

**Considerations for Commons Governance in Chilika Lagoon:
New-Commonisation through Codification**

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

This thesis examines how communities can re-establish governing authority over shared environmental resources (commons) after periods of dispossession (decommonisation), a process described as ‘new-commonisation’. Focusing on Chilika Lagoon, India, it explores how small-scale fishery communities might regain autonomy following decades of externally-driven decommonisation, caused by privatization, encroachment, elite capture, and fragmented state interventions. The central argument is that legally-grounded recognition of commons is helpful for re-gaining rights and essential for protecting communities from renewed external threat.

Drawing on process-tracing analysis of three cases; Shimshal Valley in Pakistan, forest governance under India’s Forest Rights Act (2006), and Locally Managed Marine Areas (LMMAs) in Papua New Guinea; the study identifies how community mobilisation and legal codification interact to regain and stabilize self-managed commons. Though the findings are hypothesis generating rather than hypothesis testing, they suggest that enduring governance outcomes emerge when communities achieve de jure recognition of de facto rights, and that their success depends on contextually-dependent enabling conditions, such as equitable enforcement, multi-level support and the mechanism for legal rights. As no two commons are identical, there is no single path to codification; legal arrangements must respond to the specific socio-political and ecological context of each community. This research contributes to commons theory by framing codified legal backing as a critical, yet under-developed, dimension of enduring commons governance, in the face of persistent external pressures.

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This thesis would not have been possible without the many years of work that my supervising professor, Dr. Prateep Nayak, has dedicated to Chilika Lagoon. I first learned about this region in one of his undergraduate classes more than a decade ago, and he is still just as passionate about this work today.

I am deeply grateful to my friends and family for their patience through the many years it took to complete this thesis, and especially to those who listened to early and late-stage wrestling with ideas. Particular thanks are extended to Sara Argueta for her additional time and support. This encouragement from my community was the steady ground I needed.

Dedication

To the communities whose lives and livelihoods are inseparable from the ecosystems they steward.

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List of Abbreviations

CBNRM	Community-Based Natural Resource Management
CDA	Chilika Development Authority
CFCMS	Central Fishermen's Co-operative Marketing Society
CPR(s)	Common-Pool Resources
CMT	Customary Marine Tenure
FISHFED	Odisha State Fishermen's Co-operative Federation
ICZMP	Integrated Coastal Zone Management Plan
IUCN	International Union for Conservation of Nature
LMMA(s)	Locally Managed Marine Area(s)
MoEFCC	Ministry of Environment, Forest and Climate Change (India)
OSDMA	Odisha State Disaster Management Authority
PNG	Papua New Guinea
SES(s)	Social-Ecological System(s)
UNDP	United Nations Development Programme
V2V	Vulnerability to Viability Global Partnership

“Justice cannot be indifferent to the lives that people actually live.”

– Amartya Sen, *The Idea of Justice*

Chapter 1: Introduction

1.1 Governance Disruptions and New-Commonisation in Chilika Lagoon

Chilika Lagoon, located on India's eastern coast in Odisha (see Figure 1), holds international environmental importance as one of the largest brackish water ecosystems in Asia (Kumar, et al., 2010). It is characterized by extensive mangrove forests, biodiverse wetlands, and rare and endangered species, earning its designation as a Ramsar Wetland of International Importance and a critical habitat for threatened species (Kumar et al., 2010; Ramsar Sites Information Service, 1981). Chilika has also been home to long-standing small-scale fishery communities who have managed the common-pool resources (CPRs) of this complex social-ecological system (SES) for generations, with oral histories tracing their presence to at least the 1500s (Nayak, 2014). Despite centuries of stewardship, the lagoon's environmental and social stability have been threatened by increasingly fragmented, top-down governance interventions that have introduced both economic pressures and ecological degradation. This fragmentation is reflected in overlapping agency mandates, inconsistent enforcement, and major decisions made without fisher input that significantly impact their livelihoods (Nayak & Berkes, 2010; Dujovny, 2009; Pradhan & Flaherty, 2008; Nayak, 2017b).

From regional kingdoms in the 1700s that imposed heavy taxes on fishers, to British colonial governance in the 1900s, and more recent government-mandated neoliberal policies that encouraged ecologically harmful shrimp aquaculture in the 1990s, Chilika's fishing communities have repeatedly experienced external interventions that disrupted their commons governance systems and contributed to SES degradation (Nayak, 2014). More recent decisions have continued this trend, such as dredging a new sea mouth in the lagoon without meaningful community consultation, reinforcing a long-standing pattern of external interference. This has prompted discussions in recent years, including at the University of Waterloo's annual V2V Global Partnership conference held in Chilika, on how to restore community agency and safeguard commons governance (Shukla et al., 2022).

Relevant literature on Chilika, such as Nayak and Berkes (2011) and Nayak and Berkes (2022) have identified that to "keep the commons as commons", there will need to be sufficient strategies built in place. These will need to respond to climate-based threats, protect communities and livelihoods, address anthropogenic injustice, and support both ecological integrity and community wellbeing. To re-establish their commons system, and to sustain and protect it, the community might also go through *new-commonisation*, a process in which "resources are converted into joint-use or new transformative arrangements with refined rules and management systems complementing resource use and protection in synergy with traditional practices and values" (Nayak & Berkes, 2022, p. 11).

This thesis pays particular attention to the *protection* aspect of this definition, and asks: if Chilika's small-scale fishery communities were to undergo the process of new-commonisation, developing new or re-established rules and practices to govern the commons, how might this system be protected and sustained, especially in light of Chilika's long history of power imbalances between the fishing communities and external actors? In reference to maintaining commons excludability, Nayak and Berkes (2022) note that "unequal power relations make negotiations difficult, if not impossible, as in the case of Chilika Lagoon privatised for aquaculture production" (p.12); therefore, this study also acknowledges the large barriers in the way of new-commonisation and highlights ways in which the community has advocated so far for their autonomy.

Should it be possible that the community undergoes the difficult process of new-commonisation, this thesis therefore also explores what might help maintain this newly established commons system. As Nayak and Berkes (2022, p. 6) further argue, "governance arrangements help maintain commons as common property and ward off the challenges posed by decommissioning". Thus, this thesis also

reviews key governance frameworks; adaptive governance, polycentric governance, and community-based natural resource management (CBNRM); and reflects on their potential strengths and limitations in maintaining community autonomy in Chilika Lagoon's social-ecological system (SES). Ultimately, this thesis focuses on what has often been the missing piece in these governance frameworks: enforceability, through legal commons arrangements that formalize community-devised rules of subtractability and excludability, with the intention of addressing external pressures and threats.

