**

The history of aquaculture in India is difficult to separate from the history of fisheries research in India. The Indian fisheries sector began to receive special attention during the post-independence period with the successive five year plans. The Central Inland Fisheries Research Station (CIFRS) and Central Marine Fisheries Research Stations (CMFRS) were set up by the Ministry of Food and Agriculture in 1947. In 1959, the CIFRS was elevated to the status of research institute (CIFRS to CIFRI) while CMFRS was transformed to CMFRI in 1961. In the late 1960s, around the same time when Green Revolution was unfolding, both these research institutions came under the

11 Termed as “Technology transfer” or “Technical Know-how” in the policy documents



administrative control of the Indian Council of Agriculture Research (ICAR).

In the early 70s, the Indian government began to devote attention to aquaculture because of the export potential of shrimp which they realised after the introduction of trawling technologies along the east and west coast, documented by the works of John Kurien (Kurien, 1985) and Maarten Bavinck (Bavinck, 2001) respectively. The Marine Product Export Promotion Council (MPEPC) which was established earlier in 1961 converged with the Marine Product Export Development Authority (MPEDA) in 1972 with the enactment of the MPEDA Act with the aim to actively promote the export of marine products.

These changes at the policy level caused the focus of CIFRI and CMFRI research institutes to shift towards aquaculture research with the launch of five All India Coordinated Research Projects (AICRP) to promote aquaculture research in India. These research projects were considered to be a major turning point in the history of aquaculture in India.

## 4.2 Strategic Planning and Land Invasion (1975-1990)

4.2.1 National Aquaculture Development Plan Aquaculture Development and Coordination Programme (ADCP), a project under the United Nations Development Programme (UNDP) and Food and Agriculture Organization (FAO) conducted a regional workshop on Aquaculture planning in Bangkok, Thailand in October 1975. India was one among the 10 participating countries and the workshop set the stage for alluring foreign investments and technical know-hows for aquaculture in South Asia.

National Aquaculture Development Plans<sup>12</sup> were drafted and released by the participating countries with targets set for the next 10 years, to which India pledged to contribute the maximum – 41% of the total 3 million tonnes<sup>13</sup>. The rationale given was that India needs to promote aquaculture to feed its growing population with specific back-of-the-hand calculations made on population projections and per capita fish consumption. But the truth was that India was exporting way more seafood than importing at 1973,<sup>14</sup> the data for which was also mentioned in the plan. The increase in production was to be attempted in phases by strategically increasing the area under cultivation and by intensifying the existing practices. Vast areas

12 <http://www.fao.org/3/x5629e/x5629e00.htm#Contents>

13 Putting the number in perspective, India alone exported 0.65 million tonnes of farmed shrimps in 2020.

14 India was exporting 49 thousand tonnes, mainly of shrimp and other crustaceans worth INR 795.8 million and contributing to nearly a quarter of the international trade in shrimp products while it was importing just 2500 tonnes of fresh water fish purely to meet the immediate requirements of the North Eastern states (George and Sinha, 1976).

of land that were assumed to 'derelict' and be available for fish farming were identified and production targets were set for each year for different species.

#### 4.2.2 The Need for Hatchery Technology

The sudden increase in the area under cultivation half way through the NADP in 1979 led to an increase in demand for the seeds for stocking the farms. Therefore, efficient ways for sourcing them had to be identified rather than collecting them from fry catchers from the nearby estuaries. This led to the demand for hatchery technology in India. It was calculated that an investment of INR 40 crores (in 1979 value) would be required for setting up of 430 hatcheries to achieve the 10 year target of the NADP that was set in 1974.

A two member team from Thailand was sent to India to select a suitable site for setting up of hatchery and recommending a technology for the same in 1981. The team was funded by the Swedish International Development Agency (SIDA) and executed by the FAO under the Bay of Bengal Programme (BOBP) in accordance with the Buenos Aires Action Plan of the United Nations to foster Technical Cooperation among the Developing Countries (TCDC). The mission team visited the 10 demonstration farms of 2 ha each that were set up by the research institutes and the only two private sector shrimp farms in Tamil Nadu were owned by big corporates

like Hindustan Lever Ltd and Tata Oil Mills Company back in 1981. The yield of the farms then were 836 kg/ha/7 months for Tiger shrimp (*Penaeus monodon*) and 268.4 kg/ha/3 months for the Indian white shrimp (*Penaeus indicus*) against the current yield of 3-4 tonnes/ha/3 months from the pacific white shrimp (*Litopenaeus vannamei*) (Discussed in detail later in Box 2). A hatchery system was proposed to be started at Neelankarai, Chennai at an 8 ha site inspected by the team and the consultants also recommended for the lake fishers to convert their less productive fishing grounds to farms that are potentially more productive after acquiring sufficient training from the extension programmes of the research institutes.

#### 4.2.3 Training, Outreach and Extension Activities

CMFRI established Krishi Vigyan Kendra at Narakkal, Kerala which conducted various outreach and training programmes like the lab to land programmes<sup>15</sup>, etc., which triggered industrial forms of aquaculture in areas like Quilon (now Kollam, Kerala) where it was non-existent. ICAR with the assistance of UNDP started a subproject called the Centre of Advanced Studies in Mariculture with the objective of arranging expert consultancies, training and research in 1979. Sixteen senior level officers from different maritime states were trained on different aspects of hatchery management. Another study conducted by

---

15 This implies programs where in-lab models were executed on land

## Box 2: Advantages and Disadvantages of the Exotic Species- Pacific White Shrimp, *L.vannamei*

Scientifically, the new exotic species had several gains compared to its previous counterpart. Some of them are listed below:

### Advantages

- It could be stocked at very high densities due to their less aggressive nature leading to a much higher production for the same unit of land.
- The new species resides in the water column unlike the tiger shrimp that rests on the soil beneath, making the land more contaminated and difficult for feeding.
- Further, in order to increase the production, the ponds will just have to be dug deeper to increase the height of the water column rather than increasing the area under cultivation like for the previous Indian species.
- The exotic species was also highly tolerant to varying salinities and temperatures with higher survival rates and more importantly has a very good market in the US, as the most preferred species being native to their coast with a higher meat yield of 66-69% during the processing stage.

With the advantages, also came newer problems (in addition to the previous)

### Disadvantages:

- Stocking at higher densities require intensive management, lack of which might lead to higher organic content in the effluent water (as shown in Pulicat).
- Requires continuous circulation of water leading to erosion of the soil in the dyke and the bottom, thereby adding to input costs for compacting the land using JCBs and after every cycle.
- Continuous circulation of water requires large number of aerators to run through the night to maintain the optimal dissolved oxygen level in the waters, leading to increase in electricity consumption.
- The number of aerators have to be increased as the cropping season progresses depending on the size of the shrimp and stocking density of the farm
- Due to the increase in the depth of the ponds, this eliminates any possibility of carrying out the culture extensively. Electric motors will have to be used to pump larger volumes of water into the ponds within a smaller area, depriving the surrounding communities of underground water.

the BOBP recommended that the shrimp hatchery technology development in the Indian private sector had been slow because of inappropriate models and concentration efforts in the public industry. Therefore, BOBP funded training programmes to attract private investments in the industry. The trainees were taken to the National Prawn Fry Production and Research Centre (NAPFRE) in Malaysia for a month. Consultancy, study tours and

financial support led to construction of several small-scale hatcheries across the country.

The Sixth Five Year Plan which came out in 1979 set goals for increasing seafood export, particularly of high value shrimp and the budget for fisheries sector was increased from 3.52% to 5.62% of the total agricultural outlay (Krishnan and Birthal, 2002). It also commissioned for all India surveys on Marine

and Inland Fish Marketing and the study which was conducted by Indian Institute of Management, Ahmedabad was released in 1986. The study results published were clearly indicative of the change in discourse around aquaculture from 'brackish water fish farming' in 1974 at the time of drafting the NADP to 'export oriented brackish water prawn farming' at the end of the 10 years of NADP. The study by India's top business management school recommended that the lands reserved for economically weaker sections of the society under the state governments should be leased out for long periods on liberal terms to private entrepreneurs with the capacity to invest on large farms citing that those lands have not brought any 'economically productive results'. The study considered that the paddy cultivation in the traditional paddy cum shrimp farms was not economically remunerative and that the government policies do not encourage their conversion to perennial farms. The study therefore recommended for the government to formulate better land utilisation policies to maximise the economic use of the scarce resource.

#### 4.2.4 The Need for Imported Feeds

The rapid delinking of aquaculture from agriculture, which was a result of the programmes implemented over the decades, erased the inter-dependency between integrated rice-aquaculture fields in places like West Bengal and Kerala where the pond's natural flora and fauna were the sole

feed sources in such fields. In places like AP where there were no histories of traditional extensive shrimp farms, farmers adopted supplementary feed practices using mixtures of oil cakes, rice bran, locally available snail, trash fish, etc. This method of feed preparation was time consuming and required six man hours every day for preparation of feed for a pond of 1 ha (Wood et al., 1992).

The Government of India identified the need for high quality pelleted feed for shrimp culture and that it did not have a single established shrimp feed industry in India. Therefore ICAR approached BOBP in 1989, now funded by the British Government, for technical assistance to assess the feasibility for setting up of feed plants in India. Logistical difficulties and availability of trash fish due to competition from the poultry industry were identified as major barriers and therefore the consultants recommended for importing the shrimp feed into the country rather than setting up its own industry (More details regarding the current status of the shrimp industry can be found in Box 3). CP group, a Thai multi-national conglomerate with \$35 billion business in various sectors, started investing in India's feed industry in 1992, honouring the invite by the then Prime Minister Shri P.V Narasimha Rao and in 1996 set up its own factory in Chennai.

#### 4.3 The Boom and immediate Bust of the Industry - 1990s to Early 2000s

The stage was set now with greater institutional finance, adjusted land utilisation policies, required technologies and training for the opening of the markets in 1991 to capitalise on the available opportunities. The sales income of six fishing companies engaged in seafood export soared by 176.1% to INR 83.8 crores in the first half of 1993 and the net profit of these companies nearly tripled by 269.2% to INR 6.8 crores during the same period (Mukul, 1994). This initial boom, however, was immediately busted by large-scale disease breakouts of the white spot disease in several aquaculture farms along the coast in 1994. It has been said that the disease first occurred in India because of the illegal import of seeds from Thailand without proper quarantine procedures due to severe shortage of seeds with the rapid intensification and increased area under cultivation (Karunasagar et al., 1998). Farmers released the effluent waters from the diseased ponds directly into the open waters which affected even the natural stocks of the Tiger shrimp species making it impossible for any form of revival for the industry. Infecting the natural stocks also mean that these stocks would have reached the local markets through capture fisheries which has never been checked for the disease.

Simultaneously, the increase in area under cultivation and encroachment of the coastal commons led to severe conflicts between the

shrimp farmers and the local communities (Patil and Krishnan, 1998). Studies have also discussed the conversion of paddy fields to shrimp farms in several places along the coast including the Cauvery rice delta regions (Selvam and Ramasamy, 2000; Kagoo and Rajalakshmi, 2002) which led to the filing of the Public Interest Litigation in the Supreme Court by S Jagannathan, a Gandhian well known for the LAFTI<sup>16</sup> movement in South India. The landmark judgement which came in December 1996 (Discussed earlier in Box 1) banned the practice of aquaculture in the CRZ areas and ordered for the demolition of the previously existing farms. Several farmers withdrew from the industry because of the heavy losses and nation-wide protests against the industry.

#### 4.4 The Silent Era - Early 2000s to 2010

The 7-10% increase in production that the industry was experiencing every year in the '90s came down to an average of 1.8% increase in production with highly fluctuating prices in the market. The CAA act was passed in 2005, which came out to be a mere licensor and regulator of the aquaculture industry (Also discussed earlier in Box 1). Meanwhile, trials were being conducted from early 2000s for the introduction of a new exotic species from the Pacific coast which was approved for importing and commercial culture in

---

16 Land for the Tiller's Freedom Movement, similar to the Bhoodan Movement by Vinoba Bhave in North India



2009 by the CAA. The previous tiger shrimp species could not be cultured again as they became highly susceptible to the disease but the newly introduced species had several advantages for the entrepreneurs purely with the intent of huge profit making (Refer Box

2 for more information). Within 2009-10, 15 hatcheries were approved by the CAA and a total of 30,600 numbers of broodstock of the exotic species were imported to the country. CAA which was supposed to demolish the pre-existing farms according to the SC

### Box 3: The booming shrimp feed industry

The consultancy report published by BOBP in 1989 highlighted the unavailability of trash fish for the fish meal industry in India due to competition from the poultry industry and recommended for the import of fishmeal. However, the tables have turned in the last 30 years. Recent studies have shown that 69% of fish meal and 75% of fish oil production went to seafood farming as of 2016 with fishing vessels systematically plundering the oceans for species that have not been previously used for fish meal production including the juvenile fish (Changing Markets Foundation, 2019).

Recently when Goods and Services Tax (GST) was levied on the fish meal industry in 2019, a letter (Refer Figure 7) from the trawling fishermen cooperative in Mumbai revealed that 60% of their catch was being bought by the fishmeal industries and that if the fish meal industry collapses because of the taxation, then the effect would immediately trickle down to the fishing communities.

This is highly unsustainable as the by-catches have become more valuable in the recent years leading to excessive trawling for fish meal and fish oil when compared to food fish, because of the demand for feed from the newly created markets: the commercial aquaculture industry. One of the distributors in the Tuticorin fishing harbour said that the trash fish auction has increased in the recent three to four years with the newer fishmeal industries coming up near Tuticorin. The shrimp feed industry buys the trash fish for INR 15/kg whereas the poultry industry gathers only the leftover for INR 10/kg as reported by the distributor who auctions at the Tuticorin harbour.

Date : 24<sup>th</sup> January 2019

To,  
Sri Devendra Fadnavis,  
The Hon'ble Chief Minister,  
Government of Maharashtra,  
INDIA.

May it please The Hon'ble Chief Minister of Maharashtra.

We are the association for the welfare and upliftment of the Fishermen of Coastal India downtrodden class dependent on the Mother Nature for our livelihood.

Basically, the Fishermen Community is less educated but, hardworking. Our daily earning is dependent on the nature's gift and if there is any wrath by the nature, this community is hard hit.

Of late, on account of the El Niño effect and other nature related issues, fish catches have gone down. The various welfare and protection measures taken by the government for their upliftment, has supported the life of these "Sons of Sea".

Now, we are given to understand that the government has levied GST on Fishmeal Industry. For all these years there was no tax on this product, either Central or State. We are informed that for the first time tax has been levied on this product.

We are the only suppliers of raw material to this Industry. About 60% of the Fish catches of the Fishermen goes to them. The Fish not fit for human consumption and Fish Offal which otherwise would have gone waste is purchased by this Industry. This has helped to increase our **purchasing Power**.

Moreover, this Industry is the only source of purchase of huge stocks of wild catches, otherwise our life would have been disastrous. Thus the prosperity of the Fishermen community is mainly based on Fish Meal Industry.

In view of the levy of GST, the margin of the Industry will suffer which will affect our earnings. To withstand the costing, they will pass on this burden on us by reducing the purchase price. This will **affect the earning of fishermen** who live on hand to mouth basis. Since neither the Central nor State have fixed **support price** for Fish, we are at the mercy of industry as far as "price" is concerned.

If retrospective effect of the clarificatory circular is not nullified, Fish meal Industry may collapse or they may close down because of the huge tax liability which was not collected by any of the Fishmeal Industry in the Country. If this happens it is the fishermen community which may have to bear the brunt of this effect.

Considering all the above, on behalf of lakhs and lakhs of Coastal Fishermen, we fervently beg The Hon'ble Chief Minister to take necessary steps to drop the GST levied on Fishmeal which will prevent the catastrophic disaster come on the head of fishermen, for which act of Kindness and justice, we the "Sons of Sea" will remain ever grateful to the Benign The Hon'ble Chief Minister.

Your Highness will understand better than anybody else, how it feels to be anchored. They need to go to water, to water their livelihood. Fishermen are in troubled waters. Today the tax burden has anchored them. These sons of sea need hand holding... from a son of soil, that is you. Kindly release their anchor by setting them free from the GST effect.

Thanking you,

Yours faithfully

Figure 7: Letter to the CM of Maharashtra for removing the GST on the fish meal industry (Source: As sent to me by a fisherman from Mumbai)





Figure 8: Trash fish auctioned and being transported to shrimp feed mills in Veraval, Gujarat from Bhaucha Dhakka fishing harbour in Mumbai (Image Source: Author)

judgement authorised the functioning of 6378 farms within 5 years of its inception at the end of this decade of which 107 farms were given the license to cultivate the newly introduced species (CAA, 2010).

#### 4.5 The past Decade - 2011 to 2020

India's seafood exports have flourished with an exponential increase of 105.26% by quantity and 363.64% by value from 2010 to the present with an all-time high of 7.08 billion USD in 2018 (MPEDA, 2020). The number of hatcheries increased to 259, out of which

252 are located in Tamil Nadu and Andhra Pradesh alone and the broodstock numbers imported increased to over 6 lakhs in March 2016 (CAA, 2016). There have been reports of the white spot disease even in the newly introduced species, but the release of the untreated diseased water does not affect the natural stock because it is native to the pacific coast. No study so far has been conducted<sup>17</sup> to assess the spread of white spot disease to the natural stocks of other species that are brought to the markets through capture fisheries. For example, the lake fishers in Pulicat, catch shrimps using the traditional stake nets while the shrimp farms are located adjacent to the traditional fishing grounds and continue to release their effluents directly into the lake that affects the natural stocks of the shrimps and other fish species.

The resistance movements from the nineties have been long forgotten or suppressed in different parts along the coast by the shrimp farmers with placatory acts like building temples, water tanks for the villages and other charity as was the case with Perunthottam village in Nagapattinam, Tamil Nadu. Several smaller feed companies have entered the business of sourcing trash fish and producing pelleted feeds for aquaculture (Refer Box 3 for more information on the feed industry). Higher cost for importing broodstock from the US has led to farmers using broodstock grown within their own farms in the hatcheries which poses a serious threat to another disease

17 At least to my knowledge

break out in the industry. CAA has therefore allowed for smaller hatcheries to form a consortium in April 2014, enabling smaller hatcheries with lesser production capacities to import the broodstock at lower costs. This again goes to show the intent of the CAA as a disease regulating authority rather than what it was proposed for by the SC judgement as discussed before in Box 1.

Despite all this, the state has continued to increasingly invest in the sector with the launch of the Neel Kranti (Blue Revolution) Mission in 2016 that had a budget of INR 3000 crores for a period of 5 years. Then MPEDA Chairman A Jayathilak reported in an interview that they intend to achieve an export target of 10 billion USD by 2022 (ET Bureau, 2018). For the first time after independence, a separate ministry for Fisheries was setup at the Centre by the Government in 2019 which launched its first scheme – Pradhan Mantri Matsya Sampada Yojana (PMMSY) in September 2020 with an investment of INR 20,000 crores in the sector (the highest ever investment in the sector since independence) and aims to enhance exports to INR 1 lakh crore (more than double of the current export value<sup>18</sup>) by 2024-25.

Currently only 5.76% of the brackish water and salt affected areas are being utilised for shrimp farming (Jayanthi et al., 2018), therefore the new 'Draft National Fisheries Policy, 2020' highlights that the remaining

brackish water resources and salt affected areas in the country have remained 'unutilised or underutilised' and that they are available for 'ushering economic prosperity' through further development of shrimp farms on these natural resources (Government of India, 2020). India also released its first Draft Mariculture policy in 2018 and a revised version was released in 2019, shifting the focus now to mariculture farms in the seas. The current brackish water production of around 6 lakh metric tons fades away in comparison to the estimated production of 4-8 million MT (Government of India, 2019) from mariculture in India.

The different scheme and policy documents released in the last half of the decade read very similar to the documents and consultancy reports that were released in the late '70s and early '80s to promote brackish water aquaculture in India. They highlight the current needs and its potential for the future, strategically selecting suitable areas for leasing the seas by the government, enticing private players to step up into the industry to tap the immense export potential, all in the deception of providing food and nutritional security for the nation and livelihood and entrepreneurial opportunities for the coastal communities.

