CHILIKA

THE FISHERMEN, THE CATCH, AND THE CHALLENGES

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Acknowledgments

The indescribable stories of fishers in Chilika that I had captured during my fieldwork have slowly and organically grown into this book over time. I was glad to finish with the exigencies of a PhD thesis, and personal commitments, before I set out to do some justice to Chilika Lake and its community of traditional fishers. The families I met, their wealth of knowledge, warmth, and care, so generously extended during my field study, remain my biggest gifts. It would be a fitting act of acknowledgement, if this book can create a more responsible and sustainable fishery eco-system in Chilika. While the fishers may disagree with some of my arguments, I am sure, they would take deep pride in the larger narrative.

This work would not have been possible without the guidance, support and encouragement of my guide, Dr. Rabindra Kumar Mohanty, Professor of Sociology in Mizoram University. With the responsibilities that my job entailed, I could hardly reach him in person for guidance; but he never let this distance be a barrier in the progress. His detailed study of my drafts, minute observations, valuable advice, constructive criticism, extensive discussions and interesting suggestions, have enhanced my knowledge immensely and kept me motivated. A special thanks to Dr. Amiya Kumar Das, Department of Sociology from Tezpur University for the support in sharing his experience and learning which helped me plan my work more meticulously. Dr. Das has generously shared his time and knowledge and played a major role in making me understand the art of structuring a book. I am also thankful to Dr. Rajshree Bedamatta, Associate Professor, IIT, Guwahati, who has given
me her insights into capturing, formulating and articulating my analytical work and presenting concepts in a definitive manner.

Special thanks to officials of Chilika Development Authority (CDA), Department of Fishery and Animal Husbandry, NGOs, local administrative authorities of Chilika for their support during the research. Furthermore, I would also like to acknowledge with much appreciation the crucial role of administrative and technical staff members of the CDA, who were kind enough to advise and help in their respective roles. A special note of gratitude to Asish Sahu from Utkal University, Odisha, for making life fun while working. I would like to express my special thanks to him for being a great soul. He was always ready to help with a smile, especially during the data collection period.

I would also like to acknowledge the academic and technical support of the Department of Sociology, Utkal University. The library facilities and computer facilities of the University have been indispensable during my research. My special gratitude to Prof. Navaneeta Rath, Head, Department of Sociology, Prof. Anup Dash and Prof. D.N. Jena for their personal and academic guidance throughout the research. Special thanks to Dr. Gaurangi Maitra, (at gaurangimaitra.com), for reading, commenting, finalizing and editing the entire book. Any mistakes that remain however are mine alone.

I should also record my boundless gratitude to numerous friends and family in addition to the individuals already mentioned. With some I had the opportunity to share enthusiasm and curiosity, some provided inspiration, moral support and unconditional optimism, while others kept inquiring about the progress of the research and its practical purpose. I must thank all my colleagues, who have constantly encouraged me to finish this work and lent their support throughout with intellectual discussions. I must also thank UNFAO for bringing in wealth of knowledge in the fishery sector, which helped me in building my knowledge base.

Last, but not least, I would like to thank my wife and son, for their love, patience, and understanding. The book is dedicated to my parents for whom their son’s journey might have been a source of pride and much amusement.
This book began a decade ago, when I was selected for the ProVention Consortium Grants, an International Research Grants supported by the Asian Disaster Preparedness Centre (ADPC). I was excited by the grant design which engaged young professionals to form innovative links between research and action in disaster risk reduction. The project objectives certainly whet my appetite with opportunities and challenges that nurtured my core competence in disaster risk reduction in the development sector.

On a personal note, Chilika is an indelible part of our identity, lives, lore, legends, history, and aquatic ecosystems in Odisha. My earliest memories of Chilika, its natural beauty, and bounty came from the poems we recited as children. The lines from Chilika Kavya that described the fishermen coming back in the evening, rowing their boats to the rhythm of popular songs, left a lasting impression on my mind. As I write this prologue, I can vividly recall verses from this poem written by Kabibara Radhanath Ray (1848-1907), depicting water birds that are the special charm of the lake; resonating with the bells of cattle returning from the hills at dusk, and reflecting the moonlit hills and forests on the lake waters. These lyrical ballads brought alive the unique topography of Chilika long before I was able to visit in person and realize, “as a poet of nature Radhanath has done for Orissa, what Kalidas has done for India, putting the geography and the topography of his homeland to splendid poetic use” (Mayadhar Mansingh, 1962). When I first visited Chilika, I travelled by train and the
journey brought back memories of the poem “Rela Upare Chilika Darsana” (Sighting of Chilika from a Train) by Utkalmani Pandit Gopabandhu Das (1877-1928). This multifaceted personality was simultaneously enthralled by the beauty of Chilika and saddened by his inability to see Chilika; he thus eloquently wrote of Chilika being the only place where the three eternal feelings of happiness, solace, and love could be found.