While the term new-commonisation was first introduced by Khan (2012) in reference to legal-backing, the conceptual foundations for understanding commons processes (such as commonisation, re-commonisation, and decommonisation) were laid by Nayak and Berkes (2011), who critically examined how commons emerge, erode, and might be re-established after, or to prevent, collapse. Their subsequent work further explores these dynamics and highlights challenges related to unequal power, stating, "political ecology captures these discursive processes by promoting the idea that commons are intensely contested domains and highly political spaces" (Nayak & Berkes, 2022, p. 9). Building on these foundational insights, an area that warrants further exploration is the practical application of newly formed, legally-backed commons arrangements following decommonisation.

This thesis employs process tracing methodology to investigate the causal pathways by which communities have transitioned from decommonisation to legal commons arrangements, as demonstrated across three case studies. These include communities of yak herders in Northern Pakistan, forest dwellers in India, and fishers in Papua New Guinea, each navigating complex SES in distinct but relevant ways. According to Gerring (2007), process tracing is a within-case method that seeks to identify the causal processes (the chain of events, mechanisms, and intervening variables) that link a potential cause (X) to an observed outcome (Y). Rather than relying only on covariation across multiple cases, process tracing digs deeply into a single case to uncover the sequence of steps and causal mechanisms that generate the outcome. The analysis explores the processes and outcomes associated with achieving new-commonisation in each case study. Consistent with theory from Gerring's (2007) case study methodology, this thesis is hypothesis generating rather than hypothesis testing. It draws out insights to better understand the process of new-commonisation should Chilika's fishers consider advocating for legal pathways to re-establish their commons, post-decommonisation, particularly given their unique historical, ecological, and political challenges. These challenges, as well as an outline of commons theory, are highlighted in the next chapter through a Literature Review of secondary sources.

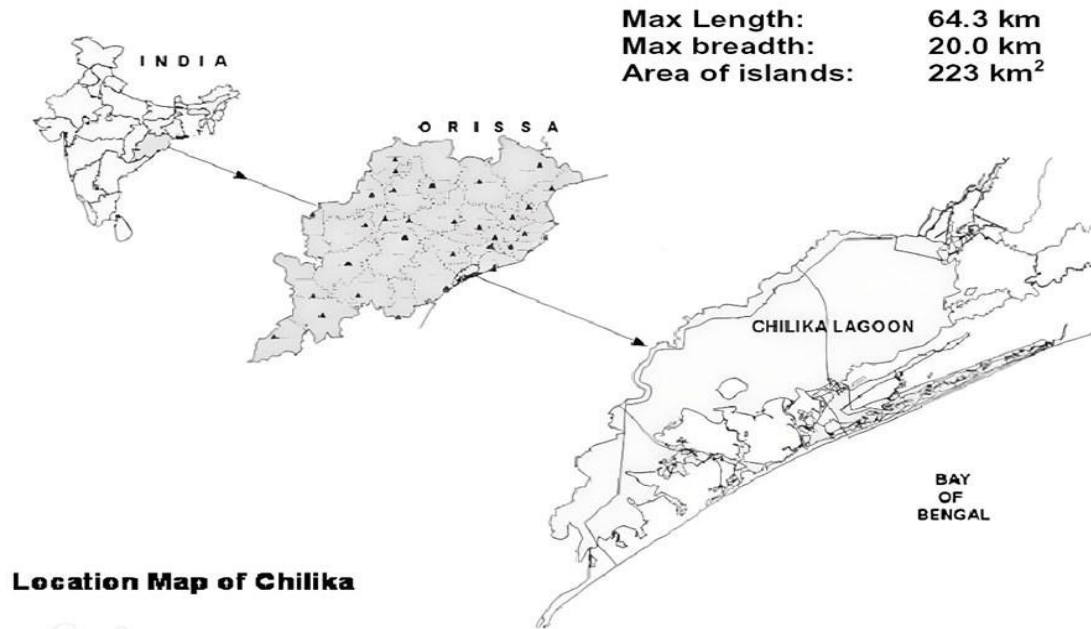


Figure 1: Map and Location of Chilika Lagoon (Robson & Nayak, 2010)

1.2 Research Questions

This thesis explores the following research questions:

1. How have historically imposed external governance and development agendas contributed to the degradation and decommissioning of Chilika's social-ecological system (SES)?
2. What are the strengths and limitations of prominent governance frameworks: adaptive, polycentric, community-based natural resource management (CBNRM); when applied to the socio-political context of Chilika Lagoon?
3. What factors shaped the process of new-commonisation through legal commons governance in the cases of Pakistan's yak herders, India's forest dwellers, and Papua New Guinea's fishers?
4. What experiences from these case studies can inform new-commonisation in Chilika Lagoon?

1.3 Thesis Roadmap

This introduction has set the context for the need for a governance shift in Chilika Lagoon, should its small-scale fishery communities seek to re-establish the commons following a period of decommissioning. The chapters that follow deepen this inquiry by first outlining relevant commons theory and the ecological significance of the lagoon, tracing historical governance disruptions that have contributed to decommissioning. The thesis then examines theoretical governance frameworks that may support the maintenance of commons post new-commonisation, with a particular focus on their relevance to Chilika's socio-political context. This is followed by a methodology chapter outlining literature review, case study, and process tracing methodology which will be employed. The final chapters provide an in-depth analysis of other communities that have implemented legal commons governance arrangements to re-establish commons, to assess whether and how this approach to new-commonisation might be applied in Chilika.

Chapter 2: From Decommonisation to New-Commonisation of Small-Scale Fisheries in Chilika Lagoon

2.1 Introduction

Chilika Lagoon has faced a range of social-ecological pressures driven by both climate change and anthropogenic activities, including more frequent natural disasters, the introduction of intensive shrimp aquaculture, increased tourism, and the opening of a new artificial sea mouth, among others (Nayak & Berkes, 2010; Sahu, Pati, & Panigrahy, 2014; Nayak, 2014; Dujovny, 2009). These disruptions have altered underwater topography, shifted salinity levels, disturbed water flow and fish stocks, and threatened the unique biodiversity that exists in and surrounding these brackish waters (Sahu et al., 2014). They also threaten small-scale fishery communities who have managed these resources for hundreds of years. This thesis aims to contribute to the growing body of work advocating restoration of community autonomy over common-pool resources (CPRs) in the Lagoon.