---

18 Current Export Value = INR 46,662.85 crores

## 5. Conclusion: Reflections, Possibilities and Way Forward

Investigating into the major events that shaped the industry, we were able to identify the key drivers and actors who were involved (continue to be involved) in promoting the unsustainable intensification of the farms at the local levels – the state, the research institutions and the multi-lateral agencies. The perception that aquaculture was a sunshine sector that developed after the economic reforms in 1991 is not fully true and we need to acknowledge the undercover contribution of the other powerful actors behind the scenes during the first 40 years after independence. Over the next 30 years, we have resorted to blame and regulate the entrepreneurs and the farmers for the socio-ecological disaster with numerous individual conflicts and cases being filed in the courts and the National Green Tribunal (NGT).

While these individual fights and demonstrations are important, the larger understanding of the industry that this paper contributes to compels for structural transformative politics (especially in the politics of policy making and politics of knowledge production) through committed collective action. The top down technocratic management approach of the state and the research institutions have to be challenged by creating stronger alliances at the local level that transfers agency to the people from the local communities. The alliances can be formed with the local communities, civil society organisations, researchers from technical and social science backgrounds, students from local colleges and finally with representatives from the state as well so that the needs and the demands of the immediate local communities are given priority in the policy and planning process.<sup>19</sup> I discuss in brief (but the possibilities are many) below

19 My understanding of this process is largely inspired by the possibilities of the current project that I am working on. For more information, see TAPESTRY

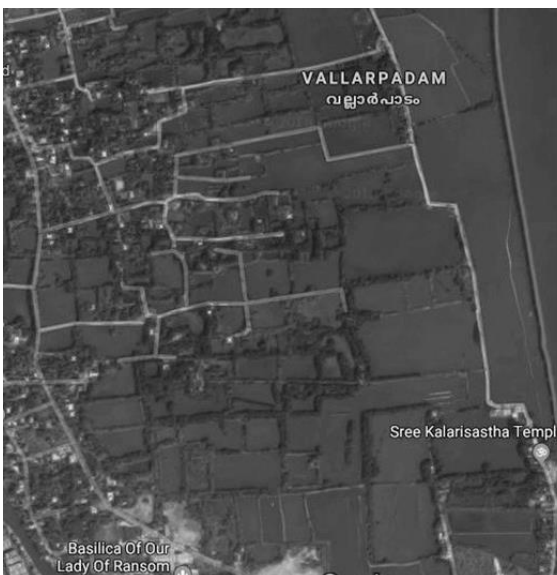


Figure 9: Kerala vs. Nagaiapatinam in Tamil Nadu (Image Source: Google Earth)

how transformative emancipatory politics, if imagined and performed, can be effective at the fronts of policy making and knowledge production with respect to the fisheries and aquaculture sector.

The Draft Mariculture Policy released in 2018 used the word Marine Spatial Planning for the first time in India which at its first sight reminds us of ways and means through which the British ruled over India (Mondal, 2019), in the sense that it introduces the colonial concept of mapping as a means to display power and control space. But the advent of citizen science and mobile based spatial data collection apps over the recent years has enabled the potential for democratisation of such spatial data collection methods. Mapping, Planning and Zoning which the colonial rulers and the post-colonial state have previously used for privatisation of natural resources can now be used for 'commoning' and claiming for traditional rights over spaces and places, including the sea that is being increasingly considered for privatisation. Critical participatory counter mapping by the local alliances that documents the community lived, reported and interpreted data can then be used with the remotely sensed data produced by the state departments/research institutes for creating powerful and parallel ontologies that challenge the hegemonies of the state.

Finally, the possibility of aquaculture or mariculture as an alternate or additional

livelihood for the fishers can also be not ruled out. Though we do not have to consider the typical Malthusian population assertions forced by the current exponents of the industry, ones which have been strongly denounced again and again over the years, climate change and sea level rise is real and there exists a constant threat to the lives and livelihoods of the artisanal fishers.

One could never find a fisher from an artisanal fishing village owning a shrimp farm along the East Coast (at least in Tamil Nadu) though it is portrayed as an alternate livelihood for the displaced coastal communities amidst the climate crisis. I was informed by an artisanal fisherman from Nagapattinam district in Tamil Nadu that several fishing villages have banned its fishers from participating in the fish farms in their traditional panchayats ("ur kattupadu" as called in Tamil) as they were considered to be destroying their livelihoods. On the other hand, there were a few aquaculture farms in Vallarpadam Island, Kochi which were owned by the fishers from the traditional Dheevera fishing community. Extensive polyculture farming of the locally available species along with stocking of commercial fish species was carried out with the natural tidal inflow and outflow. The mangroves were very much intact and were used as bunds instead of sand dykes which also provided for nutrients and served as feeding grounds for the species grown in the farms. This goes on to show that there are alternate eco-friendly ways in which aquaculture can still be practiced and

performed against the rush to intensify. It has also been observed that such forms of aquaculture are more suited to the social needs of the fishers/farmers themselves and thus, as India's harsh lockdown has shown, able to meet the challenges of a pandemic world much more suitably.

Figure 8 shows the differences in the type of aquaculture farms (extensive on the left vs. intensive on the right) that are visible to the naked eye from the satellite images taken from Google Earth. The place on the left is from Vallarpadam Island in Kochi on the west coast while the image on the right is from Nagapattinam district on the East Coast. The image on the right shows the place marked as mangrove forest on Google Earth, but shrimp farms have been placed exactly on the creek where the mangroves were once located while the image on the left shows how the mangroves have been used as bunds that also serve as feeding grounds.

While questioning the top down approach of the state and the research institutions, the local alliances formed may remain open to such opportunities of the technology. The current ways and means of producing knowledge through the modern academic disciplines of science and technology have to be reconfigured to incorporate the traditional knowledge of the local communities. The alliances with the researchers formed should work with the local communities to incorporate them and their knowledge of

ecological diversity, species diversity and local food diversity, etc. The knowledge thus produced should embrace the plurality and transdisciplinarity in developing indigenous aquaculture technologies rather than merely importing them from places divorced from its local users purely for commercial purposes. The research material produced should be made available open source through mediums and languages accessible to the local communities. More importantly, transformative politics in knowledge production involves giving equal (sometimes even more) credits to the local communities in the authorship of the publications and in patents rather than labelling them as case studies in boxes or qualitative anecdotes in italics that comes across as epistemic supremacy of the modern scientific disciplines over centuries of traditional knowledge that has sustained the local communities.

In conclusion, here is an imagination of the industry that shook me initially while I was writing my thesis last year. Aquaculture has the potential to change the way humans interact with the seascapes forever in the future. Similar to how human beings transitioned from hunter-gathering societies to agriculture, artisanal fishers are akin to the hunter gatherers of the sea. But human beings are looking to settle down with large aquaculture/mariculture farms on the seas. The sociological implications of this contrast—that between hunting and settling—though very abstract, are many as we hardly find any hunter gathering societies in the world today.



But the question I want to leave with the readers is: Are we willing to learn from our histories, take cognisance of our mistakes and do things differently today or are we waiting to watch the past repeat itself into the future?

## References

- Anderson, J.L., Asche, F., Garlock, T., Chu, J., 2017. Aquaculture: Its role in the future of food. *Front. Econ. Glob.* <https://doi.org/10.1108/S1574-871520170000017011>
- Anh, P.T., Kroeze, C., Bush, S.R., Mol, A.P.J., 2010. Water pollution by intensive brackish shrimp farming in south-east Vietnam: Causes and options for control. *Agric. Water Manag.* <https://doi.org/10.1016/j.agwat.2010.01.018>
- Bavinck, M., 2001. *Marine Resource Management: Conflict and Regulation in the Fisheries of the Coromandel Coast.* Sage Publications, Inc.
- Belton, B., Padiyar, A., Ravibabu, G., Gopal Rao, K., 2017. Boom and bust in Andhra Pradesh: Development and transformation in India's domestic aquaculture value chain. *Aquaculture* 470, 196-206. <https://doi.org/10.1016/j.aquaculture.2016.12.019>
- CAA, 2016. Coastal Aquaculture Authority Annual Report 2015 - 2016.
- CAA, 2010. Coastal Aquaculture Authority Annual Report 2009-10.
- Changing Markets Foundation, 2019. Fishing for Catastrophe: How Global Aquaculture supply chains are leading to the destruction of wild stocks and depriving people of food in India, Vietnam and the Gamibia.
- Craze, M., 2019. India's pangasius industry next aquaculture segment poised for explosive growth [WWW Document]. *Undercurr. News.* URL [https://www.undercurrentnews.com/2019/09/05/indias-pangasius-industry-next-aquaculture-segment-poised-for-explosive-growth/#:~:text=India could eventually export pangasius&text=Vietnam%2C which accounts for more,Nations' Food %26 Agriculture Organization. \(accessed 9.26.20\).](https://www.undercurrentnews.com/2019/09/05/indias-pangasius-industry-next-aquaculture-segment-poised-for-explosive-growth/#:~:text=India could eventually export pangasius&text=Vietnam%2C which accounts for more,Nations' Food %26 Agriculture Organization. (accessed 9.26.20).)
- Cruz-Torres, M.L., 2000. "Pink Gold Rush:" Shrimp Aquaculture, Sustainable Development, and the Environment in Northwestern Mexico. *J. Polit. Ecol.* <https://doi.org/10.2458/v7i1.21547>
- Edwards, P., 2015. Aquaculture environment interactions : Past , present and likely future trends. *Aquaculture* 447, 2-14. <https://doi.org/10.1016/j.aquaculture.2015.02.001>
- ET Bureau, 2018. Indian seafood export touches new high at \$7.08 billion. *Econ. Times.*
- FAO, 2020. *The State of World Fisheries and Aquaculture 2020.* Rome.
- FAO, 2019. Fisheries and Aquaculture Country Profile: The Republic of India [WWW Document]. URL <http://www.fao.org/fishery/facp/IND/en> (accessed 9.19.20).

- FAO, 2018. The State of World Fisheries and Aquaculture 2018 - Meeting the sustainable development goals., FAO. Rome. <https://doi.org/978-92-5-130562-1>
- George, P., Sinha, V.R., 1976. National Plan for Development of Aquaculture in India. Bangkok, Thailand.
- Godfrey, M., 2016. 4 trends to note in China's seafood exports, imports [WWW Document]. SeafoodSource. URL <https://www.seafoodsource.com/features/4-trends-to-note-in-china-s-seafood-export-imports?content%5Bb1a7c925-1ed6-4bc4-ab97-58e281440ce3%5D=4> (accessed 9.28.18).
- Government of India, 2020. Draft National Fisheries Policy, 2020.
- Government of India, 2019. National Mariculture Policy 2019 - Revised Draft.
- Jayanthi, M., Ravisankar, T., Nagaraj, G., Thirumurthy, S., Muralidhar, M., Saraswathy, R., 2019. Is aquaculture abandonment a threat to sustainable coastal resource use? - A case study of Andhra Pradesh, India, with options for reuse. Land use policy. <https://doi.org/10.1016/j.landusepol.2019.04.034>
- Jayanthi, M., Thirumurthy, S., Muralidhar, M., Ravichandran, P., 2018. Impact of shrimp aquaculture development on important ecosystems in India. Glob. Environ. Chang. 52, 10-21. <https://doi.org/10.1016/j.gloenvcha.2018.05.005>
- Jeffrey Immanuel, J., Anshul, S., Narayanan, N.C., 2019. Coastal regulation zone, 2018 into the sea with regulations. Econ. Polit. Wkly. 54, 57-58.
- Kagoo, I.E., Rajalakshmi, N., 2002. Environmental and Social Conflicts of Aquaculture in Tamilnadu and Andhra Pradesh. J. Soc. Econ. Dev.
- Karunasagar, Iddya, Otta, S.K., Karunasagar, Indrani, 1998. Disease Problems Affecting Cultured Penaeid Shrimp in India. Fish Pathol. 33, 413-419. <https://doi.org/10.3147/jsfp.33.413>
- Krishnan, M., Birthal, P.S., 2002. Aquaculture development in India: An economic overview with special reference to coastal aquaculture. Aquac. Econ. Manag. 6, 81-96. <https://doi.org/10.1080/13657300209380305>
- Kurien, J., 1985. Technical Assistance Projects and Socio-Economic Change - Norwegian Intervention in Keralas Fisheries Development. Econ. Polit. Wkly.
- Mondal, T.K., 2019. Mapping India since 1767: Transformation from colonial to postcolonial image. Misc. Geogr. <https://doi.org/10.2478/mgrsd-2019-0023>
- MPEDA, 2020. Marine Products Exports [WWW Document]. MPEDA. URL [mpeda.gov.in/MPEDA/marine\\_products\\_exports.php#](https://mpeda.gov.in/MPEDA/marine_products_exports.php#) (accessed 8.5.20).
- Mukul, 1994. Aquaculture Boom : Who Pays ? 3075-3078.
- Nadarajah, S., Flaaten, O., 2017. Global aquaculture growth and institutional quality. Mar. Policy 84, 142-151. <https://doi.org/10.1016/j.marpol.2017.07.018>





- Páez-Osuna, F., Guerrero-Galván, S.R., Ruiz-Fernández, A.C., 1998. The environmental impact of shrimp aquaculture and the coastal pollution in Mexico. *Mar. Pollut. Bull.* [https://doi.org/10.1016/S0025-326X\(98\)90035-2](https://doi.org/10.1016/S0025-326X(98)90035-2)
- Patil, P.G., Krishnan, M., 1998. The social impacts of shrimp farming in Nellore District, India. *Aquac. Asia* III, 3-5.
- Pokrant, B., Reeves, P., 2001. Putting globalisation in its place: Globalisation, liberalisation and export-orientated aquaculture in West Bengal and Bangladesh. *South Asia.* <https://doi.org/10.1080/00856400108723428>
- Raj, S., 2006. Macro Fauna of Pulicat Lake, National Biodiversity Authority, . Chennai.
- Selvam, S., Ramasamy, C., 2000. Socio-economic and environmental impacts of shrimp farming, in: Krishnan, M., Birthal, P.S. (Eds.), *Aquaculture Development in India*. National Center for Agricultural Economics and Policy Research, New Delhi, New Delhi, pp. 52-58.
- Tacon, A.G.J., Metian, M., 2018. Food Matters: Fish, Income, and Food Supply—A Comparative Analysis. *Rev. Fish. Sci. Aquac.* <https://doi.org/10.1080/23308249.2017.1328659>
- Telesory, 2019. Global Shrimp Industry- The Indian Dynamics [WWW Document]. URL <https://www.telesory.com/blogs/-/blogs/global-shrimp-industry-the-indian-dynamics> (accessed 10.12.20).
- Wood, J.F., Brown, J.H., MacLean, M.H., Rajendran, I., 1992. Feed for artisanal shrimp culture in India - Their development and evaluation. Madras.



# Coastal Shrimp Aquaculture in India: Should the farmers be blamed?



## ABBREVIATIONS

- Bay of Bengal Programme (BOBP)
- Central Inland Fishing Research Institute (CIFRI)
- Central Marine Fishing Research Institute (CMFRI)
- Indian Institute of Management Ahmedabad (IIM-A)
- Marine Products Export Development Authority (MPEDA)
- National Aquaculture Development Plans (NADP)
- Pradhan Mantri Matsya Sampad Yojana (PMMSY)

## KEY

**Wild-caught (capture) Shrimp**

**Culture Shrimp**

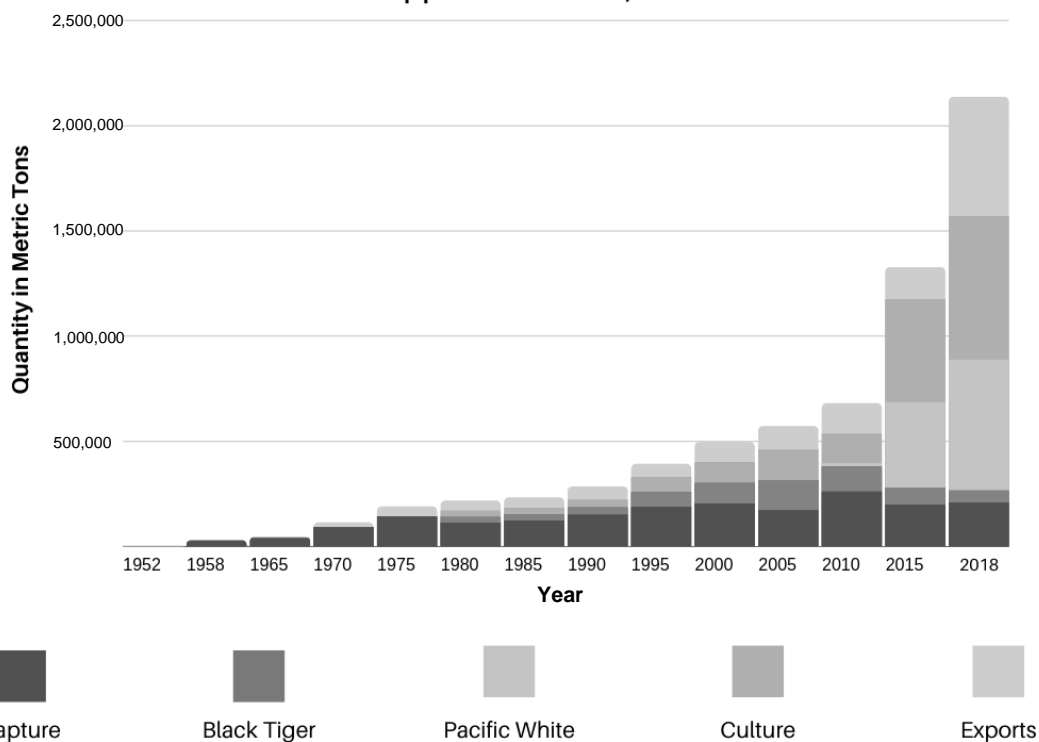
**Influences**

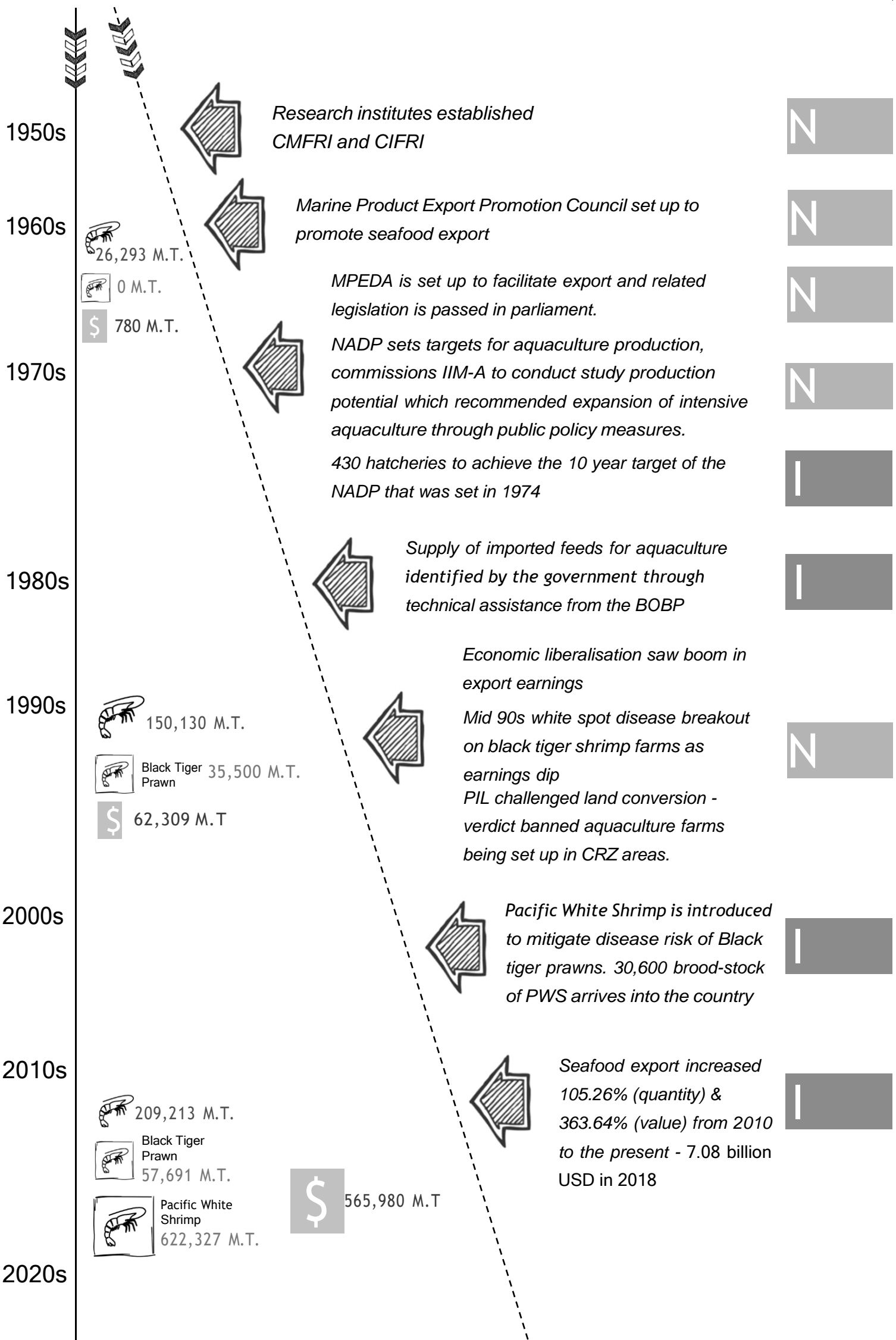
**Export**

**ACTORS**

- International
- National
- State
- Local

Production and export quantities across capture and culture shrimp production in India, 1953-2018





## BOX2

# Linking Culture Fisheries to the Blue Economy

The Blue Economy (BE) emerged as a development framework from the United Nations Conference on Sustainable Development (hereafter Rio +20) held in 2012. Thus the growth of culture fisheries can be examined under the proposition that the logistics sector is a key element in natural-resource industries. This is because it ‘elongates GVCs<sup>1</sup> and facilitates the opening of new commodity frontiers’ (Baglioni and Campling, 2017, p. 2448). Within the BE framework then, culture fisheries is an emerging commodity frontier<sup>2</sup>.