It is a matter of pride that Chilika is the largest coastal lake in India and the second largest brackish water lake in the world (Inventory of Wetlands, 2018). Akin to other global water bodies, Chilika has borne witness to primary small-scale household enterprises surviving beside large-scale commercial sectors in fisheries and aquaculture. Chilika is therefore a significant part of the national open water resources (excluding the oceans) and contributes to food security, poverty alleviation and social well-being of millions of fishers in the Indian subcontinent. Yet, the impact of mechanization, the emerging threats to common property with open access, and environmental hazards, in the context of alternate livelihood options have received inadequate attention from social scientists. As a direct causatum of these deficiencies, the objectives of my investigation explored the complexities in the context of property rights; and examined alternative sustainable livelihood options for the fishers in the Chilika region.

At the very core of my research were personal interactions with fishers and their families, which remain my most vivid recollections of the Chilika region. Our preliminary conversations on where and when the fish would breed, migrate, and regenerate, became good indicators of the depth of their indigenous knowledge. They held a wealth of information about the past, present and future ecology of the community; with different age groups subscribing to different value systems and indigenous beliefs regarding fishery management. As the picture of their understanding of fishery resources emerged, I realized they could contribute substantially to the contemporary discussions around sustainable fishery management. Quite often, our discussions on the heightened vulnerability of small-scale traditional fishers would converge on climate induced natural
disasters and fishery livelihoods; and on the entry of big business houses with large-scale mechanization and deep pockets. On several occasions, they were not only highlighting their subjection in dealing with the current situations, but a few of the fishers became increasingly agitated when the discussion touched on property rights. Not unnaturally, I became eager to undertake an in-depth study, which began with detailed fieldwork during 2009-10, for my PhD thesis.

It became increasingly clear to me that it is vital to comprehend and objectively evaluate the fishers’ thoughts and perspectives, their extant resources, and the complexities involved. Subsequently this knowledge could become an integral part of their vulnerability reduction from the external environment and climatic variation. There were several intrinsic issues, which I could not highlight in my thesis, which in turn led me to writing this book. Yet, I am more than aware that no one book can do justice to the wealth of the fishers’ knowledge that exists, and their ever increasing livelihood vulnerabilities due to increased competition, unregulated property rights and climate change.

REFERENCES

Casting the Net in Global and Regional Waters

As children, we waited eagerly for the festivities that marked Kartik Purnima (the full moon in the months of November–December); especially, the happy ritual of making miniature boats and racing them across the nearest body of water. Our elders would be more sacrosanct, making boats (boita) out of banana stems and coconut sticks, filling them with earthen lamps, fabric, and betel leaves, as prescribed for the ritual of Boita Bandana. The boats would then be set afloat with lamps lit and prayers; these benedictions animated the waters and even quietened us as restless youngsters for a while, before we went back to racing our boats again. It was only very much later, I read Sanjeev Sanyal’s book, *The Ocean of Churn: How the Indian Ocean Shaped Human History* (2016). It made me realize that the annual Boita Bandana recreated benediction rituals meant for sailors leaving on long voyages that began in Chilika in the second century BC. The southern route to the Indian Ocean began at Chilika, where sailors from India were able to take advantage of the monsoon winds and ocean currents to trade with Indonesia, Java, Sumatra and Bali.

This was just one among the many stories, poems, and songs, not to mention its aquatic bounty, that made Chilika part of our common vocabulary in Odisha. Thus it was only natural that Chilika formed the core of my project on, “The indigenous fishery livelihood in Chilika Lake: and the development challenges in its resource management.” Given the broad-based context of Chilika,
an overview of the fisheries sector in the global and regional contexts, with the later devolving sequentially on India, Odisha, and Chilika, would be germane to casting our nets before we began fishing in earnest.