This chapter first outlines commons theory as it applies to Chilika Lagoon with communities managing CPRs as well as concepts of commonisation, decommonisation, re-commonisation and new-commonisation to lay the foundation for future discussions on Chilika's governance context and future possibilities. It then provides an historical account of Chilika's social-ecological system (SES) and the commons, including early systems of community management to external pressures as a result of colonial, post-independence, and current policy shifts, to contextualize how fragmented external governance systems have emerged and intensified over time, leading to a state of decommonisation of the fishery commons. Holling's (1973) Resilience Theory will be employed to help frame the limits of Chilika's commons SES in resisting these external, decommonising, pressures presented in line with Côté and Nightingale's (2012) call for resilience analysis to consider context, power, and knowledge systems. The effectiveness of three prominent commons theories that work in conjunction with external actors; including adaptive governance, polycentric governance, and community-based natural resource management (CBNRM); will be explored for their strengths and limitations in Chilika's socio-political reality, with particular attention given to the need for deeper protection measures of the commons. Finally, this leads to the introduction of the idea of codification of commons, proposing any process of new-commonisation in Chilika Lagoon to include legalizing commons to better safeguard community autonomy from current and future threats.

2.2 Commons Governance Theory

Governing the *commons* means that there is a shared management of resources by a defined community, where rules and institutions are self-developed by members to manage the resource sustainably (Ostrom, 1990). Butler (1982) traces the documented origins of the concept of commons to Roman law, stating:

“The Roman law of public or common rights focused primarily on the sea and the seashore because the Roman civilization was almost completely dependent on navigation for economic survival... The primary legal authority on public common rights and the status of the sea and the seashore was Justinian's work, the Institutes. In a now famous passage, Justinian declared: ‘Things common to mankind by the law of nature, are the air, running water, the sea, and consequently the shores of the sea; no man therefore is prohibited from approaching any part of the seashore, whilst he abstains from damaging farms, monuments, edifices, etc., which are not in common as the sea is’” (Butler, 1982, p. 849-850).

The community-based or collective governance of fisheries, forests or water systems, known as *common-pool resources* (CPRs), has long been a complex issue of discussion for the subject of social-ecological systems (SES), since ecologist Garrett Hardin (1968) infamously coined the phrase the *tragedy of the commons* (Ostrom, 1990). According to Hardin, this phenomenon occurs when people who are using the same shared resources each act in their individual self-interest, which depletes the resources unsustainably, ultimately leading to the degradation or collapse of the resource system itself. Hardin assumed internal users would inevitably exploit CPRs and argued that avoiding depletion required external control or privatization of CPRs.

However, scholars such as Elinor Ostrom, have challenged this view, seeing it as too deterministic, arguing that communities can successfully manage commons through self-organization and collective action (Ostrom, 1990). This dynamic is well explained by McClanahan et al. (2006, p. 1410) in the context of fisheries:

“The effectiveness of management regimes in conserving reef resources depends not only on whether the dynamics of the conservation strategy can complement the local ecology, but also on whether resource users adhere to the associated rules and regulations of the regimes. Despite lowering benefits for the entire user group, an individual’s rational self-interest can be to overutilize collectively owned resources, because the short-term benefit of such action is almost entirely acquired by the individual, whereas the burden is shared with the entire group of users. However, this opportunistic behavior is not inevitable in common-property resource scenarios, and decisions to act in collective rather than individual interest can be influenced by social and economic factors” (McClanahan et al., 2006, p. 1410).

With the widespread influence of Hardin’s tragedy of the commons theory, Ostrom’s work was considered groundbreaking, and demonstrated that given certain institutional conditions, commons governance is not doomed to fail (Ostrom, 1990). Ostrom (1990) asserts that these conditions include eight commons governance design principles:

1. Clearly defined boundaries (of the resource and user community; externally closed);
2. Appropriation rules (time, place, technology, quantity);
3. Collective choice arrangements (users have the opportunity to modify rules);
4. Monitoring (plans made for active and regular audits of resource use);
5. Graduated sanctions (penalties proportional to violations);
6. Conflict resolution mechanisms (including access to space that is quick, low-cost and local);
7. Minimal recognition of rights to organize (rule-making not challenged externally); and
8. Nested enterprises (organizing governance is linked to local and broader systems).

This vision presented ways to manage CPRs without defaulting to external intervention or privatization, legitimizing locally developed governance as effective and sustainable. Nayak and Berkes (2011) assert that Chilika’s small-scale fisheries have long practiced such de facto governance.

Ostrom received the 2009 Nobel Prize in Economic Sciences “for her analysis of economic governance, especially the commons”, recognizing her decades of research showing that communities can successfully manage shared resources without relying solely on markets or state control (Nobel, 2009, n.p.). Since Ostrom’s (1990) theory, extensive research confirms that communities can sustainably govern CPRs through locally devised rules, design principles and local institutional arrangements across many settings (Schlager & Ostrom, 1992; Agrawal, 2001; Agrawal & Ostrom, 2001; Agrawal & Chhatre, 2006; Berkes, 2006; Cox, Arnold, & Villamayor-Tomás, 2010;

Nayak & Berkes, 2011; Cox, 2014; Cox et al., 2016). For example, Schlager and Ostrom (1992) assert that de facto rule creation and management can be beneficial to the political economy, highlighting that communities can create effective, low-cost, and context-specific rules, based on their lived experience. Schlager and Ostrom (1992, p. 4). claim that this often outperforms top-down alternatives, as the system is sustained through internal regulation and shared incentives:

“*First*...many of these de facto arrangements substantially reduce the incentives to overinvest... and dissipate rent that fishers face in an open access fishery... *Second*, self-organized collective-choice arrangements can produce operational rules closely matched to the physical and economic conditions of a particular site... Fishers have devised maps of their fishing territories that could not be generated by central authorities... [which] reflect local knowledge of where fish spawn, their habits in particular waters, and where technologies can be used without the efforts of one boat adversely affecting the success of another boat. The knowledge needed... is achieved by a community of fishers who learn from their accumulated daily experience on a particular fishing ground. The cost of assigning a government official to devise a similar arrangement would be prohibitive... *Third*, since the professional literature is so pessimistic about fishers adopting effective self-regulation, this literature is used by policy analysts to recommend sweeping reforms... [which] may "sweep away" successful human efforts to solve extremely difficult problems... *Fourth*, since the regulation of these de facto proprietor regimes is undertaken by local fishers who benefit from these regimes, the costs of regulation are largely borne by these same beneficiaries. Institutional arrangements that internalize the costs of monitoring and exclusion among beneficiaries reduce inefficiencies”.

However, to assess their applicability across a wide range of contexts, Cox, Arnold and Villamayor Tomás (2010) conducted a meta-analysis of 91 empirical studies that apply Ostrom’s principles, to consider theoretical issues that came up in practice. They found that while the principles offer a strong foundation and are generally supported, their practical application is not necessarily clear cut, and their success significantly depends on *external* contextual factors, such as socioeconomic and market forces (Cox et al., 2010). Additionally, Agrawal and Gupta (2005) warn that if designed poorly at the onset, decentralized common-pool resources (CPRs) may not ensure fairness and could reinforce existing social and economic inequalities. This could include elite capture by *external* forces, such as in Terai, Nepal, where they found that CPRs were unevenly distributed to wealthier, upper-caste, land-owning households with supplementary incomes (Agrawal & Gupta, 2005).