### Blue Economy as a development framework

The Rio +20 conference laid the global framework under which the ocean policy-making has been mainstreamed. This conference saw the re-affirming of the global community’s stance to eradicate poverty and hunger; at the same time addressing issues related to environmental degradation (UN, 2012). The most prominent outcome of this has been the adoption of the Sustainable Development Goals (SDGs); the attainment of which is envisioned through multi-stakeholder platforms that achieve social, environmental and economic wins. The prominence of the oceans in the SDGs is evident because they play a vital role in the global economy. When it comes to global trade, its very continuity depends on the safe carriage of cargo across the world’s waterways. Connected to this are matters of geopolitics with a focus on maritime sovereignty and sustainable resource exploitation within Exclusive Economic Zones. The oceans play a key role in global and national security and drive defence, environmental, fisheries and agrarian policy-making. Finally, the oceans collectively form the earth’s largest carbon sink accounting for 40% of all CO<sub>2</sub> absorbed since the beginning of the industrial era (DeVries et al., 2017).

It is in the context of the vital role the oceans play in the global economy that the BE framework has emerged. The BE can mean many things for many contexts but one way to look at it is to the idea of building cohesion between the different economic sectors related to the oceans.

---

1 GVC refers to ‘the full range of activities that are required to bring a product from its conception, through its design, its sourced raw materials and intermediate inputs, its marketing, its distribution and its support to the final consumer’ (Global Value Chains Initiative 2017).

2 Commodity frontiers are zones which allow for enhanced accumulation to capital. We return to this in more detail in Section 6.

These relate to trade, commerce and logistics, seafood, waste management, renewable energy, carbon finance, conservation and recreation (World Bank, 2017). What ties all of these sectors together is the understanding that the oceans present a vast reserve of benefits; benefits that can, and increasingly must, be harnessed through sustainable means. Following dominant capitalist approaches to nature, this has meant commodifying the oceans in order put a value on them and then creating economic incentives to sustainably harvest this value (Barbesgaard, 2018). In line with this, the ocean economy has been valued at USD 24 trillion dollars (Hoegh-Guldberg, O et al. 2015) thus, presenting a significant economic opportunity. Given the scale and range of economic opportunities provided by the BE, it is not surprising that a range of hitherto disconnected and powerful actors are forming alliances. The Blue Economy is now included in the portfolios of some of the world’s biggest financial, economic, agro-food and policy institutions and forums (Barbesgaard, 2018).

### Linking culture fisheries to the Blue Economy

Of particular interest is the subject of food in the Blue Economy. Reaffirming its intentions to reduce global poverty and hunger while protecting the environment, the FAO launched the Blue Growth Initiative (BGI) in 2013. At its core, the BGI is an umbrella program aimed at streamlining policy-making with regards to seafood in order to deliver social benefits, environmental protection and economic growth. Its four arenas of its engagement are capture fisheries, culture fisheries, seafood value chains and ecosystem services. Fisheries are of immense importance to employment, sustenance and trade that is directly generated from the sector; however the indirect benefit of this sector is even more crucial. The FAO (2009)

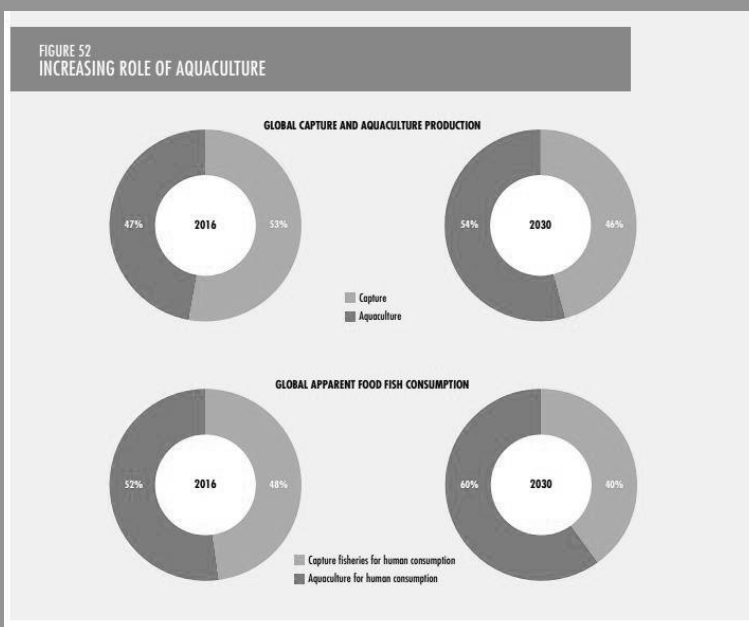


Image 1: The predicted share of aquaculture in 2030 (Source: FAO, 2018)

predicts having to feed 10 billion people by 2050; this in the face of falling productivity rates of agriculture, driven by climate-change (Ray et al., 2019) and the exhaustion of Green Revolution technologies (Moore, 2012). This presents a daunting challenge, and it is precisely where aquaculture has gained ascendancy. Mainstream discourses regularly cite aquaculture as an opportunity to meet rising demand for animal products using less feed, especially compared to pigs and cattle (Fry et al., 2016). And since aquaculture ‘continues to grow faster than other major food production sectors’ (FAO, 2018, p. 17), this sector is central to realising the SDG 2030 hunger goal. Culture fisheries, in the face of falling agricultural productivity and declining capture fish landings, have taken centre-stage in meeting the global food deficit.

In addition to an absolute increase in the rise in global seafood consumption (Guillen et al., 2019), there is also a relative increase as diets are shifting away from traditional meats to seafood. This is driving up global demand and while food GVCs are no longer purely a South to North journey, the world’s culture fisheries growth in the South is going to be central to meet this growing global demand. For example, while the FAO estimates that global culture fisheries will grow globally by 36.7% until 2030, India has plans to expand its culture fisheries sector by 244% between now and 2030 (NFDB, 2018). Culture fisheries thus open up new commodity frontiers in the Southern continents and along with this come new ways of organising the production, exchange and consumption of food. Technological and organisational revolutions have been central in re-organising global value chains over the last four decades. The rise of China as the ‘chimney of the world’ (Malm, 2016) would have been impossible without the container revolution and the associated advances in ship-building, ports-operations and vessel-navigation systems. Thus logistics reshape the relations between ‘capital and labour and between firms- by enabling production under new terms [and] by shrinking space and time, they allow for the overcoming of distance’ (Baglioni and Campling, 2017, p. 2448 italics in original).

The BE as a development framework provides an umbrella for bringing together the thrust to increase culture fisheries productivity on one hand, and the reorganising of the logistics sector to complete the circuit of productivity on the other. In doing so, it allows for the examination of the local dynamics of shrimp production within global trends of consumption and in turn, lends insights into actions of the various actors at the local level of petty commodity production, the national level of the state and the global level of capitalist firms.

## References:

- Baglioni, E. and Campling, L. (2017), "Natural resource industries as global value chains: Frontiers, fetishism, labour and the state", *Environment and Planning A: Economy and Space*, Vol. 49 No. 11, pp. 2437-2456.
- Barbesgaard, M. (2018), "Blue growth: savior or ocean grabbing?", *The Journal of Peasant Studies*, Vol. 45 No. 1, pp. 130-149.
- DeVries, T., Holzer, M. and Primeau, F. (2017), "Recent increase in oceanic carbon uptake driven by weaker upper-ocean overturning", *Nature*, Vol. 542, p. 215.
- FAO (2009), *High Food Prices and the Food Crisis: Experiences and Lessons Learned*, FAO, Rome.
- FAO (2018) *The State of World Fisheries and Aquaculture 2018 - Meeting the sustainable development goals.*, Rome: FAO.
- Fry, J.P., Love, D.C., MacDonald, G.K., West, P.C., Engstrom, P.M., Nachman, K.E. and Lawrence, R.S. (2016), "Environmental health impacts of feeding crops to farmed fish", *Environment International*, Vol. 91, pp. 201-214.
- Guillen, J., Natale, F., Carvalho, N., Casey, J., Hofherr, J., Druon, J.-N., Fiore, G., et al. (2019), "Global seafood consumption footprint", *Ambio*, Vol. 48 No. 2, pp. 111-122.
- Hoegh-Guldberg, O. et al. (2015) *Reviving the Ocean Economy: the case for action - 2015*, Geneva: WWF International, Gland, Switzerland.
- Malm, A. (2016), *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming*, Verso, London New York.
- Moore, J.W. (2012), "Cheap Food & Bad Money: Food, Frontiers, and Financialization in the Rise and Demise of Neoliberalism", *ResearchGate*, available at: [https://www.researchgate.net/publication/236660320\\_Cheap\\_Food\\_Bad\\_Money\\_Food\\_Frontiers\\_and\\_Financialization\\_in\\_the\\_Rise\\_and\\_Demise\\_of\\_Neoliberalism](https://www.researchgate.net/publication/236660320_Cheap_Food_Bad_Money_Food_Frontiers_and_Financialization_in_the_Rise_and_Demise_of_Neoliberalism) (accessed 6 September 2019).
- Ray, D.K., West, P.C., Clark, M., Gerber, J.S., Prishchepov, A.V. and Chatterjee, S. (2019), "Climate change has likely already affected global food production", edited by Jung, Y.H. *PLOS ONE*, Vol. 14 No. 5, p. e0217148.
- World Bank. (2017), "The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries.", *World Bank and United Nations Department of Economic and Social Affairs*, available at: <https://openknowledge.worldbank.org/bitstream/handle/10986/26843/115545.pdf?sequence=1&isAllowed=y> (accessed 3 January 2019).

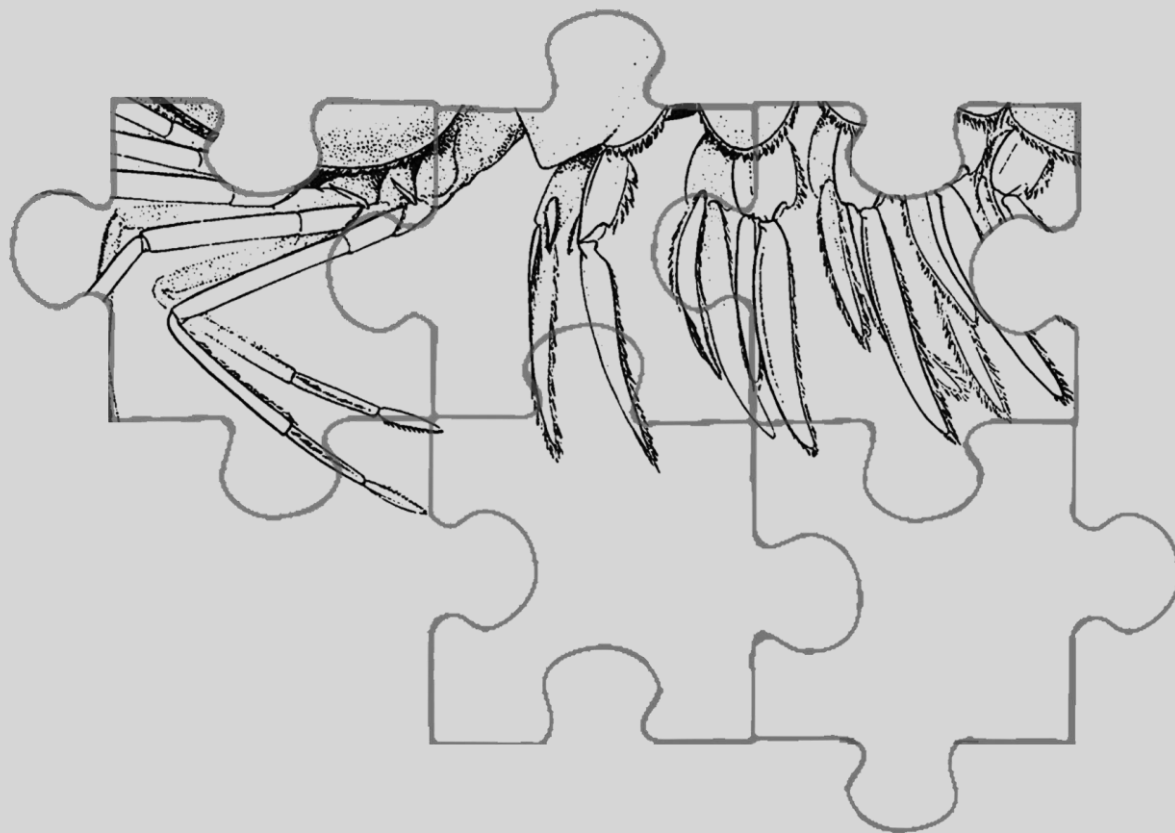




# Vulnerabilities of livelihoods in the Sundarbans; is shrimp production a viable option?

The Sunderbans is simultaneously a tiger conservation area, a World Heritage site, a complex solid-fluid landscape and a human settled region. In a place such as this, the vulnerabilities of the people are on account of both human and non-human causes and there are no easy alternatives to livelihood choices. This piece juxtaposes shrimp production and the socio-ecology of the region to explore areas of research and long-term policy-making.

*Sreeja Dutta*



## 1. Introduction And Context

On the east coast of the Indian subcontinent, spanning across India and Bangladesh, lies the extensive mangrove ecosystem called the Sundarbans. It is in the lower deltas of the Ganges-Brahmaputra and Meghna river basin, forming a mesh of rivers and islands. Locally known as Badabon, this region is ecologically characterised by dense mangrove forests, a large portion of which is settled by people. The remaining parts are designated protected areas, where the mangroves and wetlands provide a unique ecosystem which hosts a diverse set of flora and fauna. Among them, is the Bengal Tiger and estuarine crocodile. The Sundarbans Forest Reserve is internationally recognized as a biodiversity hotspot and is notified as a UNESCO World Heritage Site (Gopal B, 2006). This World Heritage property is comprised of three wildlife sanctuaries which form the core area, bounded within which exist several species of endangered wildlife and areas of unique natural beauty, ethnobotanical interest, special marine faunal interest, rivers, creeks, islands, swamps, estuaries, mud flats, and tidal flats<sup>1</sup>.

The Sundarbans is characterised by an ecological processes of delta formation which include monsoon rains, flooding, and tidal activities. This is described well accurately in a colonial Gazetteer:

‘The Sundarbans are a network of tidal channels, rivers, creeks and islands. Some of these islands are mere swampy morasses, covered with low forest and scrubwood jungle, but those to the north, which are embanked, grow rich crops of rice. As one approaches the coast, the land gradually declines to an elevation throughout many hundred square miles that is scarcely raised above high-water mark. This scabbard area is a typical specimen of new deltaic formation. It exhibits the process of landmaking in an unfinished state, and presents the last stage in the life of a great river the stage in which it emerges through a region of half land, half water, almost imperceptibly, into the sea’ (O’Malley, 1914).

---

1 The Sundarbans <https://whc.unesco.org/en/list/798/>



This half land-half water nature of the Sundarbans has bearing on the people living in this coastal region, where life, in comparison to other solid landscapes, has been precarious for a long time owing to the ever-changing ecosystem. In addition, the administration of the region has been driven, previously, by the imperative of colonial revenue generation and today for the management of protected areas. Added to this is the increasing intensity of natural disasters on account of the climate crisis. Livelihoods which are primarily based on natural resources face several challenges. The conservation spotlight on the tiger has obscured several other species that are critical to the livelihoods of people in the Sundarbans. Pertinent to this paper, are several species of fish and crustaceans found here proportionate to the salinity gradients in different parts of the forest. They include commercially valuable species like Bombay duck, some species of snappers and sardines in areas of high salinity. In brackish water areas we find Hilsa, a fish that is culturally important and a favourite in Bengali cuisine on both sides of the border.

Over the last three decades, semi-intensive shrimp cultivation has emerged as a lucrative sector within this socio-economy, and today this region provides for the highest production of Black Tiger prawns (locally known as bagda) in India. This paper is interested in placing the export revenue generating culture prawn within the complex socio-ecology of the region, made further complex

with the impacts of the climate crisis, the tiger conservation programme and the interaction of the people with the Forest Department. It does so by using the blocks of Basanti and Gosaba in the administrative district of South 24 Parganas.

## 2.0 Field Sites, Aims and Methods

This paper is informed by the historical background as stated in Box 1 and focuses on two islands which were cleared for settlement and the land converted for agricultural production. Basanti and Gosaba blocks in the Indian part of the Sundarbans forest are administered by the state government of West Bengal. There are two out of 19 administrative blocks under the Canning subdivision in the district of South 24 Parganas. Both these blocks are in the eastern part of the Sundarbans delta with River Bidya on its east, River Matla on the west, Sandeshkhali-I block on its north and Sundarbans Tiger Reserve in the south. Over the years, the region's high vulnerability to hazards and disasters like tropical cyclones, embankment breaching and subsequent salt water incursion has led to high levels of precarity of life and livelihoods, in turn resulting in occupational shifts. While out-migration, tourism, conservation etc., are forms of occupational shifts, this paper is focussed on the change of land-use from paddy and extensive forms of fish production to semi-intensive shrimp aquaculture ponds.



## BOX 1 - The Lineage of Administration in the Sundarbans

Historically, this administrative system of the region finds its roots in arrival of the East India Company. The understanding of this allows for a gleaning of insights regarding the current human settlement in the Sundarbans from a land and water use perspective. In the year 1764, large tracts of the Sundarbans were surveyed and mapped as part of a colonial exercise towards settler-colonial designs of rent seeking. This involved identifying and subsequent fixing of the boundaries of the Sundarbans forest and divided the forest into 236 blocks, which in total measured to over 1.7 million acres. The alluvial land in the river delta region revealed high economic potential in the eyes of the company and prompted conversion of the 'wasteland' into paddy land. This attempt to reclaim land was made by converting the forests into agricultural land with the help of Bengali zamindars, who were incentivised by offering them land tenures. Before this period only bhawalis (the woodcutter community of Sundarbans) were the inhabitants of the region and had the right to extract timber from the forest without paying revenue to the government. The exercise of land reclamation, on one hand, reclaimed wetlands and converted them into cropland and on the other, wetland forests were retained as reserve forests for timber extraction as well as other non-timber forest produce. This also brought people from agrarian and fishing communities into the region. Ultimately, this created two types of resource management in the Sundarbans under the British colonial administration: a form of management and administration which has been taken forward under post-colonial Indian rule.

Since the creation of the tiger sanctuary and the growing importance of the region as a World Heritage site, the primary administration that the people of the region interact with are members of the Forest Department. The Forest Department as it exists today, continues to function quite similar to its own colonial avatar. This is not just because the colonial forest laws still prevail, but one observes the governance of areas under its jurisdiction using restrictions as primary mode of regulation. Sanctuary-making, issuance of licences, rent-seeking are all part of its colonial inheritance. Additionally, the organisational structure, training and response to society, where the fencing of nature is the primary objective, ensure that control is created through almost military-like methods which result in multiple forms of conflict.