Globally millions of people depend on fisheries, aquaculture, and the related tertiary sectors as important means of earning and building livelihoods. Fishery-related livelihoods by their unregulated nature are multifaceted, self-motivated, and adaptive; given their dependence on open resources, including oceans, rivers, lakes and similar common property. Estimates of the global population employed directly and indirectly this sector vary from 140 to 260 million persons (FAO, Teh and Sumaila, 2013 respectively), with the latter including the small-scale fishers. Irrespective of these contradictory numbers, the fishery sector is undoubtedly a vital segment in creating livelihood opportunities for people in many parts of the world. Despite their significant contribution to the world fishery sector, small-scale fishing communities are often impoverished by rampant over fishing and critical factors like insecure access rights to fishery resources; poor or absent health and educational services; lack of social safety nets; vulnerability to natural disasters and climate change; and exclusion from wider development processes (FAO, 2012). Therefore, due diligence to fishery regulation and socio-economic implications are cardinal to sustainability in global fishery communities. And yet, this is only half the story.

The other half comes from the major shift within the fishery sector from a ‘production growth approach’ to ‘improved fisheries management’, which began in the mid-1900s. The focus during this period was to address fishing pressure, using various regulations, so that sustainable catch levels could be achieved in perpetuity. Escalation in fishing was initially a post Second World War phenomenon, partly fuelled by highly proficient fishing methods and technology, even when most of it came from coastal waters (Sumaila et al. 2013). Increased demand for fish, growing volume of business, and subsidized expansion of fishing capacity, spurred a manifold increase in the fisheries sector. The consensus that
humans could never overfish has apparently been proved wrong along with marginalization of resource groups and impending ecological impact. Consequently, the management and governance systems for fisheries aimed specifically at state-regulated fishery, evolved further in the twentieth century, empowered by mutual understanding and consensus. The document from the UN Session on Sustainable Development, entitled, “The Future We Want”, underlines the vital role of small-scale fisheries for sustainable development and highlights the need for inclusive empowerment.

In 2015, fish accounted for about 17 per cent of the global population’s intake of animal protein and 7 per cent of all protein consumed. In addition, it provided more than 3.2 billion people with almost 20 per cent of their average per capita intake of animal protein (State of World Fisheries and Aquaculture (SOWFA, 2018). However, average per capita fish intake may vary significantly within regions, based on the culture, practices, economy, and key geographic factors. For example, across countries, annual per capita fish consumption varies from less than 1 kg to more than 100 kg (SOWFA, 2018). Per capita apparent consumption for world fisheries and aquaculture, as calculated by FAO is shown in Figure 1.1.

![Figure 1.1: World Fisheries and Aquaculture: Per Capita Apparent Consumption (kg) Source: The State of World Fisheries and Aquaculture, 2018, FAO.](image-url)
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As per FAO (SOWFA, 2018) data, (Figure 1.2) the global fish production* peaked at about 171 million tonnes in 2016, with aquaculture representing 47 per cent and capture representing 53 per cent of the total. During this period, while the production through capture method remained comparatively static, aquaculture displayed a constant increase (almost 5.8 per cent annual growth between 2011 and 2016), and has been responsible for the continued growth in the supply of fish. The agency has further estimated that the production is expected to grow by 18 per cent to 201 million tonnes by 2030.

![Figure 1.2: Total World Fisheries and Aquaculture Production by Capture and Aquaculture (million tonnes).](image)

Figure 1.2: Total World Fisheries and Aquaculture Production by Capture and Aquaculture (million tonnes).

More specifically, aquaculture production has seen a massive growth, making it an important contributor to total global fish supply. With improved fishery management and substantial increase in aquaculture, the per capita fish supply in 2014 touched a new mark of 20 kg (SOWFA, 2016). The growth in global fish supply has thus overtaken global population growth; and employment in the fishery sector has outpaced employment in traditional agriculture. FAO estimates indicate stagnating or decreasing share of employment in capture fisheries compared to the aquaculture sector, where increased employment opportunities are available (SOWFA, 2016).
The fisheries as a sector are managed by several stakeholders including local, national, regional, and global organizations with varied interests that depend on the nature of their professional domain. Hence, different levels of control mechanisms, starting from international organizations to local fishery cooperatives have been raised and strengthened to manage fisheries and fishery-related livelihoods. Collectively, the governance of fisheries has achieved significant progress through national and international efforts with the objective of sustaining the sector. At the global level, the United Nations Convention on the Law of the Sea (UNCLOS 1994), is the fundamental regulator of international fisheries management. It provides a legal framework for the world’s fishery sector, stipulates rights and accountability of marine countries towards resources sustainability; while protecting and preserving the marine environment (UN, 2010). In addition, the UN Fish Stocks Agreement, 2002, mandated the international community to ensure long-term conservation and sustainable use of fishery stocks. During last few decades, international communities have taken up regulation of the world fishery resources to counter climate change, overfishing, and pollution; which are endangering recent gains in protecting the world’s large water bodies and ultimately impacting global fishing. For example, the International Conference on Nutrition held during 2014, while strongly highlighting the value of fish and seafood as an important source of proteins and essential micronutrients for women and young children, also endorsed greater management and regulation of fishing practices to safeguard nutritive value and maintain healthy intakes.