This is reflected in the work of Nayak and Berkes (2011; 2022) who, building on Ostrom’s principles, introduced the processes of commonisation, decommissionation, and re-commonisation describing how CPRs might evolve in response to these external forces and pressures.

Commonisation refers to the process through which resources come under community-led governance supported by locally developed rules and institutions (Nayak & Berkes, 2011).

Decommissionation occurs when these resources are taken over by external actors, such as through privatization, elite capture, government intervention, or market forces; resulting in the erosion of community control as well as usually the degradation of the resource system (Nayak & Berkes, 2011). Without referring to the term, Schlager and Ostrom (1992, p. 4) provide a good example of the decommissionation of a fishery below, as a result of unprotected informal rights falling to elite capture:

“The Brazilian government, in an attempt to "modernize" fisheries, made nylon nets available to anyone who qualified for a bank loan arranged by the government through

the Banco do Brasil. The Valenca fishers did not qualify for bank loans and could not purchase nets. A number of wealthy individuals around Valenca did qualify, and purchased nets. These individuals hired men to fish with the nets, men who had no prior fishing experience. The men invaded the Valenca estuary. Conflict erupted between the established fishers and the new entrants. Fishers were shot and equipment destroyed. The de facto property rights crumbled as fishers fought for whatever fishing spots they could gain. The fishery was overharvested and eventually was abandoned”.

As discussed in future sections, Resilience Theory refers to, “the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks” (Walker et al., 2004, p. 2). When systems, including social-ecological systems and commons governance, are pushed past these resilience thresholds, they lose the ability to recover from disturbances, which cause their collapse or transformation into a new, and often undesirable, state (Walker et al., 2004). Chilika has undergone a long process of decommissioning, driven by repeated external interventions in its CPRs without community consent; this includes the introduction of intensive shrimp aquaculture, the opening of an artificial sea mouth, and other external development initiatives (Nayak, 2014; Nayak & Berkes, 2011; Dujovny, 2009).

Nayak and Berkes (2011) emphasize that such interventions have not only disrupted the ecological balance of the lagoon, but have steadily undermined and weakened historical governance mechanisms, displacing community autonomy over the management of their resources. This clear decommissioning is evident after customary fishers fought (and won) against shrimp aquaculture:

“Finally in 2001, the State Government of Odisha banned prawn aquaculture in Chilika Lagoon, and cancelled the 1991 lease policy. However, such far-reaching decisions failed to make any significant impact, as illegal prawn aquaculture continues unabatedly as of 2010... more than 60% [to 80%] of the Chilika Lagoon fishing area remains under illegal prawn aquaculture [indirectly and directly]... areas allocated for aquaculture under the 1991 lease policy continue to be under the control of the non-fishers. Fishing areas that were used by fishing villages as caste-based commons have, in effect, become ‘privatised’. Due to growing confusion and conflict over fishing areas, a related development occurred. Our field notes indicate that caste-based fishers were afraid of their physical safety (owing to threats of violence) and had stopped going to their customary fishing areas, that were either located close to non-fisher villages or at distances requiring travel through non-fisher villages. In addition, many caste-based fishers could not travel to their customary fishing areas, as navigation became a real problem due to the intense web of prawn farms. Eventually, these abandoned areas became de facto open-access, open to encroachment and eventual privatisation. One of our study villages, Badakul, has abandoned more than half of its 2,000 ha of customary fishing area due to conflicts with aquaculture owners” (Nayak & Berkes, 2011, p. 138).

Nayak and Berkes (2022) define *re-commonisation* as having avoided decommissioning by engaging in a process that creates new uses, rules, rights and obligations, re-establishing the commons. Jeong (2018, p. 169) states, “I think changing the understanding of commons centered on resources and goods to understand it as centering on commoning as a social practice is more useful not only from a practical perspective, but also from a theoretical one”. He discusses the concept of re-commonisation as a process in which a commons is ecologically reconstructed, resource-users’ participation is expanded, and these self-governing norms are realized externally (Jeong, 2018).

More recently, Nayak and Berkes (2022) emphasized that commons are not static entities but dynamic and evolving systems. Commonisation, decommonisation, and re-commonisation are overlapping and ongoing *processes* that may occur simultaneously. Communities must continuously adapt and negotiate their governance structures in response to socio-political, economic and ecological pressures; responses which may strengthen or undermine the commons, depending on the direction of change (Nayak & Berkes, 2021; Nayak & Berkes, 2022).

Although this study focuses on Ostrom's conception of commons governance in natural resource systems over CPRs, it is important to note that the term 'commons' has evolved to encompass wider interpretations across disciplines. Scholars have explored cultural and informational commons, such as open-source software like Linux; shared knowledge networks such as Wikipedia, medieval guilds, JamBand, and the Associated Press; and patent pools such as the Manufacturers Aircraft Association (Madison, Frischmann, & Strandburg, 2010). Others have studied more spatial commons including shared navigable airspace and landing strips; neighbourhood ambiance (Fennell, 2011); as well as broadcast spectrum and some intellectual property; environmental energy sources such as solar, wind, ocean wave and geothermal; the upper and lower atmosphere and even the use of outer space (Ryan, 2023). Ryan (2023) argues largely for the commons to include navigable and other publicly accessed waterways; fixed wildlife and plant biodiversity; and agreements to withhold from total extraction (she terms it 'takingsification') of land, forest, and mineral resources by politicians. In political philosophy, Hardt and Negri's book *Assembly* (2017) employs commons as a metaphor for horizontal organization, collective power, and activism within capitalist political systems.

Despite these diverse applications, a recurring concern across the literature is vulnerability of commons systems to external pressures. As Brando et al. (2019) observe, commons are often presented as alternatives to market or state control, yet they remain limited in their capacity to withstand intervention from more powerful actors, such as Ryan's (2023) takingsification examples. Though internal institutional design and self-organization is well theorized, there is a critical gap in commons discourse regarding mechanisms for protection from external threat.

Jeong (2018) emphasizes that re-commonisation is the re-establishment of rules during the process to *prevent* decommonisation. If Chilika's communities were struggling to keep their small-scale fishery commons stable only because of human-environment dynamics, a process of re-commonisation might suffice. However, because Chilika's communities successfully managed the CPR resources for centuries, and only recently faced decommonisation driven by external actors (see Section 2.3), a different response is needed; a process of re-commonisation cannot maintain the decision-making security of the community and thus the focus is on *new-commonisation*, defined as:

“[A] process through which resources are converted into joint-use or new transformative arrangements with refined rules and management systems complementing resource use and protection in synergy with traditional practices and values” (Nayak & Berkes, 2022, p. 11).