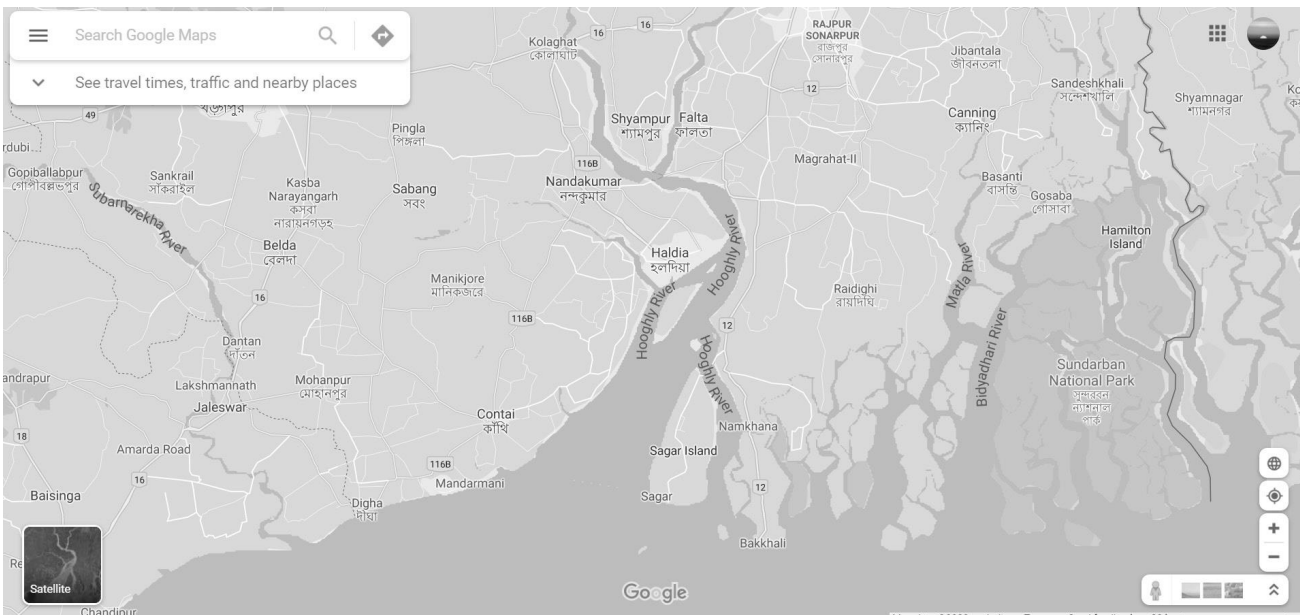


Image 1: Basanti and Gosaba blocks in the Sundarbans region, just north of the Sunderban National Park

The analysis of this scenario in the Sundarbans is built on my previous work, where I interned with the Development Research Communication and Service Centre. I was part of a project related to climate change adaptation and mitigation wherein I was looking at the prevalence of warning systems in a region prone to frequent cyclones and floods (see more at <http://www.drcsc.org/>). Fieldwork was conducted across villages in the community development blocks of Basanti and Gosaba. In-depth interviews were conducted mostly with the elders of the villages. Initial conversations were via a semi-structured questionnaire and the focus was on the consequences of natural disasters on the lives of the people. The objective was to understand the community resource management techniques in the face of natural disasters.

Over the course of my work, I was able to grasp the increasing insecurity of lives and livelihoods in these two islands in the face of frequent natural disasters. I was also able to discern a troubled relationship of the people with the local and state administration, something that is reflected in the way the Forest Department enforces the tiger conservation programme, as well as how climate mitigation programs are being envisioned. Interventions for the people bearing the onslaught of cyclones has been to the extent of building permanent structures where people and livestock can seek shelter during cyclones; thus, aimed at providing immediate relief. Where long term plans are proposed, they are focussed on the eventual relocation of people, such as that proposed under the conservation group WWF's 'Sundarbans Delta Vision 2050'<sup>2</sup>. In the present-day situation, however,

2 Bangladesh Sundarbans Delta Vision 2050. International Union for Conservation of Nature. Bangladesh country office, November 2014. Available at



natural resource-based livelihoods hang in the balance, bracing the impacts of cyclones while preparing for a coerced relocation out of the region. It is against this backdrop that this paper attempts to explore the existence of semi-intensive shrimp production in the complex socio-ecology of the blocks of Basanti and Gosaba.

The islands of Basanti and Gosaba function as an entry point to understand shrimp aquaculture in the face of multiple vulnerabilities in the Sundarbans, particularly on account of my previous work. However, these two field-sites are not the focal point of this paper and while some primary research was conducted here, the large parts of the research for this paper focusing on shrimp aquaculture is generalised to Indian region of the Sundarbans and the situation at large.

Although these blocks are located on the northern fringes of the Sundarbans Tiger Reserve and appear to be islands in the larger delta, today Basanti and Gosaba are well connected to the capital city of Kolkata. This has bearing in our understanding of the possibility for social-economic mobility for the people who live here. The presence of aquaculture is perhaps an indicator of this connectivity which signals the proximity to a market and export hub in the global value chain of shrimp. Occupations in Basanti and Gosaba can be broadly divided as

agricultural and non-agricultural sources, where social relations of caste, gender, as well differentiation brought by regional/linguistic distinctions and migration, play a tremendous role in the rates and scale of dispossession.

This paper and its observations were undertaken as part of an independent research with The Research Collective. This was conducted over a period of two months in the year 2020. The focus is on juxtaposing the rise of semi-intensive shrimp production to the socio-ecology of the region by exploring the vulnerabilities currently being faced by the people here. I am interested to see if intensive aquaculture is a feasible alternative for the people and the ecosystem keeping in mind the immediate impacts of the climate crisis, the tiger conservation programme and the lineage of governance in the region. In taking what was observed during my field visits, I combine secondary research and a literature review to build my reflections on shrimp/crab farming in the region.

### **3.0 Emergence of Culture Fisheries in the Sundarbans**

The practice of taking fish from their natural environments and growing them in confined settings, such as in rice fields, in intertidal zones, or in homestead ponds, is a practice in West Bengal that goes back all the way to when the region was first settled. These activities would today be defined as culture-

---

<https://portals.iucn.org/library/sites/library/files/documents/2014-065-doc.1.pdf>

based fisheries, where only a part of the life of the species is controlled in environment which are identical to the original one. These traditional practices evolved mainly at the household level, and slowly spilled over into the community level; thus, they were low in ecological and capital intensity, were seasonal in nature and fulfilled local needs. However, culture-based fisheries have slowly been transformed into aquaculture, a shift that signifies 'the cultivation of aquatic life within controlled environments or the commercial production of certain aquatic species by managing the major part of their life history under strict control'.<sup>3</sup> A common theme of this publication is the rise of prawn/shrimp species as a commercially significant commodity that has been actively promoted and pursued in policy by the Indian state. This section explores a short lineage of shrimp production in the South 24 Parganas district by exploring it through three phases: traditional shrimp farming, shrimp aquaculture around India's liberalisation and shrimp aquaculture today.

### 3.1 Traditional Shrimp Farming

The farming of fish is common to the human habitation of the region, and both fresh and brackish water farming have been practices. A common practice in the region has been to dig homestead ponds which fill with fresh water during the monsoon months. These ponds double as water sources for daily household

work through the year and also support the growth of a wide variety of species, primarily for household consumption. Similarly, a more commercial version of this are 'big ponds (either owned by individuals or few families), land-shaping ponds (mainly excavated for agricultural irrigation purpose) and low-lying inundated paddy fields' (Chand et al. 2012, p.26). Similarly, 'brackishwater aquaculture is practised in large artificial enclosures developed in coastal swamps by erecting earthen dykes, locally called bheries. Culture is carried out by taking the tidal saline water in and out through sluices from nearby rivers for commercial pisciculture' (ibid.).

### 3.2 Semi-Intensive Shrimp Farming

The traditional or the extensive form of shrimp production, shrimp was farmed 'in low-density monoculture or in polyculture with fish in tide fed waterbodies, or in rotation-culture with rice in the bheries' (DISHA, 2006, p.15). This resulted in a form of fishing that was ecologically benign, sold in local markets and was economically affordable. However, closer to India's liberalisation, and the collapse of shrimp production in South East Asia, India began to promote the farming of shrimp. Here the species *Penaeus Monodon* (Black Tiger Prawn) became the species of choice, and slowly the following shifts began to occur.

Supply and procurement markets came to be geared entirely to cater to this species

3 See <http://www.fao.org/3/t8598e/t8598e06.htm>

alone and thus, traditional forms of capture and culture-based fisheries were forced into decline; the monoculture of Black Tiger Prawn became the focus. Extensive means of production were no longer viable to keep up with the demand and thus the production methods shifted towards semi-intensive forms, which involved higher stocking of shrimp seeds per hectare of land. Tied to this shift was the need to prevent disease due to higher stocking and thus, the need to have chemical inputs, antibiotics and pelletised feed became necessary. Similarly, the need to bring more land under cultivation became necessary and soon agricultural lands, silted riverbanks, wetlands, mangrove areas and existing ponds were brought under cultivation. Simultaneously, the need to stock these semi-intensive ponds with Black Tiger Prawn meant the modification of fishing gears, the selectivity in catch and the increase in capture fisheries effort to focus only on this species<sup>4</sup>. On the output side, the effluents from the semi-intensive farms carried waste into surrounding waters and lowlands.

India's farmed shrimp sector has grown in cycles of booms and bust<sup>5</sup>. The region under this study too has gone through its stages of

booms and bust; yet the overall trajectory has been one of growth. This is primarily because, while the annual production of shrimp from extensive bheries is between 200-350 kg/ha, the productivity through semi-intensive means is at close to 1000 kg/ha. Thus, despite the destructive spill over effects of semi-intensive shrimp farms, the scale of income to be earned ensured that the sector grew at a steady rate.

### 3.3 Shrimp Farming Today

After the initial periods of boom and bust, India's tiger prawn export production had almost entirely collapsed by the year 2006. Soon after in 2009, the Indian government gave the approval for the import of the exotic *litopenaeus vannamei* (Pacific White Shrimp) broodstock, and India has seen a dramatic revival and exponential growth of the sector. In other districts of West Bengal too, farmers are shifting to this new species; however, the South 24 Parganas district continues to engage in the semi-intensive production of Black Tiger Prawns.

As can be seen in Table 2, the land under cultivation of semi-intensive prawn cultivation in West Bengal has largely remained constant

4 'This mass catch of tiger prawn seedlings has been a direct result of the demand of corporate induced prawn farming. It destroys Sundarban's ecosystem in two ways: The massive by-catch (up to 1000+ other juveniles are destroyed to catch a single seedling of tiger shrimp *Penaeus monodon*). Encroachment and continuous disturbance of riverbanks by fixed and drifting bagnets that hinder mangrove regeneration' (DISHA, 2006, p.21).

5 See Chapter 2 'Who Wins when shrimp booms?' and Chapter 3 'Coastal Shrimp Aquaculture in India: Should the farmers be blamed?' of this publication for further information on this.

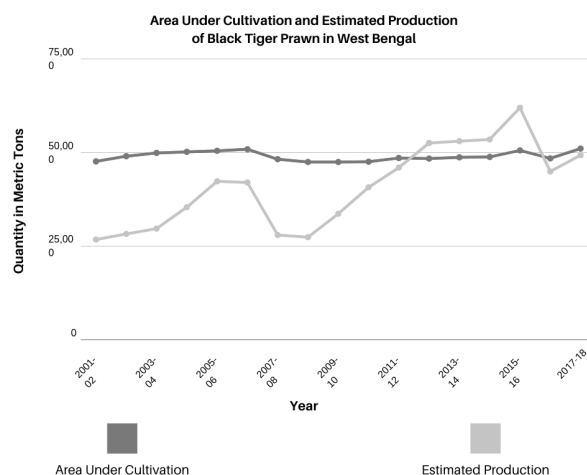


Table 2: Area Under Cultivation and Estimated Production of Black Tiger Prawn in West Bengal (Source: MPEDA)

Area utilized and production of Tiger Shrimp during 2017-18

A total of 59,099 ha area is under tiger shrimp culture in 9 maritime states producing 57,691 MT with an average production of 0.98 MT/ha/year. The state of Gujarat records maximum productivity of 2.97 MT/ha/year followed by Tamil Nadu and Odisha with productivity of 2.8 and 1.48 MT/ha/year respectively.

Sl. No.	State	Area Utilized (Ha)	Production (MT)	Productivity (MT/ha/Year)
1	West Bengal	51,084	49,219	0.97
2	Odisha	2,624	3,887	1.48
3	Andhra Pradesh	1,880	2,714	1.44
4	Kerala	3,144	1,522	0.48
5	Gujarat	55	162	2.97
6	Karnataka	302	59	0.19
7	Tamil Nadu	10	28	2.8
8	Goa	0	0	0
9	Maharashtra	0	0	0
	Total	59,099	57,691	0.98

Table 3: Area Under Cultivation and Estimated Production of Tiger Prawn in India in the year 2017-18. It must be noted that 85% of India's Tiger Prawn is produced in West Bengal alone. (Source: www.MPEDA.gov.in)

since the turn of the century. However, the intensification process has ensured that per hectare productivity has risen; this is an indication of more lands shifting from extensive to semi-intensive farming, and those farms under semi-intensive farming employing more technology and inputs to raise productivity. What is stark, however, is that the boom and bust nature of this commodity production remains a feature, a

point that we return to later in the paper when discussing the suitability of prawn production in the Sundarbans.

Today, West Bengal produces 85% of India's Black Tiger Prawn, the biggest majority of which comes from the Sundarbans.

#### 4.0 Vulnerabilities

The previous section briefly outlined the

evolution of shrimp production in the region. This section explores the socio-ecological realities of where shrimp production touches down. The section is divided into the two main drivers of vulnerabilities that I observed during my time in the Sundarbans. One is the very visible issue of the climate crisis and the other is the conservation project related to the tiger. Both of these have had an impact on the life and livelihoods of the local people where the former has affected and transformed the agrarian economy severely and the latter has constrained access to natural resources in the now 'protected' forest areas. In combination of the engagement of the people with the state administration, they narrow the possibilities for a large proportion of the population in terms of socio-economic mobility.

#### 4.1 Climate Change and Sundarbans

The vulnerabilities of the communities living in Basanti and Gosaba in the Sundarbans today are directly related to the topography and ecology. This makes this land-waterscape, that was reclaimed from mangroves and fortified by embankments, especially vulnerable to climate change related impacts. The severity and frequency of cyclones in the last few decades have has been disastrous for this low-lying region. Cyclones, coupled with heavy rainfall and tidal surges, have broken away embankments and caused flooding in the fields, as well as causing saltwater

incursions in the underground water tables. The intrusion of saline water in rice fields destroys the productivity of rice for at least a couple of years after the cyclone on account of increasing the soil's salinity; the soil in some places has turned white because of its saline nature.

Climate change has also had the impact of increasing surface water temperature in Sundarbans. Over a period of 37 years, water temperature has increased at an accelerated rate of 0.5°C in comparison to global increase in the surface water temperature, which stands at 0.06° C every decade (Ghosh, 2012). Not only has this adversely impacted the avifauna life, it is proving to be detrimental for the health of the mangrove ecosystem, which is now regenerating at a much lower rate.

One of the main challenges that climate change and ecological degradation has posed directly impacts the local rice economy in this region. Agriculture in the form of paddy cultivation is a predominant feature in the land-use pattern in areas where there is human settlement. Currently, this practice is threatened by salinisation, lack of fresh water during the dry season and flooding in the monsoon.<sup>6</sup> The high frequency of natural disasters has caused storm water surges, breaking of bunds, and incursions to the sweet water tables making soil acidic. In addition, the fields, that have been part of

6 <https://india.mongabay.com/2020/07/salt-tolerant-rice-innovations-help-farmers-deal-with-salinity-in-the-sundarbans/>



years of intensive agriculture, have begun to render low outputs and this has severely impacted rice production which has formed the bedrock of these blocks. Compounding this crisis, the dry season has begun to show drastic impacts on water availability as freshwater sources are reduced to a trickle due to damming upstream<sup>7</sup>. All the factors above create a situation of high distress where intensive agricultural practices of high-yielding rice varieties like Dudheshwar are increasingly prone to fail.

#### 4.2 Tigers and Forests

In 1972, as part of larger biodiversity conservation efforts in the country, the Indian government notified a large portion of the protected forest in the Sundarbans as a Tiger Reserve under the campaign 'Project Tiger'. In 2001, it was included in UNESCO's world network of International Biosphere Reserves as a World Heritage Site. However, sanctuary making had been an old colonial legacy, where a fifth of the land area of British India was designated as 'government forest' between 1878 and 1900. This was primarily for the purpose of increasing revenue and upgrading a growing stock of various kinds of timber (Rangarajan and Shahabudin, 2006). As early as 1867, the valuation of the forest for timber is explicitly expressed in colonial texts, 'The woodlands should be a permanent

source of revenue of several lakhs to the state and an unfailing supply of wood at a fair price to the public' (Chakrabarti 2009). From these early days, the tiger has posed a great threat to both colonial expansion projects but more directly and gravely to the people who began to settle here. Today, households have been severely affected by tiger attacks<sup>8</sup>, something that I observed during my visits as well.

In these islands, while several people are engaged in agriculture, for many the forest is the main or additional income source. Many households depend on income from collecting timber, honey and seafood. This means venturing out into the river and its creeks, and the forest itself. In their report 'Local People and the Global Tiger' (Chakrabarti, 2009) the author describes a shift in paradigm brought in by Project Tiger:

'In 1972 the Project Tiger task force took a nation-wide tiger census which found a total population of 1827 animals. The task force initiated a conservation programme called the ecosystem approach. The premise of the ecosystem approach was the need to provide an extensive range for adult tigers, each requiring a minimum of 10 square km of undisturbed territory. A further premise was that the minimum tiger population required

7 <https://india.mongabay.com/2020/05/erosion-an-important-cause-of-mangrove-loss-in-the-sundarbans/>

8 <https://www.news18.com/news/india/how-will-we-survive-sundarbans-tiger-widows-struggle-to-survive-post-cyclone-amphan-devastation-2639975.html>



## Box 2: Interface between Local Communities and Forest Department

On account of climate change-related challenges and the threat posed by the conservation project, people in the region already face distress. Livelihood practices here are not mutually exclusive; for many, foraging for forest products such as honey and fish at different times of the year is an important source of additional income. Firewood collection is also an important biofuel for cooking for many. According to reports from 2009, there are 35,330 people working in the forest of Sundarbans annually, of which 4,580 collect timber and firewood, 24,900 are fishers, 1,350 collect honey and 4,500 are involved in other activities (DISHA 2009:13); it is likely that the numbers are higher today.

Under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (henceforth, FRA). According to Section 2(i) of the FRA 2006, honey comes under the category of 'minor forest produce' and Section 3 (1) (c) of the FRA 2006 mentions that the rights given are, 'right of ownership, access to collect, use and dispose of minor forest produce which has been traditionally collected within or outside village boundaries'. Similarly, Section 3(k) of the FRA mentions that the forest dependent people must be given the 'right of access to biodiversity and community right to intellectual property and traditional knowledge related to biodiversity and cultural diversity'.

for sustained reproduction was 300. This suggested the need for reserves with areas of at least 3,000 square km. The Sundarbans thus became a local theatre for a larger universal campaign informed by the science and politics of international capitalism. The chain of reactions generated in the Sundarbans propagated in multiple directions, often far beyond the aspirations of the original project. Following the recommendations of Project Tiger, some inner core zones of the Sundarbans were reserved for

undisturbed reproduction and buffer zones were established around them, where villagers would be allowed limited access for the collection of forest products...The implementation of Project Tiger involved the relocation of many villages from the buffer zone. Thus, the price for setting up the tiger reserve was human displacement. Hundreds of people were relocated for each tiger being protected. Only in a few buffer areas were people allowed to remain'.





At the time of implementing Project Tiger, it had been predicted that as the tiger population grew it would venture out of these man-made and imagined boundaries of the reserve. Looking at the current scenario, this has indeed happened. The tiger attacks have happened mostly in the creeks of the islands where the villagers go for fishing or honey collection. Mostly men have been victims to such attacks as they go to the forests, but women too have not been spared. One can see that many households are run by women as the men have been victims; here villages are regarded as 'widow villages' indicating the grave nature of the tiger-human encounters. With the breaching of embankments due to cyclones, Gosaba village has lost some barriers between them and the forest; its inhabitants are now more vulnerable to tiger attacks.

However, in spite of these constitutionally mandated rights, entering the forest has become a challenge in the Sundarbans, primarily on account of the interaction of the people with the Forest Department (refer to Box 1).