**Fisheries in India: A Historical Overview**

The wealth of freshwater and marine resources of India that ensure the fisheries sector is a significant contributor to the livelihood of millions and its economy. The British era Indian Fisheries Act of 1897 was an early pan Indian legislation which made fisheries a state subject, but minimal progress ensued. The erstwhile Madras Presidency (Mosse, 1998) and Bengal Presidency showed individual levels of progress in small-scale fisheries and fresh water
aquaculture, respectively. The linking of agrarian policies with the management of water and potential for fisheries of this past era, finds a continuum in the Indian Council for Agricultural Research (ICAR); with the latter still holding the policy making authority for the fisheries sector in independent India.

Post-1947, a series of intensive efforts that included organized research and development, were undertaken; with emphasis on the Indian fishery sector growth through modernization and intensive capital investment (Kurien, 1978). Subsequently, the Central Fisheries Research Institutes for Marine and Inland Fisheries, the Deep Sea Fishing Station, the Central Institute of Fisheries Technology, and the Directorate of Cold-Water Fisheries were established. An analysis of the Government of India’s Five Year Plans endorsed the urgency for fishery development and provided specific recommendations, which consequently resulted in the Indian Fishery sector posting growth induced by reforms.

The first three Five Year Plans focused mostly on the marine fisheries sector with specific emphasis on the mechanization of native crafts, introduction of automated fishing boats, modernization of fishing equipment and adoption of synthetic tools for augmented fishing. Concurrently, infrastructure for handling plants, cold storages, landing, processing, transportation, and marketing facilities were created. These concerted measures, combined with intensive scientific studies, documentation and strengthening of various other facets, set the marine fishery sector on a growth trajectory. Simultaneously, the global impact of improved communication and the increased demand for fish, championed the fishery market in India. During the Fourth Five Year Plan period (1969-74), India initiated deep-sea fishing through introduction of trawlers. At the same time the inland fishery further received a boost through positive and successful development of improved breeding techniques.

In the inland fishery sector, several factors like the establishment of Fish Farmers Development Agencies, and the creation of seed production centres, particularly enhanced both culture and freshwater fishery. The introduction of technology spawned supplementary
industrial units for boat, net, and diesel engine production for a burgeoning fishery sector. Supported by the increased volumes of export, the fisheries sector in India showed substantial growth, vindicating the developmental measures undertaken during 1947-77 by the Government of India. Subsequently, the fishery sector helped the country to build up a fishing industry, which played a key role in the overall growth of the country.

Going beyond increased production targets, the Fifth Five Year Plan (1974-78) endorsed the importance of fish products for meeting nutritional requirements at the household level. This in turn resulted in higher economic growth, improvement in the lives of fishermen, and increased foreign exchange income from exporting fish and fishery-related products. This plan stressed cohesive and balanced development of marine fishery to maximize return on investment. In 1976, the provision for infrastructural facilities was intensified with the announcement of an Exclusive Economic Zone for deep-sea fishing. During this period several other developmental strategies were undertaken including the expansion of fishing to the areas which were otherwise lying unused, augmentation of fishing and fishery products and improvement of traditional fisheries.

In the late 1980s and early 90s, two separate institutions, i.e. the Brackish Water Fishery Development Authority (BFDA) and Marine Products Export Development Authority (MPEDA) were established in India to further promote and effectively manage shrimp culture. In addition, the 1986 Environment Protection Act of India put in place conservational measures to prevent impoverishment of the fishery resources. With the increased focus on aquaculture, the Government of India was able to mobilize additional support from multinational organizations and several developed countries, including Britain. Therefore, by the mid-90s, shrimp mono culture was enhanced and simultaneously commercial culture of brackish water shrimp gained momentum in India. The emphasis on shrimp aquaculture and the resultant resources generated, made Martinez-Alier claim that the shrimp aquaculture resulted in a situation where the ‘Blue Revolution’ produced ‘Pink Gold’ (Martinez-Alier, 2002).