According to this definition, new-commonisation is the process in which commons are transformed into a management system that newly protects the resource and decision-making processes, while elevating historical and traditional methods of governance developed by long-standing communities, thus re-establishing commons. Khan and Haque (2021) suggest that new-commonisation may have two types of states:

“Following Nayak and Berkes (2011) we prefer to use the term new-commonisation because this is a new arrangement in which commons get converted to conservancies... for resource management... In this process there are two main variants: (1) NGO-led

new-commonisation; (2) community-led new-commonisation. If new-commonisation happens through external forces and interventions then it could be termed as NGO-led new-commonisation and if the process resulted through inner dynamism to bring the change in the system through the formalisation of the traditional institutions, it would be termed as a community-led new-commonisation” (p. 297).

This means that should small-scale fishers in Chilika Lagoon, either on their own or with the help of NGOs or other parties, create a new governance arrangement to re-establish and rebuild the fishery commons after decommonisation, they would have gone through a process of new-commonisation.

Over time scholars have proposed various governance frameworks for commons systems such as polycentric governance, adaptive governance and community-based natural resource management (CBNRM). In Elinor Ostrom’s winning Nobel lecture, *Beyond Markets and States: Polycentric Governance of Complex Economic Systems*, she describes how polycentric governance, multiple overlapping centres of decision-making operating at different scales, can foster collaboration and effective resource management, challenging the traditional dichotomy of market versus state control (Nobel Prize, 2009). Schoon et al. (2015) further emphasized that polycentric governance is critical to fostering resilience in social-ecological systems (SES), noting that governance systems with multiple, overlapping centers of authority are better equipped to respond to complexity, uncertainty, and change. Akamani and Wilson (2011) propose adaptive governance for its flexibility, institutional learning, and collaboration under uncertainty. Finally, community-based natural resource management (CBNRM) is widely applied in fisheries management, advocating co-management supported by NGOs and scientists (Johannes, 2002).

Future sections overview these governance frameworks and outline how they each succeed or fall short in addressing CPR management within complex socio-political settings. This sets the stage for discussions about the potential of legalizing commons as part of any process of new-commonisation in Chilika Lagoon.

2.3 Chilika Lagoon’s System Transformation and Resilience Breakdown

2.3a Historical Transformations of the Fishery Commons

Understanding the dynamics between external actors, local governance, and the SES is essential for exploring potential ways forward, which seek to restore community decision-making autonomy, while addressing external threats (Nayak, 2014). This context is included to ground governance analysis and discussion in the realities of place, and to better inform later analysis. Information is drawn from key secondary literature to provide an overview of Chilika’s complex SES, including Nayak and Berkes (2010, 2011) on commons governance, Dujovny (2009) on the historical politics of participatory decision-making, Sahu, Pati, and Panigrahy (2014) on ecological and tourism impacts, and Kumar et al. (2010) on biodiversity and water quality. For a more fulsome historical analysis, see Nayak’s (2014) detailed study of Chilika’s ecological transformations and external pressures; much more historical information is covered there.

Social-Ecological System of Chilika Lagoon

Chilika is a brackish lake, receiving freshwater from inland and saltwater from the sea, creating and maintaining a unique habitat that supports over 225 species of fish, 710 phytoplankton plants, algae, aquatic plants, and 350 non-aquatic species (Kumar et al., 2010). Chilika is also home to a wide variety of rare, threatened, vulnerable, and endangered plant and animal species, many of which are listed on the Red List Index of the International Union for Conservation of Nature (IUCN). Notable examples include the Irrawaddy Dolphin (*Orcaella brevirostris*) known for its rounded head and

ability to live in brackish water, and the Barkudia Limbless Skink (*Barkudia insularis*), a rare legless lizard species (Kumar et al., 2010). This ecological fragility and complexity led to its designation as a Wildlife Sanctuary and a Ramsar Wetland of International Importance (MoEFCC, 2014; Ramsar Sites Information Service, 1981).

The lagoon faces increasing ecological pressures due to coastal vulnerability and anthropogenic factors, which have led to significant alterations in water salinity, sediment deposition, and other ecological shifts (Kumar et al., 2010; Nayak, 2011; Nayak, 2014; Sahu et al., 2014; World Bank, 2020; Samal & Dash, 2024). These changes have disrupted fish stocks, and damaged the habitats of endangered species, such as Olive Ridley sea turtles (e.g., Gahirmatha and Rushikulya nesting sites) and migratory waterfowl, for which Chilika serves as the largest wintering ground in India (Kumar et al., 2010). Overall, Chilika's small-scale fishery communities live among a rich variety of natural flora and fauna unique to the lagoon's brackish waters, many of which are protected or endangered and require careful management.

Odisha is highly vulnerable to natural disasters, which compound ecological challenges, including cyclones, storm surges, and tsunamis (Kumar et al., 2010). Examples include severe flooding in 1999 from a super cyclone that caused large-scale loss of life and property; varying sea levels causing regular coastal flooding; and loss of land to the sea. More recent natural disasters, such as Cyclone Fani in May 2019, which caused 64 deaths and affected 18,388 villages across numerous districts in Odisha, demonstrate the stark ecological threats facing the local environment and communities (OSDMA, 2019; Acharyya et al., 2020). According to World Bank assessments, Cyclone Fani catalyzed the Integrated Coastal Zone Management Plan (ICZMP) which introduced ecological measures in Odisha, including mangrove restoration, pollution management, erosion control, and cyclone-shelter construction, to reduce coastal vulnerability (World Bank, 2020). Follow-up reports credit these interventions with limiting damage during storms such as Amphan and Yaas and note improved ecological resilience, although participation by local governance structures was more limited than intended (World Bank, 2020; 2021).

Anthropogenic pressures are human-induced changes that led to ecological degradation or disturbance (Sahu et al., 2014). Regarding Chilika Lagoon, this includes tourism, intensive shrimp aquaculture, and modifications to the landscape. Fragmented governance and policy failures have exacerbated these pressures, by prioritizing economic interests above sustainable management. The following sections establish the foundation for the formal fishing economy of Chilika as organized by administrative and policy arrangements.

Small-Scale Fishery Commons Management & External Policy Making

Communities have occupied Chilika for a very long time; although it is uncertain when this began, records of fishing activity date as far back as the 1500s (Ray, 1960). Local legends and ancient Hindu religious texts suggest occupation may have started thousands of years ago (Das, 1977; Paṭṭanāyaka, 1979; Nayak, 2014). Radiocarbon dating demonstrates the existence of society and cultural maritime activities, including boat building, to have occurred around 2300 BCE (Patra & Patra, 1993). It is evident that fishery communities have operated in this region for centuries.