In the Sundarbans, honey collection in the months from April to June in an important source of income and requires people to venture fairly deep into the forest. It is a carefully planned activity where people

organise themselves in teams of seven or eight people and set out on a boat. The Forest Department of the Sundarbans Tiger Reserve exercises access control in the name of management by allowing the persons to enter the forests only by the application of a boat license or a 'honey pass'. In spite of the high risk to life, the income from honey cannot be realised because the honey collectors have to very often, under force, sell the honey at depressed rates to the FD. The honey pass amounts to an illegal license raj which is a violation of the FRA and so is the fact that people are forced to sell only to the Forest Department.

Apart from honey, collecting firewood is an important activity for the forest-dependent population. However, the FD is very seriously against this on account of approaching conservation as a model where all forms of traditional activities must be curtailed, an approach that is exercised through force.

Fishing in the tiger reserve or the reserve forests can be undertaken only with the possession of a Boat Licence Certificate (BLC) issued by the FD since the set-up of the tiger reserve in 1973. A BLC is given to boat owners<sup>9</sup> and a Marine Fishers identity card which is given out to individuals. People venture at different times of the year to catch fish, crabs and prawn seeds. However, the BLC in itself

---

9 Boat owners today are shrimp farmers who have achieved some level of social mobility and do not need to venture into the forest to fish. They lease their boats to fishers, who then sell their fish back to the boat owners.



has now become a paid service delivered by the Forest Department, which as a whole is a violation of the FRA.

## 5.0 Dead-Ends and Reflection

The Sundarbans region, as it is settled and looks like today, is not the natural outcome of migration and settling. While there were original inhabitants of the region, the current demographic profile and the occupations in the area, have been defined by the colonial administration's paddy cultivation and timber extraction imperatives. Within a few decades of independence, this region saw the creation of a tiger sanctuary that once again changed the way people had settled, and led to a new way of organising life. Finally, the last four decades have seen an increasing impact of climate change, in turn forcing changes that are once again not the choice of the people of the region. Thus, the vulnerabilities that the people face, whether on account of climate change, conservation, or the administration, share one theme in common and that is undemocratic and coerced nature of policy-making in the region.

Most recently, policymakers have proposed the Delta Vision 2050, which calls for a managed retreat from the rising water level

which threatens to submerge the Sundarbans. Managed (sometimes called planned) retreat is a complex multi-step procedure, which begins by modelling multi-hazard systems which would simulate the effects of cyclone, riverine and oceanic floods together to see how parts of the delta would be submerged. This is followed by demarcating vulnerable spaces in the delta and the phased process of planned relocation of populations from those areas. The Delta Vision 2050 designates one million people in the Indian Sundarbans as inhabiting highly vulnerable areas. The vision is framed through the idea of a climate emergency. As a solution to the climate threat, Delta vision proposes the development of a functional bilateral alliance between India and Bangladesh in order to address 'environmental security issues'. Much of this conversation is driven by the perceived threat of social disorder and conflict that might arise out of an 'unplanned' migration as a result of environmental degradation. Against this background of climate change-induced vulnerability and the precarity of livelihoods is the introduction of shrimp aquaculture.

### 5.1 The Uptake of Shrimp Aquaculture

The rise of semi-intensive aquaculture in the islands must be seen as a result of the

Block	Forest Land	Irrigated Land	Un-irrigated Land	Culturable Waste Land	Area Not Under Cultivation	Total Village Land
Basanti	3860.03	2824.54	20228.32	108.33	13399.47	40420.69
Gosaba	66	2048.07	19822.21	266.24	7470	29672.52

Table 4: Land-use patterns in Basanti and Gosaba blocks  
(Source: DISHA, 2006)

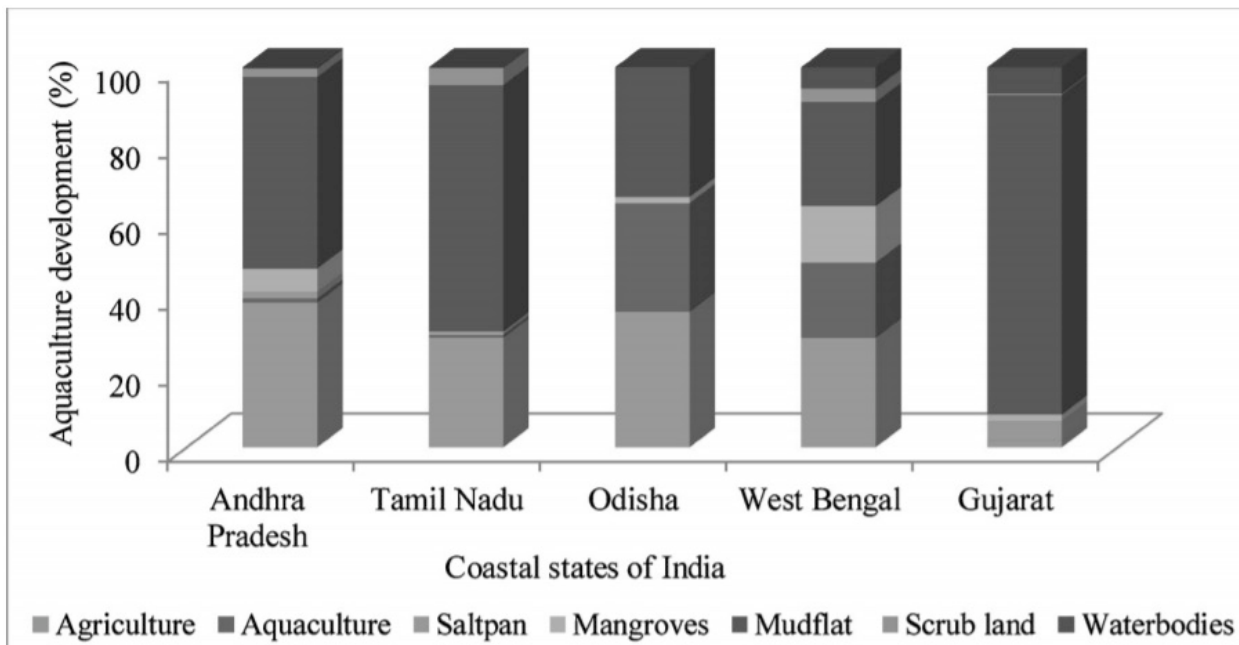


Fig. 7. Expansion of aquaculture using other land use in the coastal states of India.

Image 5: Shifts in land patterns in West Bengal from 1988 to 2013  
(Source: Jayanthi et al. 2018)

confluence of a historical lineage of land-use intensification and the contemporary impact of the climate crisis. As described in Box 1, the colonial enterprise was primarily interested in revenue generation through paddy production, a process which has continued well into the post-independence era. In the study conducted by DISHA in 2006 (See Table 4 below), only about a third in Basanti and a quarter of the land in Gosaba are not cultivated, indicating how rice production has formed the backbone of these local economies until recently. The treadmill of intensive inputs for rice farming, mirroring India's green revolution, has been the driver of this rice production, even as natural fertility of the soils has declined over the centuries.

More so, as the case study in Basanti and Gosaba islands in 2016 on 'Livelihood

Dynamics as a Response to Natural Hazards' (Das and Das, 2016) reveals, the emerging trend of aquaculture must be seen as a response to declining agricultural productivity and as a climate change adaptation measure. This, however, is not only related to the severity and the frequency of the storms, but also to how they are destroying the embankments which have historically held back sea water and allowed rice production to be undertaken. Thus, as lands get salinised, rice production gets hampered, and there is a drive from below to also shift land-use patterns from rice to shrimp. Similarly, as the previous section has shown, the loss of access to additional livelihood spaces in the forest has meant that there is an ongoing loss of traditional livelihoods. Since the Sundarbans were settled primarily from an extractive rent-seeking point of view, the livelihood

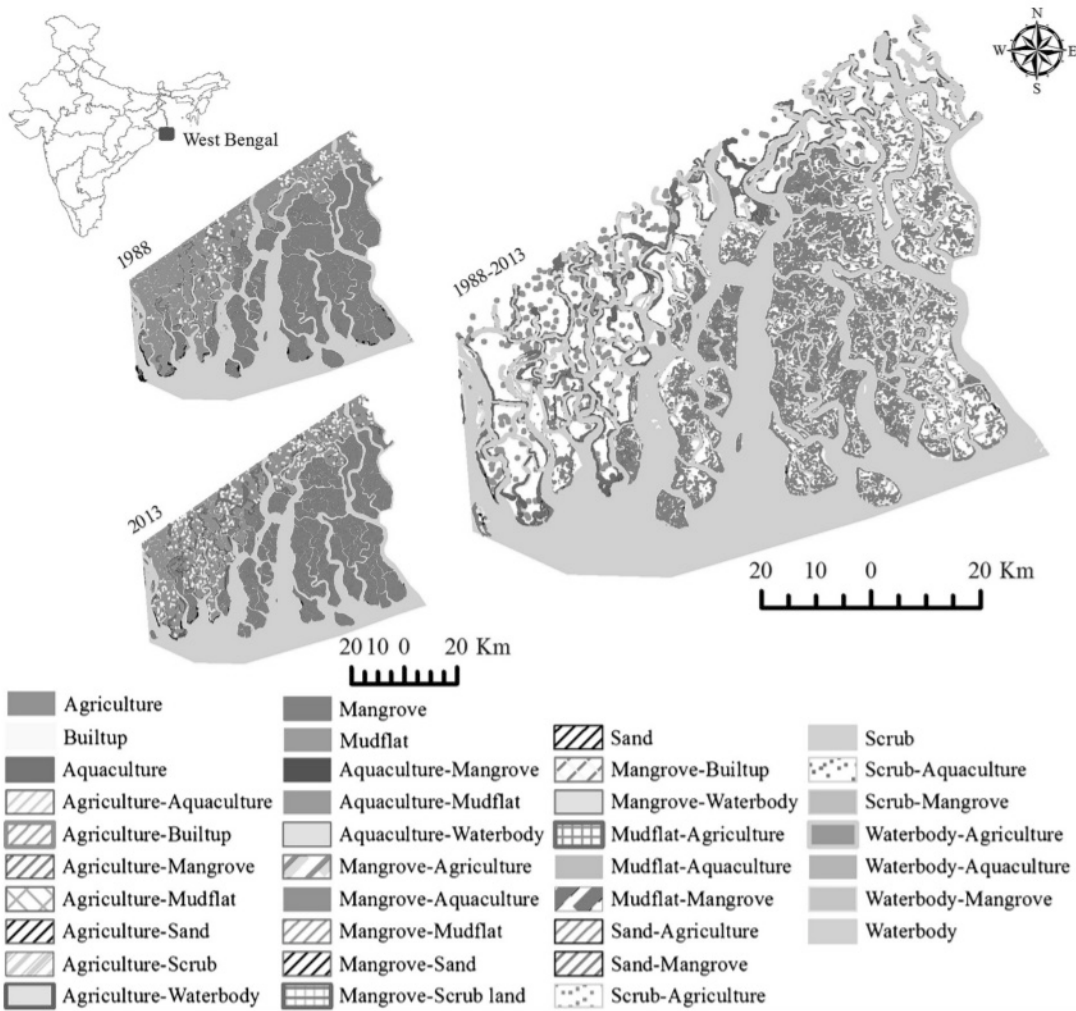


Fig. 4. Land use and change maps of Sundarbans of West Bengal from 1988 to 2013.

Image 6: Land use and change maps of Sundarbans of West Bengal from 1988 to 2013

(Source: Jayanthi et al. 2018)

diversification options are limited.

## 5.2 Reflections on Shrimp as an Intervention

There is no doubt that semi-intensive shrimp production is destructive. Perhaps the most recent assessment of this has been carried out by Jayanthi et al. (2018) by deploying the use of satellite imagery (See Image 5). As can be seen by the findings, a whole range of lands have been brought under aquaculture production. While a majority of the land converted is from former rice fields, shifts from extensive to semi-intensive aquaculture, mangroves, mudflats, scrub lands and

waterbodies has also happened (See Image 5).

Thus, an important point pertaining to the rise of aquaculture is about who is not included in the shrimp value chain, and of the gains made by those who have been absorbed into the value chain. While this paper is unable to draw interpretations from secondary literature, the situation seen from the above Image 5 and 6 above indicate that a large amount of common lands has also been brought under aquaculture development. As also detailed in Section 3, shrimp production's impacts cannot



be judged alone by the amount of land that has been converted but also by how the commons have been used as a space to both indiscriminately feed the shrimp farms and to act as reservoirs for their waste. Greenpeace<sup>10</sup> and Naylor et al. (2001) estimate that in areas of Thailand where shrimp farms have been carved out of mangrove forests, a total of 400 kg of wild fish and shrimp are lost from near shore catches for every kg of shrimp farmed (Naylor et al., 2001). It is also worth recalling that the study conducted by DISHA (2006) found that the 'mass catch of tiger prawn seedlings...destroys Sundarban's eco-system in two ways: the massive by-catch (up to 1000+ other juveniles are destroyed to catch a single seedling of tiger shrimp *Penaeus monodon*). Encroachment and continuous disturbance of riverbanks by fixed and drifting bagnets that hinder mangrove regeneration' (ibid. p.21).

Likewise, an analysis of the value chain of shrimp in other parts of West Bengal show that even the farmers who have converted their paddy lands into shrimp farms struggle with successfully gaining upward social mobility from participating in this process<sup>11</sup>. The boom and bust nature of shrimp production entails that during the bust years, the losses are passed down to the producers, further plunging them into debt. It must also be noted that, during times of bust when losses are incurred,

the environmental negative externalities see an uptick, once again indicating the graded and unequal nature of shrimp production. Further detailed attention to this aspect of the shrimp production process would be an important area of work in understanding the micro-dynamics of effects of semi-intensive aquaculture.

## 6. Conclusion

The Sundarbans as a region is complex no matter how one was to analyse it. Naturally, straddling a land and seascape, the ebbing and flooding of the region shapes the natural world in ways that are unique, and perhaps unseen in other parts of the world. Administratively, starting with the colonial ordering for rice cultivation and timber extraction, and followed by the bordering of India and Bangladesh first and then the Forest Department in the policing of the tiger sanctuary, this natural world has been subjected to the dominant ideas of settling, extraction, conservation and control. Socially, the region had pre-colonial inhabitants, followed by the colonial era of settling, and further the post-independence shifts in phases as development was undertaken; overall the demographic of the region has been in flux. Today, when the climate crisis has become the buzzword for a wide range of actors, it becomes important for one to club

10 <https://www.greenpeace.org/usa/wp-content/uploads/legacy/Global/usa/report/2008/3/challenging-aquaculture.pdf>

11 [https://www.academia.edu/43390401/Chakravarty\\_S\\_2019\\_Who\\_wins\\_when\\_shrimp\\_booms](https://www.academia.edu/43390401/Chakravarty_S_2019_Who_wins_when_shrimp_booms)



the natural and the social, in order to locate the dynamics of change currently underway.

Of the many shifts that have been and are underway in the region, this paper has briefly looked at the lineage of semi-intensive shrimp development, not so much from the perspective of the policies related to shrimp, but the socio-ecology upon where these policies touch down. The development of shrimp in India has been far from equitable; while on one hand, the foreign exchange generated from this sector is time and again highlighted, the other side of this growth has seen inequality, marginalisation and environmental destruction. In addition to this dispossessing nature of shrimp production, the people in the Sundarbans have had to contend with threat of the climate crisis, a complex socio-ecology, the decline of traditional livelihoods, the tiger conservation project and an undemocratic, non-participatory forest administration. Given the specifics of the region, more than claiming conclusions, this paper points for the need to undertake local research in order to understand and study the impacts of semi-intensive shrimp production.

The insights we glean from this is in acknowledging that the threat to life in the Sundarbans is not 'natural disasters', because as Hewitt (1983) reminds us, 'instead of studying "natural" calamities as "natural" they should be treated as events embedded in historical dimensions of people's relation to their habitat and the existing socio-political landscape'. Perhaps, this analytical frame allows us to see the Sundarbans differently, where economic inequality, market liberalism and state responses create victims much before disasters claim them (Kingsbury, 2018).

## References:

Benjamin, K., 2019. *An Imperial Disaster: The Bengal Cyclone of 1876*. New Delhi: Speaking Tiger Books.

Chakrabarti, R., 2009. 'Local People and the Global Tiger: An Environmental History of the Sundarbans,' *Global Environment 3*: 72-95. <Online at: <http://www.environmentandsociety.org/node/4614>>

DISHA, 2009. *Corporate Abuse in Sundarbans: A DISHA Study*. Available at <http://www.dishaearth.org/Corporate%20Abuse%20in%20Sunderban.pdf>

Chand, B.K., Trivedi, R.K., Dubey, S.K. BEG, M.M., 2012, *Aquaculture in Changing Climate of*



Sundarban. National Initiative on Climate Resilient Agriculture. West Bengal University of Animal and Fishery Sciences.

Danda, A. A., G. Sriskanthan, A. Ghosh, J. Bandyopadhyay and S. Hazra., 2011. 'Indian Sundarbans Delta: A Vision'. New Delhi: World Wide Fund for Nature-India. Available at: [http://awsassets.wwfindia.org/downloads/indian\\_sundarbans\\_delta\\_a\\_vision.pdf](http://awsassets.wwfindia.org/downloads/indian_sundarbans_delta_a_vision.pdf)

Dutta S, B. S., 2016. Shrimp Aquaculture and Environment- A Comparative STUDY. Indian Journal of Spatial Science, 7(2)(Winter), pp. 23-29.

Das, A., and Roy, S., 2016. Shrimp Fry (meen) Farmers of Sundarban Mangrove Forest (India): A Tale of Ecological Damage and Economic Hardship. International Journal of Agricultural and Food Research. 5. 10.24102/ijafr.v5i2.683.

Eaton, R.M., 1990. Human settlement and colonization in the Sundarbans, 1200-1750, Agriculture and Human Values 7(2): 6-16.

Ghosh, A. 2012., Living with changing climate: Impact vulnerability and adaptation challenges in Indian Sundarbans.

Available at:

<http://www.cseindia.org/userfiles/Living%20with%20changing%20climate%20report%20low%20res.pdf>

Gopal B, C. M., 2006. Biodiversity and its conservation in the Sundarban Mangrove Ecosystem. Aquatic Sciences, Volume 68(3), pp. 338-354.

Hazra, S., K. Samanta, A. Mukhopadhyay, and A. Akhand. 2010. Temporal change detection (2001-2008) study of Sundarban. Kolkata: School of Oceanographic Studies, Jadavpur University.

Hewitt, K., 1983. The idea of calamity in a technocratic age. Interpretations of calamity from the viewpoint of human ecology, 1, pp.3-32.

Hoq, M.E., 2008. Sundarbans Mangrove: Fish & Fisheries - Ecology, Resources, Productivity and Management Perspectives. Graphic Media, Dhaka, Bangladesh.



Jayanthi, M., Thirumurthy, S., Muralidhar, M. and Ravichandran, P., 2018. Impact of shrimp aquaculture development on important ecosystems in India, *Global Environmental Change*, Vol. 52, pp. 10-21.

Mandal, B., and Dubey, S., 2015. Present Status and Prospects of Black Tiger Shrimp Farming: A Case Study in Maritime State of West Bengal, India.

Naylor RL, Williams SL, Strong DR., 2001. Aquaculture - A gateway for exotic species. *Science*, 294: 1655-1656

O'Donnell, A. and Wodon, Q., 2015. *Climate Change Adaptation and Social Resilience in the Sundarbans*. New York: Routledge.

Rangarajan M, Shahabuddin G., 2006. Displacement and Relocation from Protected Areas: Towards a Biological and Historical Synthesis. *Conservation and Society*, 4:359-78.