Nayak and Berkes (2011) considered caste rules and norms to be the initial basis for fishing rights in Chilika, including who could fish, where, when, what species, and in what quantity. These rules had varying degrees of state recognition before and after Indian independence in 1947. Oral histories indicate that rules were regulated by the King during Mughal and Maratha reigns; fishers could use the resources and fishing grounds (sairats) by gaining permission or a license through tributes or gifts (bheti or slami) to the king and landlords (zaminders) who collected taxes (Nayak & Berkes, 2011).

The British East India Company gained control of Odisha after the second Anglo-Maratha War, and the territory came under direct British Crown rule, along with the rest of the country, in 1858 (Chisholm, 1911). Revenue from Chilika was controlled by Britain while ownership of the lagoon was held by the King of Parikuda until the early 1900s (Nayak 2014). Some fishery villages received their first recorded informal rights to self-govern in 1880, when British surveyor J. H. Taylor recorded that fishing rights belonged to certain castes. The British settlement of 1897-98 confirmed these rights and their exclusive use by these castes. Landlords then leased the fisheries and collected rent, creating the lease system that continues today (Nayak, 2014). Finally, the British established a cooperative store in Balugaon in 1926 to sell fishing equipment, and during World War II created 25 Primary Fishermen's Cooperative Societies to further organize fishing activities (Nayak, 2014).

Shortly after gaining independence from Britain (1947), the Indian government created legislation claiming ownership of all land and water bodies not privately titled, including Chilika Lagoon (Nayak, 2014). The majority of small-scale fishery communities were excluded from this, as they had been operating under customary tenure systems without formal documentation for many generations (Nayak, 2014). In 1959, the Central Fishermen's Cooperative Marketing Society (CFCMS) was created, later becoming the Odisha state-run agency FISHFED and subsequent policies undermined the sustainability of Chilika's fishing communities. Changes included reducing lease terms from three years to one, a 10% annual increase in lease fees in the 1960s, and a doubling of fees in 1978. These changes prevented long-term planning and required fishery communities to complete new paperwork each year to obtain leases (Nayak, 2014).

Despite the constitutional abolishment of the caste system in 1950 (Government of India, 1950), seven Hindu fisher castes and five subcastes continue to define fishing vocations in Chilika to this day. More than 400,000 fishers and their families live in over 150 villages around the lagoon (Nayak & Armitage, 2018). In the surrounding watershed and forested areas live about 800,000 non-fishing higher castes (Brahmins, Karans, Khandayat, and Khetriyas) engaged in farming, forestry, and other livelihoods from which Chilika's fishers were historically excluded (Nayak & Armitage, 2018). Over time, surrounding forests and farmland degraded, leaving many non-fishers unable to rely on farming or forestry. Through liberalization policies and weak enforcement of court rulings, government actions encouraged intensive shrimp aquaculture in and around Chilika, enabling higher-caste outsiders to displace lower-caste traditional fishers (Villamayor-Tomás & García-López, 2021). More about shrimp aquaculture can be read about later in this section under *Intensive Shrimp Aquaculture*.

While Chilika Lagoon has been granted ecological designations over time, none adequately secure the rights of historical fishing communities. For example, the lagoon was designated a Ramsar Wetland of International Importance in 1981 for its biodiversity and ecological role but lost this status from 1993–2002 following controversial restoration interventions, including the opening of a new sea mouth (Ramsar Convention Secretariat, 1981). Ramsar promotes the 'wise use' of wetlands and the inclusion of community knowledge but has weak mechanisms to ensure participation, and it does not promote customary tenure for fisheries (Ramsar Secretariat, 2010). Chilika is also part of the Eastern Ghats, a designated global biodiversity hotspot (Myers et al., 2000). Similarly, this international recognition underscores its ecological importance but carries no mechanism for protecting customary access or livelihood rights of fishing communities. Finally, Nalabana Island, located inside the lagoon, was declared a Wildlife Sanctuary under India's Wildlife (Protection) Act of 1972. Nayak and Berkes (2011, p. 137) report that this designation abruptly restricted communities from traditional fishing grounds without their consent or consideration:

“...the State Government of Odisha changed its approach to the management of Chilika Lagoon in the 1970s, by declaring Nalabana Island (1,553 ha) as a wildlife sanctuary in 1974 (the Nalabana Bird Sanctuary). In the British survey records of 1897 and the lease records of CFCMS / FISHFED this particular area was mentioned as the exclusive customary fishing ground of four Tiara caste fisher villages in Banapur region. In one major stroke, their rights and entitlements were withdrawn, and the area where they had livelihood rights for generations was declared ‘restricted’ without even an attempt to consult these villages. This marked the beginning of a process of decommissioning of specific areas within the Chilika Lagoon”.

These designations reflect Chilika’s environmental significance, yet can create fragmented governance, fail to protect fishing communities, and reflect a pattern of systemic exclusion of fishers from decision-making over CPRs they have long managed (Nayak, 2014; Nayak & Berkes, 2011).

Intensive Shrimp Aquaculture

One of the most stark examples of policy failure in Chilika Lagoon was the imposition of shrimp aquaculture, driven by India’s goal to embrace globalized, neoliberal economic reforms encouraging larger-scale commercial practices. In 1991, the Indian Government created policies establishing ‘symbiotic linkages’ to that shift, without considering impacts on social-ecological systems (Nayak, 2014). This led to policy development that legalized shrimp aquaculture everywhere, motivating non-fisher villages, typically higher caste forest dwellers from surrounding areas who had not historically depended on or lived within the Chilika fishery system, to enter the lagoon. This practice involved constructing square-shaped water enclosures (shrimp ponds) which reduced the availability and flow of fish stock for communities already residing and fishing there (Nayak, 2011). The consequences for small-scale fisheries were dramatic, with economic displacement, out-migration, and rapidly increasing lease fees, all contributing to the decline in their livelihood security (Nayak, 2014).

Fisher cooperatives challenged the policy in prolonged and expensive legal battles, which culminated in a High Court ruling in 1993, a Supreme Court ruling in 1996, and an Odisha State Legislative Assembly House Committee intervention in 1997 banning shrimp aquaculture. During these six years, communities continued to face mounting pressure from expanding shrimp operations (Nayak, 2011). Despite this legal ruling, the ban was not sufficiently enforced, and intensive shrimp continues in the lagoon, with small-scale fisheries’ common-pool fishing areas still encroached upon. See Figure 2, dated August 2022, of an example of these fishpond enclosures.

Nayak describes this particular phenomenon as a gap: “this gap between higher court rulings and their implementation on the ground results from the lack of accountability of those institutions whose task it is to do the implementing, and it highlights the clout of capitalists in the Odisha ruling class” (Nayak, 2014, p. 5). The imposition of this system occurred without community consultation and pushed many less powerful residents out. This ongoing gap between judicial rulings and effective implementation has left small-scale fishery communities marginalized, as economic interests in shrimp aquaculture continue to be prioritized over traditional fishing livelihoods (Nayak, 2011; Nayak, 2014). Villamayor Tomás and García López (2021, p. 262) further outline this dynamic:

“...encroachment by large users just responds to short-term rent-seeking... the prawn industry in Chilika, India, [is] featured by ‘unscrupulous traders and middlemen... politicians with their musclemen, a handful of big business families of Orissa and their local middlemen termed as ‘mafia’, and finally the big industrial houses’ (Pattanaik, 2003)”



Figure 2: Shrimp Aquaculture Ponds: Photo taken by Kaitlin Murray, during V2V Field School, in Chilika Lagoon, 2022

Tourism

More recently, tourism has increased pressure on Chilika's ecosystem through higher resource consumption, infrastructure development, and increased waste in the water. Long boat motors used for touring boats can harm endangered animals, like the Irrawaddy Dolphin (Sahu, Pati, & Panigrahy, 2014; Samal & Dash, 2024). Both the motors and waste can be seen in Figure 3. Despite tourism being a significant economic driver for the region, policies regulating its development fail to address environmental degradation, and have not consistently benefited the financial wellbeing of small-scale fishery communities. In their analysis of tourism in Chilika, Sahu, Pati, and Panigrahy (2014, p. 295) note that there is "no sound mechanism to maintain eco-friendly tourism". Since then, tourism activities, such as tour boat sightseeing, have further degraded the lagoon through pollution, habitat disruption, lower water quality, and declines in migratory bird populations (Samal & Dash, 2024; Nair, 2022). The government's emphasis on expanding tourism for revenue generation often neglects sustainable practices, exacerbating ecological strain.

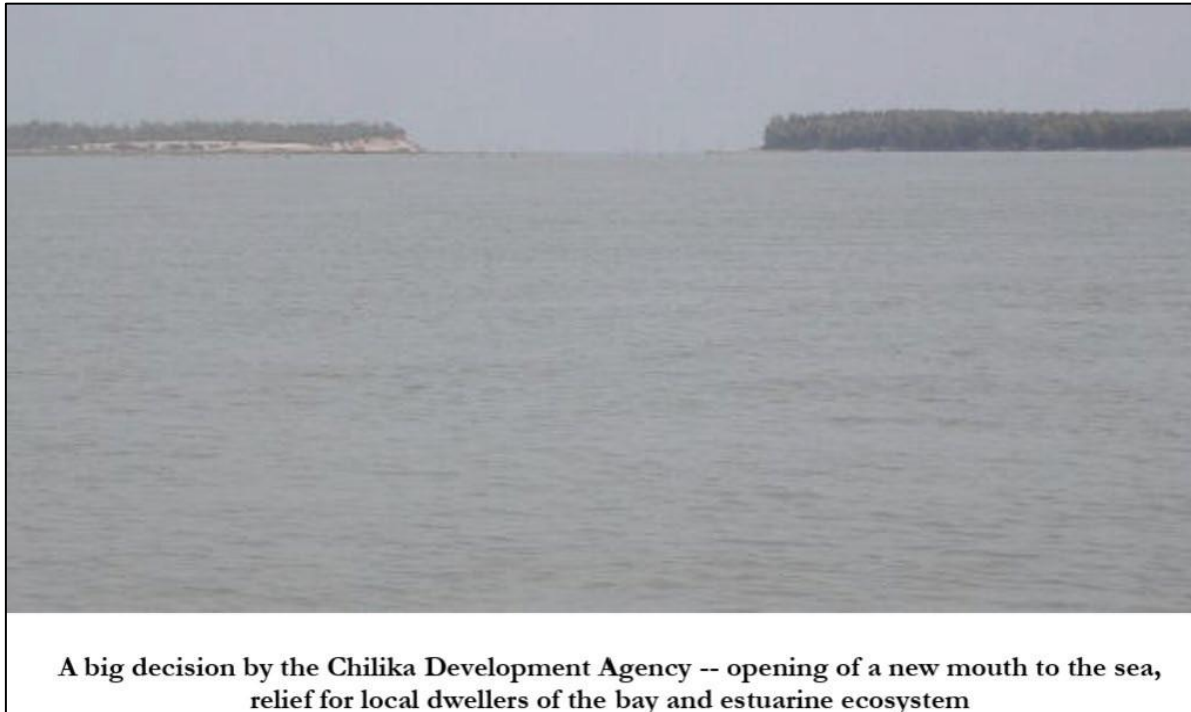
There have been some positive community-based ecotourism initiatives, such as in Mangalajodi, recognized as a model of sustainable tourism for combining biodiversity conservation with livelihood generation (Samal & Dash, 2024). Former poachers were rehabilitated and trained as birding guides, leading to a significant decline in poaching and an increase in the bird population and ultimately their conservation. However, while community-based ecotourism efforts, like those in Mangalajodi, show promise in aligning conservation with local economic benefits, they remain isolated and disconnected from government tourism strategies that prioritize revenue over environmental protection (Samal & Dash, 2024). Moreover, tourism policies remain detached from local community resource protection efforts, further alienating them from managing their own environmental landscape. According to Samal & Dash (2024), there is a lack of effective stakeholder engagement in tourism governance and fragmented efforts to create sustainable policies, which continue to drive ecological strain.



Figure 3: Chilika Lake Tour Boats, photo taken by Kaitlin Murray in Chilika Lagoon, 2022

Modifications to Chilika's Landscape

Since 1992, governance of Chilika Lagoon has been largely overseen by the state-established Chilika Development Authority (CDA), created to conserve the lagoon's biodiverse ecosystem while supporting small-scale fishery communities (Nayak, 2014). However, according to Dujovny (2009), the CDA later undertook the highly controversial action of dredging a new sea mouth, without meaningful consultation with local communities, who actively resisted these changes. The new sea mouth opened in 2000 (see Figure 4) and was initially understood to be a necessary hydrological intervention to reduce siltation and improve water circulation; presented as beneficial to small-scale fishers (Ramsar Convention Secretariate, 2002). While the new sea mouth appeared to produce ecological benefits, (increased fish capture, seagrass regeneration, and the increase of species like dolphins and migratory birds), its longer-term impacts proved damaging (Sahu, Pati & Panigrahy, 2014). The sea mouth disrupted water and fish flow within the lagoon; eroded underwater topography; introduced dangerous marine animals, such as sharks, stingrays and jellyfish, into previously safe waters; and, increased salinity levels, thereby affecting the lagoon's unique brackish habitats (Dujovny, 2009; Sahu, Pati & Panigrahy, 2014).