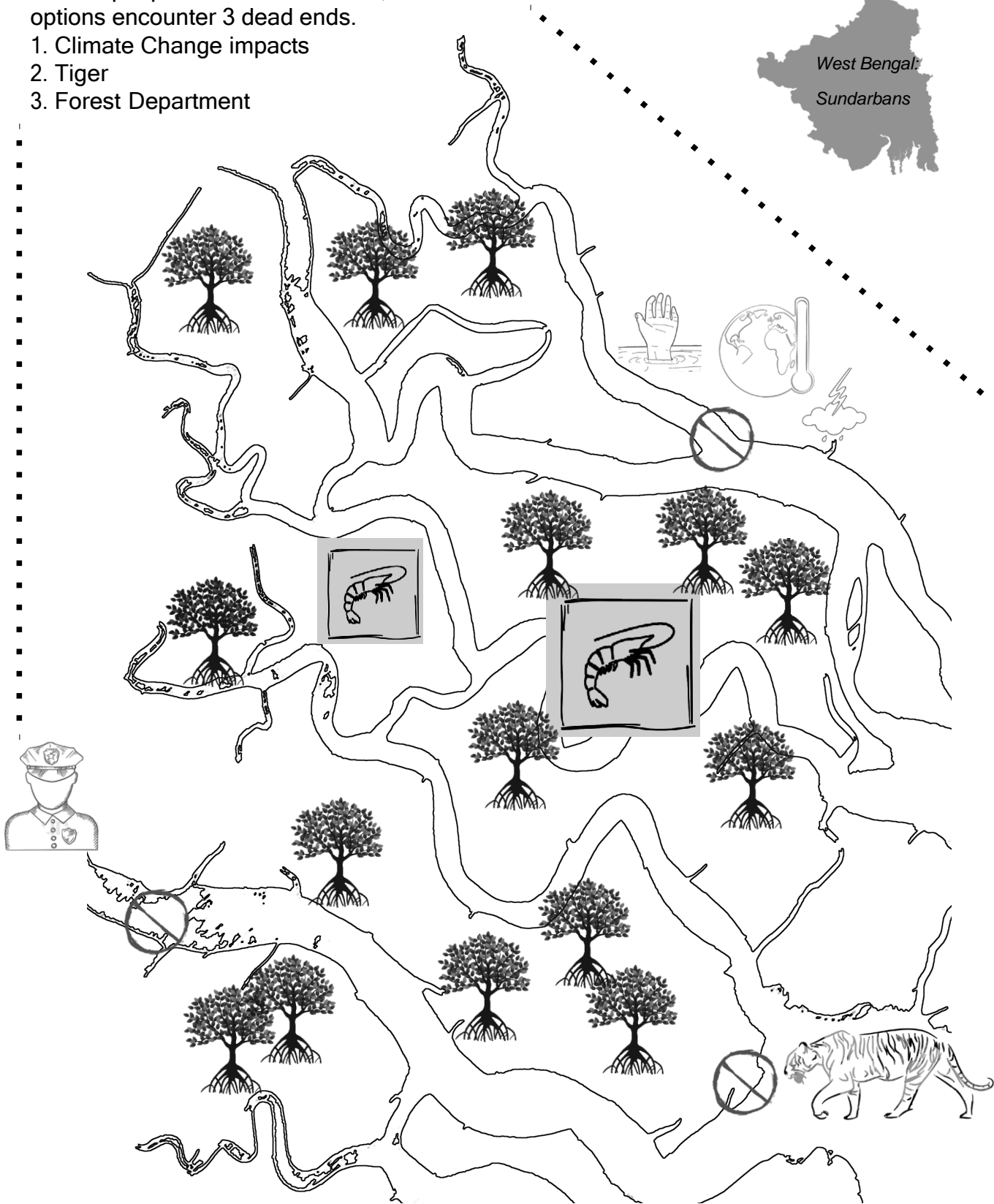
The Research Collective, 2017. *Visible Tiger; Invisible People: Study and Report Based on the Public Hearing held at Sundarban Islands, India*. Available at <https://updatecollective.wordpress.com/2017/11/20/visible-tiger-invisible-people-study-and-report-based-on-the-public-hearing-held-at-sundarban-islands-india-2017/>



# Vulnerabilities of Livelihoods in the Sundarbans: Is Shrimp Production a Viable Option?

For the people of the Sundarbans, livelihood options encounter 3 dead ends.

1. Climate Change impacts
2. Tiger
3. Forest Department



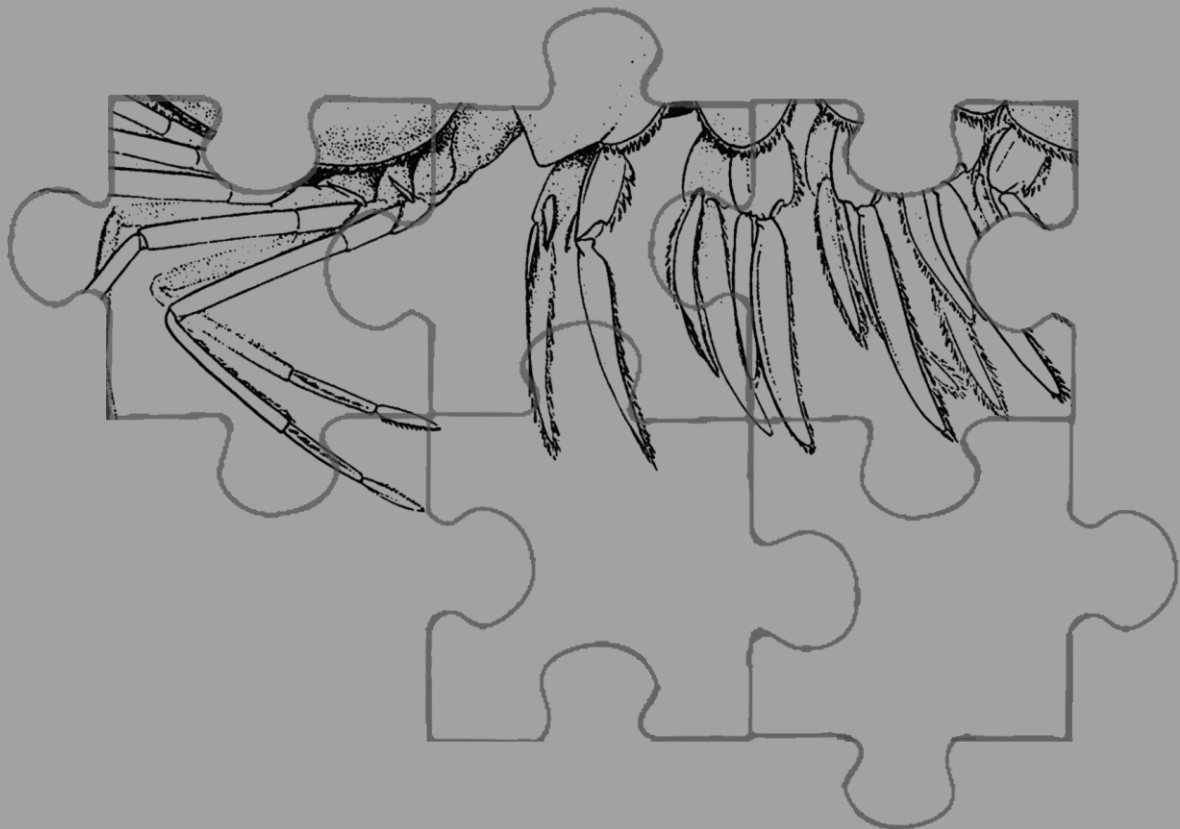




# Shrimp Aquaculture, Ecological Decline and the Spectre of NRC

Mainstream biodiversity conservation is often focused on matters of social complexities that interact with the environment. An examination of the National Register of Citizens (NRC) exercise in coastal Odisha shows how states, dominant actors and private companies use the othering of vulnerable communities to justify reforms that hold up dominant social structures.

*Ananya Pattnaik and Devika Singh Shekhawat*



## 1. Introduction

Odisha saw the rise of a burgeoning aquaculture industry from the 1990s with shrimp becoming a primary species for culture production aimed at export. The potential to earn foreign exchange created a profit-making model that was most lucrative for the dominant caste/class investors, corporations, traders and money lenders in the region. India became one of the leading shrimp exporting countries from capture fisheries sources by the 1970s as global demand for shrimp rose. Over the years as capture production plateaued, aquaculture was promoted to meet rising global demands. By the 1990s, especially with liberalisation that saw increasing private sector investment (Aducci, 2009), the profits from farmed shrimp began to come at the cost of massive ecological damage to the coastal regions as a result of the intensive methods.

The ecological consequences of shrimp aquaculture has manifested in the form of siltation, loss of mangroves, pollution among others in many coastal wetland ecosystems. The growth was also at the expense of small-scale capture fishers whose livelihoods suffered as their fishing spaces were taken up by wealthy culture fisheries actors. Upon recognition of the ecological degradation due to intensive culture fisheries and destructive capture fishing gears in the Odisha coast, the State and the environmental lobbyists set off a peculiar response. The narrative that has taken shape in the last decade is that the illegal prawn<sup>1</sup> farms and unsustainable fishing that is practiced by Bangladeshi immigrants is predominantly responsible for destruction of the ecologically sensitive region and for depriving Odia fishermen of their traditional fishing rights. Based on such a narrative, a Court-endorsed Committee has been formed recently in 2019 which includes the Forest and Environment department in Odisha to move the Centre seeking for an NRC (National Register of Citizens)<sup>2</sup> exercise to be

---

1 Prawn and shrimp are used interchangeably in this essay to signify the crustacean export 'commodity'

2 NRC is a citizenship law that facilitates the deportation of immigrants



conducted in Bhitarkanika National Park and Chilika lake, the two major brackish aquaculture zones in Odisha, with an objective to identify and deport Bangladeshi immigrants who are residents of the regions<sup>3</sup>. It is a particularly worrying phenomenon that has barely come to light and therefore, it is the backdrop against which this paper is being written.

## 2. Core Argument, methods, and overview of sections to follow

The paper seeks to trace the trajectory of ecological deterioration of the two aquaculture zones in question: Bhitarkanika National Park in the district of Kendrapara and Chilika Lake due to intensive shrimp farming and its impact on the local fishing community. It examines how the State and the environmental elite's response to this deterioration has been to selectively produce a vilifying discourse around the figure of the 'Bangladeshi infiltrator' (anuprabeskari) under the rubric of conservation. We argue that implicating Bangladeshi immigrants of the region as responsible for the ecological crisis<sup>4</sup> has deflected attention from effectively identifying true causes that have led to this grave ecological ruin. The increasing demand

for seafood, related profit along the value chain and the unequal control of the market mechanisms are reasons to be examined in order to understand the ecological declines of coastal Odisha. This paper attempts to bring together a web of relations of capital, community and ecology that continue to shape the rapidly changing life of the east coast and which have, thus far been overlooked. It is to centre the understanding that environmental concern in the region, therefore, is not reducible to a simplistic human-nature conflict and has to account for the profit-driven economic structure as well as the role of the state, the legal apparatus and social relations that shape seafood production.

Our research relies on existing academic literature of and about the regions, news reports, websites, policies, judgements and court orders to piece together a perspective that lends insights into how everyday state practices, law, policy, environmentalism, economy have influenced the ecological life of the region that has led up to the aforementioned questions of conservation and citizenship.

---

in India. Over the last two years it has been implemented in Assam and Home Minister Amit Shah has declared in a parliamentary session that it is to be extended to the entire country. See more: <https://www.indiatoday.in/india/story/what-is-nrc-all-you-need-to-know-about-national-register-of-citizens-1629195-2019-12-18>

3 <https://www.newindianexpress.com/states/odisha/2019/aug/04/odisha-to-move-centre-for-nrc-in-kendrapara-to-identify-illegal-bangladeshi-immigrants-2013798.html>

4 <https://indianexpress.com/article/india/panel-suggests-nrc-in-odishas-kendrapara-5883948/>



The essay begins by contextualising the history of Bangladeshi immigrants in coastal Odisha, their settlement and their relation to fisheries. We go on to provide an overview of the geography and ecology of the two aquaculture zones that are the focus of our paper. We further discuss their ecological dynamics vis-à-vis shrimp, the sanctuary-based model of conservation that the regions embody and the consequences of the same. We examine how the ecological damage unfolding at the various sites mentioned in this study is being used by dominant social actors, to create a conservation rhetoric that vilifies the Bangladeshi immigrants. A situation where a combination of existing xenophobia, socio-economic distress and ecological degradation due to aquaculture unfolds under the spectre of NRC is an imminent threat for the Bangladeshi immigrant.

### 3. Bangladeshi Immigration, Citizenship and Conservation

Among Bangladeshi immigrants living in the coastal tracts of Odisha, there are many who arrived before December 1971 during the Bangladeshi war of Independence<sup>5</sup>. This is the designated date by the Indian State for immigrants to qualify for citizenship (Chhotray, 2017). Following the Noakhali and Tippera riots of 1946 and the Khulna riots of 1960, two million Bangladeshis were forced to flee the violence and cross into West Bengal, most

of who belonged to lesser dominant caste groups (namashudra and debnath) (Chatterji, 2007). The Central and state governments designated 200,000 acres of barren wasteland to establish refugee colonies for them, of which was 'Dandakaranya', spread across the states of Odisha, Madhya Pradesh and Bihar (Chatterji, 2007). Due to the barren and uninhabitable environment, the populations started to move away from the 1960's onward from these designated infertile refugee camps to more productive places. Kendrapara and the villages around Chilika had a similar physical habitat to that of East Bengal with its forests, rivers and the sea which made it possible for them to practice their livelihoods and they ended up settling in these regions (Chhotray, 2017). Subsequently, they started engaging in small occupations and gradually received land leases, built homes and settled here. Most of them are known to be engaged in fishing.

Political scientist Vasudha Chhotray points to how over the years, Bengali settlers in Odisha have acquired identity documents such as voter ID card, BPL card, ration card from Indian state agencies in the 1990s, voted in elections, paid taxes, had access to welfare subsidies and had become 'Indian citizens for all practical purposes' (Chhotray, 2017. p.7). As Bangladeshis started fishing in the waters in Kendrapara, local fishing castes, especially Kaibartas (known for their localised network of

5 [https://en.wikipedia.org/wiki/Bangladesh\\_Liberation\\_War](https://en.wikipedia.org/wiki/Bangladesh_Liberation_War)





authority in these waters) claimed traditional rights on the waters, thus, creating a conflict that also involved a physical scuffle between the two groups in 1987. This led to a court petition in the Revenue Court resulting in an informal agreement between Kaibartas–Bangladeshi and Bengali fishers, in which they were allowed to fish in the Kendrapara waters after they apologised for the tussle that occurred between the two groups (Chhotray, 2017). It has been recorded that Bangladeshi fishers moved to small-scale sea fishing and then to motorised boats and advanced fishing nets and Odia fishers followed suit in the 1980s (Chhotray, 2017) coinciding with the period when there was mounting demand for shrimp.

In the 1980s, Bangladeshi refugees are credited for having introduced the nylon monofilament locally known as ‘khanda’ made up of multifilament netting material attached to bamboo poles. This is a unique and extremely efficient gear especially for catching shrimp and crab by setting them on their migratory path (Mohapatra, 2011). Chhotray (2017) speaks of a complex mix of responses by Odia fishers towards Bangladeshi fishers shifting between appreciation for having taught them new modes of sea fishing to disdain for owning gill nets and having grown more prosperous than them. Complaints of increasing upward social mobility of Bangladeshi immigrants due to fisheries are also made by environmentalists, political leaders and state officials from time to time

in the Odia news media. However, it has been found that Bangladeshi and Odia fishers are also known to have been living in peaceful co-existence in the everyday life of the region and there has been a show of solidarity by Odia fishers against the recent vilification in the form of protests and demonstrations (Chhotray, 2016). This vilification has come about with no adequate data on Bangladeshi immigrants and their extent of engagement with shrimp farming. Even the official population figures of the group have not been acquired. How such a linkage between conservation and disenfranchisement of citizenship was built is something that we shall explore later in the paper.

#### **4. Geography and Ecology of the two zones and their transition**

The following section gives an overview of the ecologies of two locations in the Odisha coast: Chilika Lake and Kendrapara’s Bhitarkanika and Gahirmatha Wildlife sanctuary. Through this, we hope to unpack how these regions turned precarious, eventually displacing the local fishing population. Against the historical backdrop of these sites, we describe how the production of the ‘illegal infiltrator’ (locally called anuprabeskari) is reproduced through a conservation discourse to place blame for a degrading ecosystem and plummeting profits.

##### **4.1 Chilika**

The Government of India in 1985 along with



international financial institutions such as the World Bank sanctioned plans for promoting prawn culture, under the banner of 'Blue Revolution'. Prior to this, oral histories indicate that Chilika had an abundant resource base (Nayak, 2011). The process involved international financial institutions giving out loans to Third World countries and their governments to develop ponds (Immanuel, 2020). It was during the same time prawn culture fisheries started in Chilika as well. Chilika is the second largest brackish water lake in the world and stretches across the districts of Puri and Ganjam and around 132 villages are dependent with the lake's ecosystem. For most of the fishers dependent on the lake, fishing is a caste-based occupation. Keutas, Kandaras, Tiaras among others form the majority of the local fishing population (Samal, 2002). The lake today suffers from heavy siltation, shrinking of lake depth, salinisation of agricultural fields and dwindling of fish species including shrimp. The ecological deterioration has been accompanied with socio-economic marginalisation of the local fishing population resulting in occupational displacement, outmigration, eroding of traditional knowledge systems around fisheries and incorporation of fishers into casualisation and seasonal work (Nayak, 2014).

A significant development responsible for drastically altering the life of the lake (the ecosystem and the people) has been the 1991 lease policy announced by the Government of Odisha which legalised shrimp aquaculture.

It went on to distinguish between 'capture' and 'culture' fishery sources and permitted the entry of non-fishers into the region for shrimp culture (Samal, 2002; Pattnaik, 2007). According to the lease policy, 6,000 hectares of customary fishing areas were reallocated to the non-fishers. The non-fishermen were affluent merchants, bureaucrats, politicians belonging to upper-caste Brahmins, Karanas and Khandayats who continue to hold immense money, status, muscle power and state support. They are the same groups who formerly used to look down on fishery as a lowly caste-based occupation.

Since the 1970's Indian prawn fisheries sector had seen the entry of the non-fishers into this trade which was largely in response to the soaring demand for the crustacean which came to be known as 'pink gold' (Kurien, 1992). When production of this valuable seafood commodity from wild-sources began to plateau, it attracted wealthy merchants to shrimp aquaculture. In Chilika, the twin changes that introduced leasing of areas of culture and sanctioning of entry of non-fishers pushed the low-income fishers to the margins of this ecosystem that they previously co-existed with. As culture fisheries boosted production, simultaneously capture fisheries saw plummeting of production, thereby landing lopsided outcomes – profits for those who practiced culture and loss for those who caught shrimp from the wild. The traditional fishers did not have the financial resources to compete with the non-fisher groups in the

region who could afford the exorbitant capital investment required for shrimp culture. Eventually, their only alternative was to give up their fishing rights and sublease the waters where they used to practice capture fisheries, often by coercion, to these players for income. Staying afloat in such a scenario has also meant bearing losses through subleasing, for many are caught up in gruelling cycles of indebtedness. One of the reasons behind the same is the money lenders who give out loans with high rates of interest and upon repayment, make the borrowers sell their catches; a system that allows them to acquire a steady supply of shrimp and to dictate the prices<sup>6</sup>.

This scenario did not go unchallenged as fish cooperatives legally challenged the 1991 lease policy. At the end of a long-drawn battle, the Government of Odisha cancelled the lease policy and banned aquaculture in Chilika in 1993. Nevertheless, as we will illustrate below, illegal prawn aquaculture is still carried out on more than 60% of the Lake.<sup>7</sup> The 1991 lease policy has been identified as the main reason behind the deterioration of the lake ecology (Samal, 2002; Pattnaik, 2007).

The local fisher groups have put up strong agitations against the lease policy as well as against other attempts by the state to privatise the lake contributing to environmental degradation. Chilika Bachhao Andolan, a massive people's agitation, was organised by the fishers in the 1990s against an integrated shrimp farm project Chilika Aquatic Farm, proposed by a joint venture of Government of Odisha and TATA, an Indian corporation. As part of the agitation, a huge gherao (blockade) of 8000 protestors was seen outside the state legislative assembly. The movement also witnessed heavy police brutality, imprisonments and deaths (Samal, 2002) and the fierce battle put up by the fishers resulted in pushing TATA to withdraw from the project. However, the exit of TATA did not resolve the intensive shrimp culture in the region and instead a new problem emerged in the form of a 'shrimp mafia'. Matilde Adduci (2009) points out how the battle against corporations such as TATA obscured people's attention from the threat posed by the local dominant class in Odisha who Adduci refers to as the 'neo-rentier class'—a web of exporters, bureaucrats, politicians, businessmen who could enjoy impunity while exploiting the lake's resources by engaging

6 <https://www.downtoearth.org.in/indepth/chilika-a-lake-in-limbo-30056>

7 "The lease policy was challenged by 36 PFCs. The High Court judgment in 1993 maintained the capture to culture ratio at 60:40. In lieu of the Odisha High Court directive, Odisha government revised some guidelines of Chilika Fisheries. However, there was no significant difference between the 1991 and 1994 policy. Following this, the Supreme Court judgment on December 11 1996, directed that no shrimp culture industry was to be carried out within 1,000 metres of Chilika Lake."

in informal aquaculture activities. After TATA's withdrawal, aquaculture grew in an illegal, unauthorised manner by this neo-rentier class who had access to capital for investment and maintenance costs, weapons and muscle power to terrorise the fishers who would resist them and enjoyed political protection against the law. This is at the core of the notion of informal sovereignty (Hansen and Stepputat, 2006) which means that State control is not totalising and absolute but manifests itself in varying ways. One of which is illegal networks of strongmen, bureaucrats, politicians etc., who become a law unto themselves and operate with impunity by indirectly carrying out the functions of a nation-state. From the year 2000, indebtedness has led to fisher's cooperatives and entire villages being incorporated into these informal aquaculture networks to receive informal credit (Adduci, 2009).

#### 4.2 Bhitarkanika

In the post-liberalisation period, Kendrapara was a major coastal site with six fish landing centres that contributed to the commercialisation of the capture marine fisheries sector. It was one of the six districts (Balasore, Bhadrak, Kendrapara, Jagatsinghpur, Puri and Ganjam) where penaeid shrimp catch (that was of significant economic importance) was landed and amounted to a sum total of 6608 metric tons<sup>8</sup>.

According to reports, the sudden increase in production occurred post-1997 due to investment in infrastructure, motorised crafts and mechanisation. However, these new modes of fishing equipment such as gill nets were mostly accessible to big, private players due to which the shrimp catch of the traditional fishing population declined. Many traditional fishers lost their livelihoods, and instead were forced to join these private mechanised fishing vessels as daily wage labourers.

In the case of Kendrapara, protected areas, i.e Bhitarkanika and Gahirmatha Sanctuary within the district and the forest officials' displacement of the inhabitants, are at the core of the question around fishing rights and ecological conservation. The State government in 1998 divided the Gahirmatha marine sanctuary into a core zone, where no fishing practices were to be allowed, and a buffer zone in waters that are around 10 km away from the coast where certain restrictions for traditional fishers were relaxed. Exemptions to the ban made for traditional fishers from time to time invited outrage from owners of mechanised trawlers. However, these exemptions are only tokenistic efforts by the State. The forest department here has time and again claimed the land of forest dwellers to an extent that the village area has declined from 499 acres in 1971 to 244 acres in 2011.

8 <https://indiankanoon.org/doc/507684/>

Bhitarkanika is the second largest mangrove ecosystem in India after the Sunderbans. Post-independence, when the jurisdiction of the forests was given to the government, access to forest products was regulated by a patta (lease) system. Fishers were given pattas for fishing and cutting wood to construct boats. The restriction of forest use in the 1970s that was imposed by the government entrenched conflict between the forest authorities and the local community (Banerjee, 2016). In the year 1975, Bhitarkanika's forest area and river bodies, an expanse of 672 sq km, was declared a wildlife sanctuary, including a portion of the region's coastline which was the Gahirmatha Marine Sanctuary. This was followed by a complete restriction on use of forest resources, in turn angering the local communities who were dependent on the mangroves for their livelihood. Locals were also on many accounts imposed with fines and imprisoned upon 'illegally' entering the forests. Subhashree Banerjee (2016) in her work on the ecological history of Bhitarkanika traces the ecosystem and livelihood systems of communities and points out that the very structure of sanctuary-making has hampered fishing and forest dwelling communities and consequently, the environment. Special kinds of mangrove trees in Bhitarkanika forest are dying as a result of the population

displacement because they require regular pruning to survive and the making of reserve forest areas where local communities are prohibited entry leads to mangrove population diminishing because of lack of human intervention.

Bhitarkanika is located in the midst of Brahmani-Baitarini river system. The aquaculture ponds in the region receive brackish water from the two rivers which is later discharged into the mangroves. The conversion of agricultural land, especially rice farms, in the 1990s into shrimp aquaculture has posed a major threat of increasing salinity in the region (Rajarshri, 2011). The inputs added to boost shrimp production also end up in the mangrove environment. It is mandatory for Kendrapara's shrimp farms to be registered under Coastal Aquaculture Authority Act and Rules, 2005 so as to not violate the Coastal Regulation Zone notification. However, both the notification and the act are poorly implemented. Similar to the districts around Chilika, there is a prawn mafia operating in Bhitarkanika. It is believed that the mafia is responsible for loss of 9 sq km of mangroves over two years<sup>9</sup>. The mafia has allegedly deforested huge tracts of mangrove forests to build shrimp farms, converting 5000 acres of river side into embankments as well as one that has blocked the flow of river Patasala in between two villages that covered

9 <https://www.thehindu.com/news/national/other-states/odisha-loses-9-sq-km-of-mangroves-in-two-years/article6203525.ece>

a 20km distance<sup>10</sup>. The Odisha government in 2017 signed a lease with Falcon Marine Exports for the operation of Jagatjore Shrimp Culture Project in Kendrapara. The 25-crore project was executed by the State Fisheries department with loan assistance by World Bank in 2001. Falcon Marine Exports is one of the many companies and firms such as Suryo Udyog Ltd., Raj Exports Ltd. operating shrimp businesses in Chilika and other coastal regions as well.

It is interesting to note that in these ecologies, multiple 'outsiders' co-exist with varying attitudes towards them by the State. As mentioned above, shrimp is cultured illegally in 60% of the Chilika Lake. There is the dominant caste Brahmin/Karana non-fisher merchants who have entered the playing field to set up ponds and gheris owing to the growing exoticism of shrimp as a commodity<sup>11</sup>. There is the mafia that enjoys political impunity, intimidates the fishers in villages and unofficially grows. There are firms such as Falcon Marine Exports, TATA and such who have visions of establishing aquaculture farms. The State in the past has either been ignoring varying forms of 'illegalities' that have proven to be exploitative for the wetlands with impunity or it has facilitated their legalisation. Yet, now the figure of the illegal has been

vested upon the most disenfranchised of all, the Bangladeshi immigrant.

## 5. Conservation and the idea of 'Protected Areas'

Kendrapara and Chilika are sites that have over the years also been notified by the State government as National Parks. Establishing a 'boundedness' by declaring ecologically sensitive regions as 'sanctuaries' is a common environmental protection pattern. The logic behind such a conservation agenda, one that excludes people from nature stems from colonial roots of protectionism. In countries like India, natural world has always been entangled with human history and fencing nature to save it has repeatedly created conflicts (Cronon, 1995). Environmental projects based on these ideas are steeped in exclusionary ideas and do not take into account relations of humans who live in proximity with what is believed to be the natural world. It shall be noteworthy to look at the implications of these conservation projects on the local fishing population to understand their precarity and livelihood loss, which is today being blamed upon the entry of immigrants.

Apart from the 1991 lease policy, the creation

10 <https://www.newindianexpress.com/states/odisha/2015/may/18/Twin-Threats-to-Bhitarkanika-Park-Illegal-Tree-Felling-Prawn-Farming-761970.html>

11 Refer to Chapter XX of this publication for an examination of the traders as dominant actors in the shrimp value chain of Chilika Lake

of a bird sanctuary over 1,553 ha of land in Nalabana Island in the lagoon of lake Chilika in 1987 has adversely affected the economic life of the fisher people by causing occupational displacement (Samal, 2002). The government of Odisha started the process of creating protected areas in the 1970s by declaring Nalabana Island as a wildlife sanctuary in 1974. According to British survey records of 1897 and CFCMS/ FISHFED leave records, this area was exclusively designated as the fishing ground of four Tiara caste fisher villages in Banapur region. Without any consultation, this area was declared restricted, instantly depriving these fishing castes of their livelihood (Nayak, 2011). Villagers also complain of a considerable amount of money being spent by the Chilika Development Authority for tourism in the form of guesthouses, museums, parks, boats etc. The Government of Odisha does not yet have a comprehensive plan that is truly oriented to alleviating the ecological damage in the Lake. After a 1988 seminar on Chilika, four problems have been identified: 'increase in siltation, choking of the Magarmukh area and connecting channels, shrinkage of the lake area and rapid spread of weeds'. The urgent acquisition of 'authentic scientific data' was recognised as a result of the seminar, however, there has not been a follow-up. Many have pointed out that the seminar participants had

no expertise on Chilika<sup>12</sup>. While sanctioning projects that contribute to environmental degradation, profits are drawn by investing in the other lucrative business of tourism by major investments on aestheticisation of the sanctuary while turning heads from grave issues that need to be tackled.

The conservation-induced conflict in Bhitarkanika has been a recurring one. Gahirmatha marine sanctuary which skirts Bhitarkanika in Kendrapara was built to protect the endangered Olive Ridley turtle that visits the Gahirmatha coastline which is known to be the largest rookery in the world with over 100,000 resting turtles. Gahirmatha sanctuary was established in 1997 with an imposition of a fishing ban in the region with no consultation with the local fishing population whose livelihoods came to a halt. The ban is executed for a period of seven months from the 1<sup>st</sup> of November to the 31<sup>st</sup> of May every year, applicable to a 20-kilometre radius. The time period coincides with the fishing season affecting the lives of 20,000 traditional fishers. The Orissa Marine Fisheries Regulation Act 1982<sup>13</sup>, originally legislated to protect fishing rights of traditional fishing communities, was finally implemented in the 1990s to restrict fishing in order to protect sea turtles. The ban was followed by several deaths by suicide of fishermen who lost their livelihoods<sup>14</sup>.

12 <https://www.downtoearth.org.in/coverage/chilika-a-lake-in-limbo-30053>

13 [http://lawodisha.gov.in/files/acts/act\\_143255897\\_1436270478.pdf](http://lawodisha.gov.in/files/acts/act_143255897_1436270478.pdf)

14 <https://www.orissapost.com/ban-on-gahirmatha-nets-many-fishermens-lives/>



Operation Kachhapa (henceforth, OpK), an NGO initiative that began in 1988, made it their chief objective to reduce the mortality of Olive Ridley turtles. OpK has declared shrimp trawling as the biggest cause of sea turtle mortality in the world. Public opinion has been built in a way that shrimp trawlers are condemned as murderers whereas trawlers continued to insist that they were only 'a small part of a larger problem that affected the Odisha coast' (Arthur & Shanker, 2010, p.32). It was an unjust portrayal especially because unlike other instances of wildlife exploitation by humans, sea turtles were not the target catch for shrimp trawlers. In the midst of this charged atmosphere, there have been several open firings that have resulted in deaths of fishers at the hands of forest guards. One such death of a small fisher from Matsyapalli occurred in 2005 and there were massive efforts by the government to cover it by projecting the deceased as a 'Bangladeshi pirate' (Chhotray, 2016). The villagers resisted these attempts until government withdrew these charges.

The depleting population of Olive Ridley turtles because of the changing nature of the marine ecosystem is indeed grave. Around ten thousand turtles end up dead along the Odisha coastline each year, many of who drown in trawl and gill nets meant to catch shrimp resources. However, veteran sea turtle conservationist Jack Frazier has highlighted how some conservationists have been presumptuous to declare that

the population of Olive Ridley turtles are on the verge of extinction especially when there is no lucid quantitative data pointing to the same (Frazier, 1980). Questioning their data collection procedures and calling the exaggeration of the species' demise a 'crying wolf', Frazier says that the effectiveness of measures to respond to the severe depletion of sea turtles will be null if claims made by researchers are not carefully and credibly sought. The misrepresentation of the species depletion and the draconian use of force that followed is the reason why 'turtle conservation came to be seen as anti-people, and in some areas, gill net fishermen joined trawler associations in their protest against sea turtle conservation' (ibid. p.33). It went to a point where, even when effective strategies such as turtle excluder devices (TEDs) for shrimp trawls were introduced in the 1990s, it came to be seen as an 'unfair conservation imposition by the state and western powers' (Arthur & Shanker, 2010, p.33). This occurred despite TEDs having proven to be beneficial and efficient for shrimp trawling due to increase in catches by eliminating non-target species that could damage the shrimp (Prakash et. al. 2016). This long-drawn conflict was a result of an exploitative and mismanaged conservation project that did not occur with the consultation with the local fishing population of the region.

Environmentalists from the initiative OpK have time and again spurred a distinct insider-outsider binary in relation to the environmental

discourse in coastal Odisha since Kendrapara is said to have the highest population of immigrant settlers. Some of these narratives come to light in political scientist Vasudha Chhotray's research. On speaking to the OpK spokesperson he claimed, 'the entire fisheries in the state has collapsed because of these Bangladeshis only...they have used every kind of fishing method to wipe clean the rivers and oceans of fish, and even put nets at the mouths of rivers' (Chhotray, 2016, p.16). They have also been known to question the presence of 'outsider' Telugu and Bengali fishers in the fishworkers unions in Odisha. OpK blames Bangladeshi fishers for most of the gill netting in the region with no data to corroborate the same. Moreover, many 'traditional' fishers are making the move towards motorised boats and mechanisation because of the larger catches that are made possible and to survive the competition to meet the exponential export demand.

In the last few years, the ecological decline in coastal Odisha has gained much notice, building pressure on the state towards initiation of conservation efforts. Destruction of prawn gheris have occurred intermittently in both the regions. In fact, in 2019 the High Court of Odisha, responding to a PIL regarding the threat to the ecology of

Bhitarkanika National Park and Chilika Lake directed the State government to initiate the demolition of prawn gheris in Bhitarkanika and Chilika and initiate a committee for wetland conservation. This move resulted in this committee bringing into focus the Bangladeshi settlers and posing them as a threat to wetland conservation<sup>15</sup>, something that is discussed in the following section.

## **6. NRC and the Discourse of the 'Anuprabeskar' (Infiltrator)**

More than a decade ago in 2005, the State Government of Odisha acting on a High Court order sent 'Quit India' notices to 1551 'illegal immigrants' in the coastal villages of Kendrapada district in Odisha, most of whom have been living here and working in fisheries<sup>16</sup>. The forerunner to this is presumably the amendment to the Citizenship Act in 2003 which made it mandatory to have documented migrants as parents at the time of birth to qualify for citizenship. Although the notices were not acted upon, a new social category of 'anuprabeskar' (infiltrator) was introduced into parlance and immigrants have since been living in a constant state of anxiety, been ostracised by their neighbours and their state services cards such as PDS and ration have been delegitimised. Some

15 <https://timesofindia.indiatimes.com/city/bhubaneswar/hc-asks-govt-to-start-demolishing-illegal-prawn-gheries-in-wetlands/articleshow/67647062.cms>

16 <https://scroll.in/article/950399/what-a-little-known-story-from-odisha-tells-us-about-the-citizenship-controversy-in-india-today>

Odia fishers also extended their solidarity to these families by writing letters to Human Rights Commission, having discussions and organising protests to facilitate political attention to the matter (Chhotray, 2017). Their reaction to these notices has been nothing short of 'bewilderment and incomprehension' (Chhotray, 2017, p.9) as they were left to navigate state procedures with documents that are now insignificant.

After lying dormant as an issue until 2019, there is now a sudden resumption of actions to be taken by the Government of India and State of Odisha on the 'illegal immigrant', considering no action for eviction was undertaken since 2005 as discussed above. Under the supervision of the High Court, a committee was formed by the Environment and Forests department in 2019 to discuss the conservation of wetlands in Bhitarkanika National Park and Chilika. In the meetings of this committee, the members concluded that there exists a large population of Bangladeshi immigrants in the aforementioned regions whose illegal prawn culture activity has contributed to the endangerment of the wetlands. The following points are from the committee's panel report citing reasons for the NRC exercise<sup>17</sup>, 'Large population of Bangladeshi immigrants settled in Bhitarkanika, illegal prawn culture activity in

the wetland, invaluable mangrove forest cover destroyed, unregulated boat operations and oil spills, national security under threat'. A member of this committee and High Court appointed amicus curiae Mohit Agarwal had sent a report to the High Court urging it to direct the Centre and State government to initiate an NRC exercise to identify 7,00,000 Bangladeshi immigrants in the wetlands who are posing an 'ecological and national security threat'. Director, Environment, and Special Secretary Forest, (Government of Odisha), K Murugesan wrote in his letter to the Home Department on August 3<sup>rd</sup> 2019, 'I am directed to intimate that as per the decision taken in the fourth meeting of the committee... held on 24.06.2019 under the Chairmanship of Additional Chief Secretary, F&E Department, the Government of India may be kindly requested to grant permission for preparation of National Register of Indian Citizens in respect of Kendrapara District'<sup>18</sup>. Based on the High Court directive, the Ministry of Home Affairs wrote to the Registrar General of India on September 20, 2019 to take necessary action and initiate the process under the Citizenships (Registration of Citizens and Issue of National Identity Cards) Rules of 2003. The Director and Special Secretary of Environment and Forest K Murugesan said, 'The committee is concerned with protection of wetlands only. We are evicting encroachers,

17 <https://www.newindianexpress.com/states/odisha/2019/aug/04/odisha-to-move-centre-for-nrc-in-kendrapara-for-illegal-prawn-culture-activity--2013868.html>

18 *ibid.*



and this has nothing to do with Bangladeshi immigrants', pointing to how ambiguous and empty ideas of conservation can be used as a weapon for a sanitising mission for the State against its enemy.

The demand for NRC in Kendrapara and Chilika was lauded as long overdue and a 'step forward'. Data collection for the National Population Registrar is ongoing and shall ease the access to information about residents and their birthplace in the future. This process has come to a halt due to the Covid-19 pandemic during which the article is being written and it is possible that the process shall resume soon. The imminent threat of religious-based citizenship and detention centres will make the everyday lives of immigrant settlers in coastal Odisha perilous, even as they continue to deal with privatisation, decline of resources and unsteady income.

## 7. Conclusion

The essay has looked at different aspects of coastal ecology in Odisha that informs and constitutes the socio-economic life of the east coast of Odisha. Institutional changes introduced by the state that affect the coast have entered the everyday social life of the stakeholders in the region. We have seen how the State on one hand, extracts productivity from the fishing community for the luxury export market of seafood and on the other hand, places the onus of environmental depletion on marginalised inhabitants of the region who

are not even responsible for the aggressive production and consumption model that has led to this depletion. A process of vilification of Bangladeshi migrant communities who have been living in the coastal districts for decades comes to overshadow the actual crisis of shrimp aquaculture which has deeply eroded the ecosystem of the districts, and conservation-induced displacement that has caused loss of occupation to small agricultural farmers who now labour in the large gheris and has hurt the fishing practices of smaller fishing communities. It places the burden of the environmental and livelihood concerns and crisis on an 'outsider', portraying them as the sole reason for the non-equitable distribution of resources and deprivation of the traditional fishing population. Local fishing communities and populations have been increasingly sidelined through the state's conservation-driven agenda and they have faced further marginalisation due to the decline of the coastal ecology. Locating an easy enemy among Bangladeshi and Bengali settlers, the State works closely with owners of large aquaculture farms, seafood exporters and keeps their interests intact even though they have raised havoc for the coastal ecosystem. These interests further the rise in shrimp aquaculture owing to the demands and functioning of the market and exporting companies furthers the chains of exploitation. The mask of this 'other' hides behind it; strong networks of local money and muscle power of export companies and large farm owners who often come from dominant



class and caste positions exploiting the labouring fishing class and depleting the environment.

## References:

Arthur, R. and Shanker, K., 2010. Olive and Green: Shades of Conflict between Turtles & Fishers in India. *Current Conservation*. 4(4), pp.28-36.

Banerjee, S., 2016. Ecological History of an Ecosystem under Pressure: A Case of Bhitarkanika in Odisha. *The Institute for Social and Economic Change*.

Berkes Fikret and Nayak, Pradeep, K. (2010) Whose marginalisation? Politics around environmental injustices in India's Chilika lagoon, *Local Environment: The International Journal of Justice and Sustainability*, 15(6), 553-567, DOI: 10.1080/13549839.2010.487527

Chatterji, Joya., 2007. *The Spoils of Partition: Bengal and India, 1947-67*. Cambridge Studies in Indian History and Society. Cambridge: Cambridge University Press.

Chhotray, V., 2016. Justice at Sea: Fishers' politics and marine conservation in coastal Odisha, India. *Maritime Studies*, 15(1), pp.1-23.

Chhotray, V., 2017. Nullification of citizenship: negotiating authority without identity documents in coastal Odisha, India. *Contemporary South Asia*, 26(2), pp.175-190.

Cronon, W., 1996. *Uncommon Ground: Rethinking the Human Place in Nature* (1st ed.). W. W. Norton & Company.

Frazier, J. G., 1980. 'Sea-turtle Faces Extinction in India': Crying 'wolf' or Saving Sea-turtles? *Environmental Conservation*, 7(3), pp.239-240

Hansen, T. B. and Stepputat, F., 2006. Sovereignty Revisited. *Annual Review of Anthropology*, 35(1), pp.295-315.

Immanuel, J. Jeffrey., 2019. Mapping the evolution of Aquaculture and its interactions with the social, economic and environment systems, Centre for Technology Alternatives for Rural Areas (CTARA), Indian Institute of Technology, Bombay, Powai, Mumbai.



- Kurien, J., 1992. Ruining the commons and responses of the commoners: Coastal overfishing and fishermen's actions in Kerala state, India. In: Grassroots environmental action: Peoples participation in sustainable development (eds. Ghai, D. and J. Vivian). pp. 221-258. London: Routledge.
- Matilde, A., 2009. Neoliberal Wave Rocks Chilika Lake, India: Conflict over Intensive Aquaculture from a Class Perspective. *Journal of Agrarian Change*, 9(4), pp.484-511.
- Mohapatra et. al., 2011. Performance evaluation of mud crab fishing gears in Chilika Lake. *Indian Journal of fisheries*, 58(4),
- Nayak, P., 2011. Commonisation and decommonisation: Understanding the processes of change in the Chilika Lagoon, India. *Conservation and Society*, 9(2), pp. 132-145.
- Pattanaik, S., 2007. Conservation of Environment and Protection of Marginalized Fishing Communities of Lake Chilika in Orissa, India. *Journal of Human Ecology*, 22(4), pp.291-302.
- Prakash et. al., 2016. Performance Evaluation of Turtle Excluder Device off Dharma in Bay of Bengal, *Fishery Technology*, 53, pp.183-189.
- Rajarshri, M., 2011. Influence of Brackish water aquaculture on Soil Salinisation, *International Journal of Research in Chemistry and Environment*, 1(2), pp.166-168
- Rodrigues J. Garcia, Villasante S., 2016. Disentangling seafood value chains: Tourism and the local market driving small-scale fisheries. *Marine Policy* 74, pp.33-42.
- Samal, K., 2002. Shrimp Culture in Chilika Lake: Case of Occupational Displacement of Fishermen, India. *Economic and Political Weekly*, 37(18), pp.1714-1718.
- Singh, S. and Parida, B. R., 2018. Satellite-Based Identification of Aquaculture Farming over Coastal Areas around Bhitarkanika, Odisha Using a Neural Network Method. *Proceedings, MDPI*.



# Shrimp Aquaculture, Ecological Decline and the Spectre of NRC in Coastal Odisha



## KEY

	<b>Conflict</b>	<b>ACTORS / INFLUENCES</b>	SSF - immigrant fisher +traditional Odiya fisher
	<b>Legislation</b>		Mechanised fishers
	<b>Destruction of Mangroves</b>		Aquaculture PCP / Farmers
	<b>Pollution &amp; Leaching</b>		State Authorities
	<b>Sanctuary zone</b>		Conservation NGOs
	<b>Loss of livelihood</b>		Fisher Collectives (Chilika Bachao Andolan)
			Big Corporations
			Upper Caste Traders
			Shrimp Mafia
			Absentee Landlords
		Tourism Lobby	

**1940s & 1950s**

- Introduction of lease system giving fishers exclusive rights to Chilika Lake
- Bangladeshi immigrants settle in the vicinity of the lake, moving away from Central India

**1970s & 1980s**

- Demand to export shrimp soars in India and attracts investment into the sector
- Culture practices are introduced in a highly inefficient and unorganised manner and sees the growth of private players





1990 to 1995



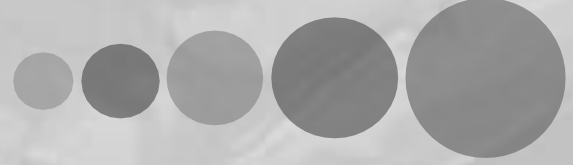
- Indian economy is liberalised
- Lease Policy is introduced to permit culture production and allows for non-fishers to operate on the lake. This gives rise to ‘absentee landlords’ operating
- TATA group signs a deal with the state to invest in culture fisheries



1995 to 1999



- The Supreme Court bans culture shrimp gherris in the lake. The ban is never implemented and shrimp production from culture sources increases
- The decade ends with the death of 4 fishers while protesting for the implementation of the court orders and the rise of local “Shrimp Mafia”



2000s



- The Chilika Regulation Bill is tabled to reserve only 30% of fishing area for fishers and lease the rest out to non-fishing groups
- The bill is never passed and this gives rise to a second round of privatisation and the proliferation of illegal shrimp aquaculture
- This decade sees a boom in shrimp production

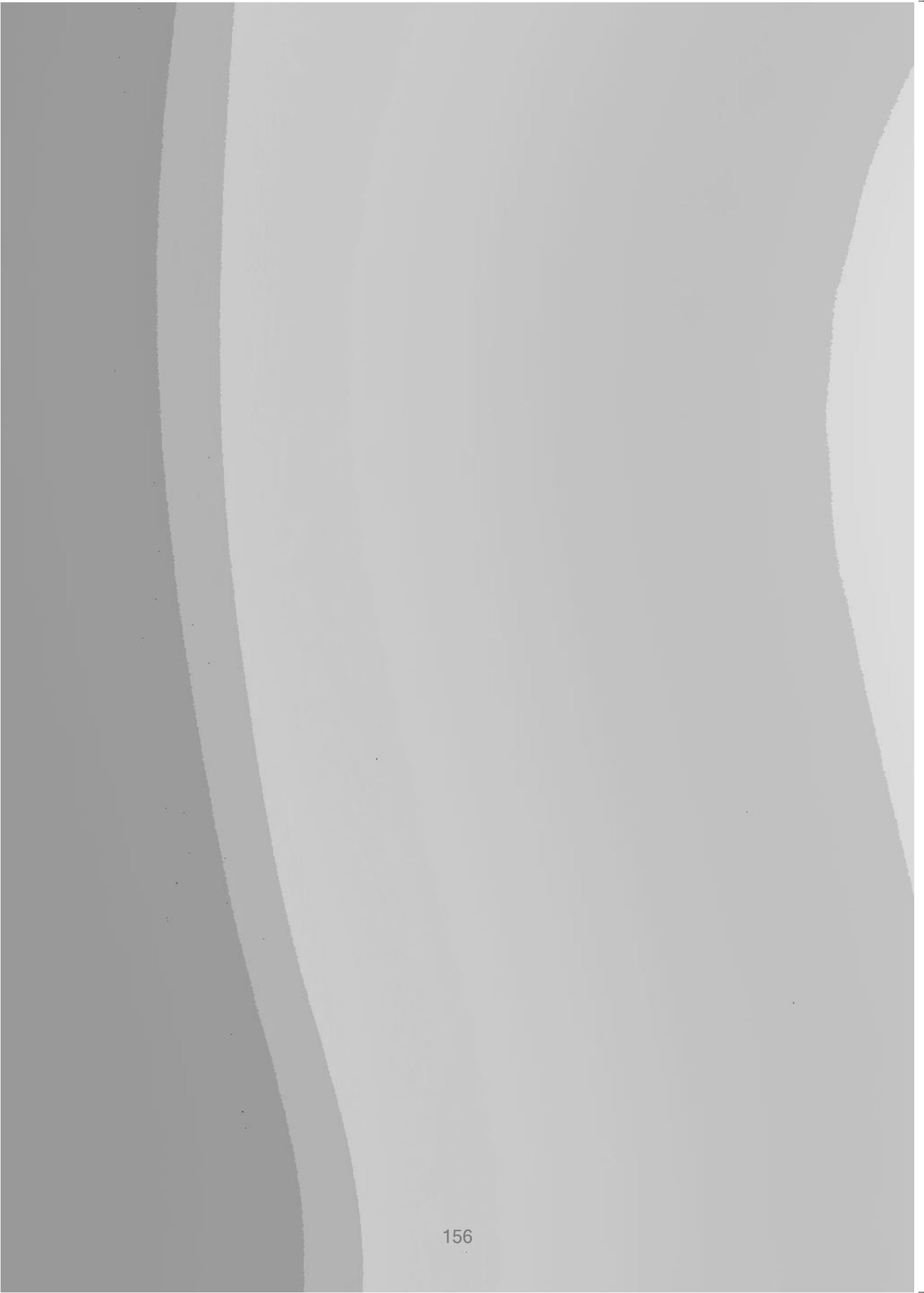


2010 onwards



- Shrimp production from culture sources begins to decline. The ecology of the lake is severely affected
- The Chilika Development Authority (CDA) demolishes illegal shrimp gherris
- The conservation lobby vilifies Bangladeshi immigrants framing them as a ‘ecological and national security threat’
- State and national authorities begin preparing to conduct a NRC exercise to evict Bangladeshi settlers







# People and Ecologies living with Shrimp Aquaculture

*A photostory*



*Kaelyn Maehara*





**Baguran Jalpai:** Until a few decades ago this coastal village in the Purba Medinipur district of West Bengal used to be driven by rice production and fishing. As connectivity to the urban centres increased and agricultural productivity began to drop, the rice farms have steadily been converted to intensive shrimp ponds. The canals that run along these farms form a network and are influenced by the rising and falling tide cycles. While they were earlier used to seasonally drain the storm floodwater from the rice farms, now they are used as the water intake for the shrimp ponds, as well as conduits for draining the waste from the ponds.





This concrete road, which connects Baguran Jalpai to the nearest commercial town Contai, is now the main road along which shrimp inputs and outputs are transported in and out from the village. Autorickshaws, mini tempos and motorbikes with carriers are primarily used to ferry in chemicals, fertilizers, motors, fuel and ancillary equipment during the start of the season and ice, weighing scales and plastic crates to package the harvested shrimp at the end.







**The Matsya Khoti:** The traditional fishing unit (Matsya Khoti) along the coast of Purba Medinipur is a space where fishing activity is collectively organised and administered. A shelter that functions seasonally, the khoti is typically a cluster of houses adjoining the beach. Seen here is the Baguran Jalpai, Matsya Khoti-II. Adjoining the khoti are temporary houses that the 'Jele Kaivarta' caste of fishers live in during the fishing season. This khoti and the dwelling unit used to be accessed through seasonal migrations by the fishers; but with the village behind becoming permanently settled, the Jele Kaivarta fishers have also moved to living in the 'Jele pada' permanently.





People from the 'Jele pada' hold a banner that expresses their protest against the Draft Coastal Regulation Zone Notification (2019). While they stand here in a small group, symbolically they stood in solidarity with small-scale fishworkers across the subcontinent who rejected this draft notification. While the earlier CRZ notifications carried a history of consultation with fishworkers, the 2019 draft and eventual passing on the notification left out the concerns of the fishworkers entirely.







**Bagda peen:** When Black Tiger Prawn aquaculture became a lucrative sector in the 1980s, fisherwomen from Baguran Jalpai started to collect the wild prawn larvae in and close to the inter-tidal zone. The Pichaboni River pours into the Bay of Bengal just south of Baguran Jalpai; here fishers have adapted their gears to catch the larvae. At the peak of the industry's growth in the 90s, entire families were sustained by the number of larvae they caught daily. Today the wild fry abundance has reduced, further elongating the working hours of the fisherwomen who sort these and sell them to local traders, who in turn transport them to intensive prawn farms operating in other districts.





The shallow creeks, mudflats, and sandbars seen in the photographs here are accessed by small scale fishworkers, especially women during low tide. Some of them set nets, woven baskets (bag nets), shovel the sand for clams, and collect shrimp fry. Over the last two decades catches have dwindled in these waters due to intensive mechanised fishing at sea and intensive aquaculture on land.





**Fisherpeople:** Shanker, seen here with his family, is a fisher of the 'Jele Kaivarta' caste. He lives with his family on a patch of land that houses 72 homes, an area in the village known as the 'Jele pada'. Jele Kaivarta fishers belong to the Scheduled Caste community and are currently the most hard-hit by shrimp aquaculture. On account of historically being landless, they are without the primary asset needed to partake in the shrimp value chain, something that Indian fisheries policymaking ignores. Similarly, since they are entirely reliant on the natural-fisheries resource, the waste and effluent discharge into the coastal waters affects them heavily.







This image shows how the shrimp ponds are stuck to tidally-influenced canals, creeks and rivers, all of which drain out into the Bay of Bengal. The intensity of shrimp production has caused high concentration of chemicals, shrimp waste, virus-affected waters to be drained into the coastal waters. The resulting pollution levels in the near shore waters have been observed by the small scale fishworkers who link the dwindling fish catch, as well as skin infections on their bodies to this unregulated and untreated outlet from the ponds.





**Sobji chaas:** Debuda, seen here with his family, today farms vegetables. He used to be a fisher, owning two boats that used to operate fixed-bag nets off the coast of Baguran Jalpai. A decade ago, having sustained losses in fishing due to the decline in catch on account of the introduction of destructive fishing gears and intensive shrimp farming, he sold his boats and retreated inland to farm. Farmers in Baguran Jalpai are constantly threatened by the proliferation of shrimp farms that are changing the socio-economy of the village unit. In addition, they are also threatened by the salinisation of their soils due to shrimp farms, and the added burden these farms place on groundwater levels







**Chingdi chaas:** Rabi (not pictured) is the owner of a shrimp farm in Baguran Jalpai. His family only sees him for meals, twice a day, during the months of March to November every year. Rabin spends his days and nights at his shrimp farm where he has to feed, monitor and guard his investments; this means working a gruelling 14-16 hours at times, constantly panicking about the success rate of his shrimp crop, and worrying about the real fear of sabotage from an older rival in the same sector. Rabin's father and brother work for Rabin's uncle in the fishing town of Digha as market auctioneers. Rabin used to be a rice farmer until his land was salinized; in partnership with his uncle, he now operates two shrimp farms on 3 bighas of land.

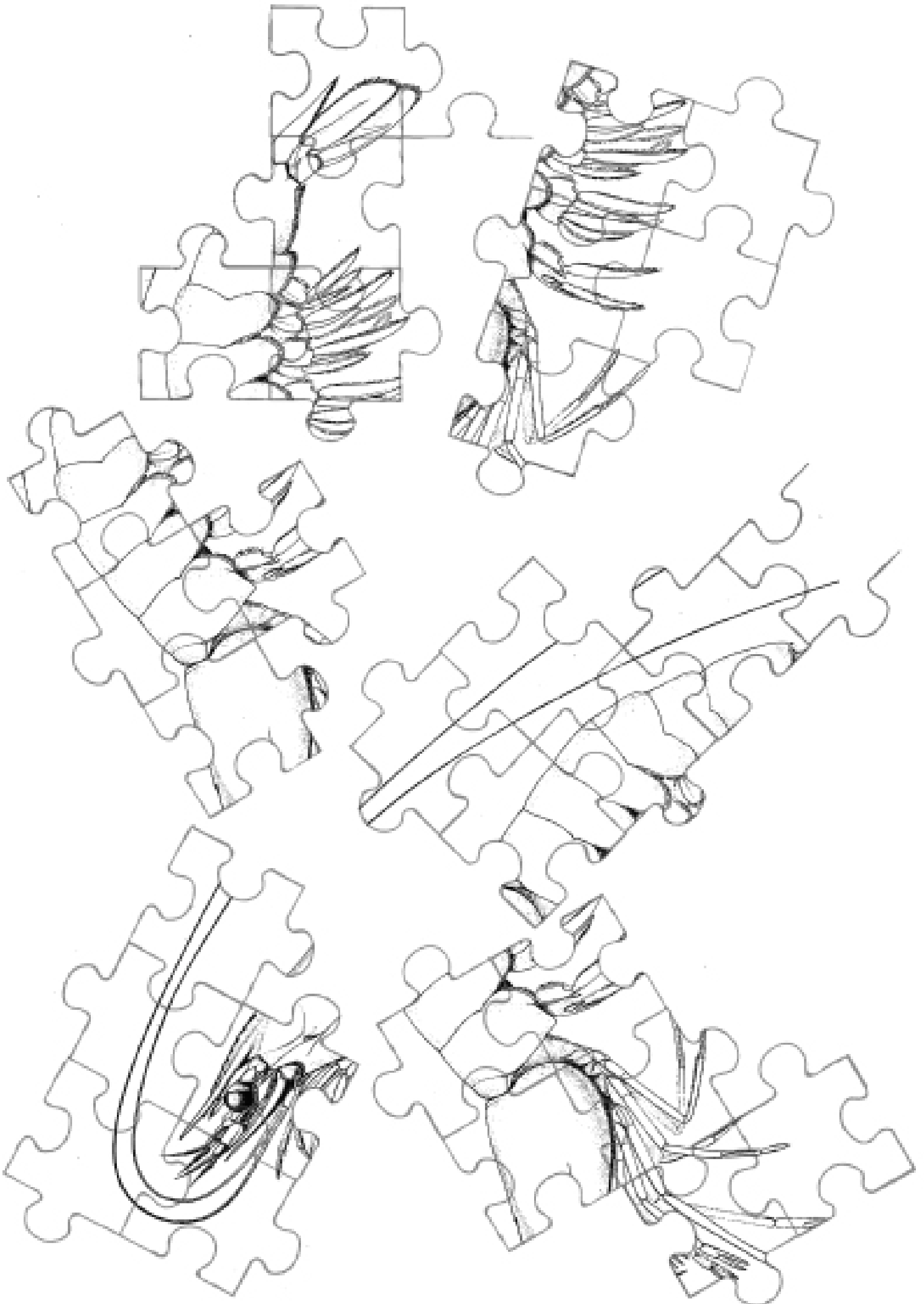






**Litopenaeus Vannamei:** The globetrotting crustacean has become the most popular shrimp species globally; close to 90% of India's farmed shrimp exports are of this species alone. In Baguran Jalpai, this shrimp is produced in two cycles between the months of March and November. Once harvested, the shrimp enters a complex global supply chain and travels across the world before being available in supermarket shelves across Europe and America. Here, quick frozen to sub-zero temperatures and packaged to make them cheap luxuries, the consumer's perception of the shrimp is far removed from the humid tropical heat in which it is produced.





# Acknowledgements

The year 2020 put us through the greatest health and economic crisis that most of us have seen in our lives. The government used the garb of the Covid 19 pandemic to put forth and implement various policies that would lead to rampant privatisation and corporatisation of the commons. Even while going through the gravest of livelihood crisis, the people have been questioning and demanding their rights. Most of the laws and policies are being claimed to be in favour of the masses. This publication attempts to investigate and analyze one such initiative, a core component of Blue Economy and Sagarmala in India: aquaculture concentrating on the East Coast.

Since the seventh General Assembly of World Forum of Fisher People in November 2017 which was hosted by National Fishworkers Forum in Delhi, we have been engaged with the question of Blue Economy and its implications in India. A publication titled Occupation of the Coast: Blue Economy in India was brought out as an effort of The Research Collective during WFFP to understand the concept of Blue Economy, particularly Sagarmala in India. Our close engagement with the WFFP process and the conversations around this publication laid the base of our work with regard to fishworkers and fisheries sector in the following years. We also ensured that the findings in that study be made available to the fishworkers community in the form of workshops, infographics (in various languages), consultations, etc. This is the latest in our efforts to understand the issue and its contemporary implications.

The process of calling for submissions and reviewing them in depth was done rigorously by the editors of this study: Savita Vijayakumar and Siddharth Chakravarthy of the Research Collective of Programme for Social Action. Their in-depth knowledge about the issue, meticulous planning, diligent follow up and creative insights make this book an enjoyable read. We thank the contributors of the publication who responded to the open call, worked along with the editors and kept the timeline strictly to make this possible.

The designer Tasneem joined the team quite early on with a deep engagement with the content which is reflected in the layout of the publication. Shumaila Taher, did the proofreading with much enthusiasm though it was not an area she is familiar with. Jibin Robin of PSA followed up with the team regularly to ensure that this sees the day of light. We also thank Henrich Boell Foundation (HBF) for supporting this study and allowing the team to explore a new area in detail.



While bringing out this publication concentrating on the aquaculture in East Coast of India, we hope the policy makers, state actors and enthusiastic benefactors recognize what this grand plan floated as the second wave of Blue revolution entails. While the farm lands are being planned to be converted into fishfarms across the country, the farmers, fishers and the large number of migrant workforce employed in these initiatives need to come together and understand what is in store for them.

Aashima Subberwal  
General Secretary, PSA

Aswathy Senan  
Coordinator, TRC-PSA

28 November 2020