A big decision by the Chilika Development Agency -- opening of a new mouth to the sea, relief for local dwellers of the bay and estuarine ecosystem

Figure 4: New Sea Mouth, Ramsar Convention Secretariate (2002)

These changes intensified tensions between communities and state authorities (Sahu, Pati, & Panigrahy, 2014; Dujovny. 2009). Community members and involved stakeholders raised concerns that the new sea mouth prioritized economic development goals, including aquaculture and tourism, over the wellbeing of the lagoon's ecosystems and dependent communities (Nayak, 2011; Nayak & Berkes, 2012; Dujovny, 2009). Dujovny (2009) highlighted a lack of consultation with communities:

“Considering all of the benefits attributed to the new sea mouth, I was surprised to find during my initial visit to Chilika in 2002, that this hydrological intervention was almost universally disparaged by the fishers I interviewed. I was repeatedly told that the new sea mouth was an economic and ecological disaster for their communities. Contrary to the CDA assertion that the opening of a new sea mouth ‘was a long-standing demand of the local communities, reflecting the value of local knowledge’ (Ghosh et al. 2006)... [fishers] expressed their desire for the government to dredge the *historical* sea mouth located across from the village of Arakhakuda. They categorically denied being consulted regarding the placement of the new sea mouth and often strongly objected to its location. Though there was general agreement that the pre-mouth situation was unhealthy for the lake, they decried the fact that the new sea mouth effectively bypassed eighteen Outer Channel communities” (Dujovny, 2009, p. 195).

The Ramsar Advisory Mission Report (2002) lists several stakeholders consulted during site visits, including government departments, NGOs, scientific institutions, fisher cooperatives, community leaders and organizations. However, the report does not disclose the outcomes of these discussions, the representativeness of participants, nor any consideration of dissenting perspectives; the voices of communities are not substantively reflected. This raises concerns about the transparency and inclusiveness of the participatory process prior to the ‘big decision’ as noted in Figure 4.

Dujovny (2009) outlines a range of ecological and social consequences following the dredging of the new sea mouth including reduced flooding risk and decreased aquatic weed overgrowth in the Northern Sector, however these changes primarily benefited farming communities rather than small-scale fisheries (Dujovny, 2009). In some communities, new stronger tidal flows made it unsafe for traditional non-motorized boats, particularly in the Outer Channel, and many took out high-interest loans to purchase motorized boats. Finally, as some fishing grounds were displaced, territorial conflict and economic strain increased, leading to in-fighting among communities (Dujovny, 2009).

Additionally, Nayak (2017b) reported that the scientifically justified opening of the new sea mouth quickly proved problematic. Its location intensified tidal inflows and outflows, overwhelming the lagoon’s natural buffers and allowing excessive seawater to enter. Fishers observed altered salinity, unstable water depths, sand accumulation, and the arrival of invasive marine species, all of which increased ecological variability and disrupted fishing livelihoods. Nayak (2017b, p. 5) states, “the most significant impact of these changes was felt through an increase in the variability, uncertainty, and unpredictability of events associated with the lagoon, such as fishing seasons by species, with impacts on fish production and livelihoods”.

Nayak (2011) included a summary of the Auditor General’s Report on the CDA’s role in Chilika, seen below in Figure 5, which outlines multiple observed failures of the CDA.

Areas of review	Specific observations
Funds allocation and expenditure	<ul style="list-style-type: none"> • Non-utilisation of funds • Irregular diversion of funds towards establishment expenditure • Non-utilisation of money collected out of ferry services
Programme implementation	<ul style="list-style-type: none"> • Absence of perspective plans and actions plans for the activities undertaken • Funds for multidisciplinary and multidimensional activities for preservation and restoration of the Lagoon were used for standalone activities • No action plan for economical disposal of dredged minor mineral materials • No action plan to address the adverse impacts of the dredged sea mouth on biodiversity. No disaster management plan exist to tackle possible adverse effects of artificial opening of the mouth
Treatment of catchment areas	<ul style="list-style-type: none"> • Wasteful expenditure of 21 million rupees due to failure of plantation • Improper maintenance of plantation journal / muster rolls – complete details of plantation labour charges not maintained • Forest department norms were not followed in undertaking the plantation
Conservation of biodiversity and genetic resources	<ul style="list-style-type: none"> • Total indifference of district administration to evict shrimp aquaculture “gherries” in the Lagoon • Ecological restoration work was limited to the bird sanctuary area only (not other ecologically critical areas of the Lagoon) • Illegal fishing and boating activities in dolphin habitation areas
Under utilisation of assets	<ul style="list-style-type: none"> • Under utilisation of existing ferry crafts • Non utilisation of survey and patrolling boats after construction
Regulatory issues	<ul style="list-style-type: none"> • Illegal fishing activities going on unabatedly • Unauthorised playing of tourist boats • Absence of a proper legal framework for CDA and to manage the Lagoon • Monitoring mechanisms though in place largely remained non-functional

Figure 5: Auditor General’s Report on CDA’s Role in Chilika (Nayak, 2011, p. 240)

These developments reflect a broader pattern of centralized governance, where local voices are bypassed in favor of top-down decision-making, contributing to what Nayak and Berkes (2010) describe as the 'marginalization' of traditional fishing communities. Many have been displaced both physically from their fishing grounds and politically from governance processes. One coping strategy formed was out-migration to urban areas in Odisha, particularly by men or youth, disconnecting them from their livelihoods and cultural ties to the lagoon (Nayak, 2011). This lack of consultation in major interventions, such as the new sea mouth, underscores the need for governance frameworks that prioritize and centre community agency, and aim to protect them from external control.

It appears that Chilika's SES, strained by socio-political and environmental factors, is at a tipping point where maintaining the original social-ecological system is no longer tenable. Nayak's (2014) historical analysis identified these challenges more than a decade ago, with many of the issues still being discussed at the V2V field school I attended in 2022 (Shukla et al., 2022). As Chilika Lagoon's SES and small-scale fishery commons face a slow reality of collapse, the persistence of these problems underscores the urgency of finding creative methods to enter into a process of new-commonisation to re-establish community autonomy over CPRs.

2.3b Resilience Theory – Framing Decommonisation in Chilika Lagoon

Resilience Theory, initially developed by Holling (1973), examines a system's capacity to absorb disturbances while retaining essential functions. In this thesis, resilience collapse is understood not only as ecological disruption but as governance breakdown: thresholds are crossed when commons rights and institutions are overridden, leading to a state of decommonisation. In the context of Chilika Lagoon, it serves as a diagnostic lens for understanding how intensifying environmental and socio-political pressures are straining the SES. It underscores a system's ability to withstand and recover from shocks. Systems can reach 'domains of attraction', where they stabilize under specific conditions but are vulnerable to shifting beyond these domains upon reaching critical stress points. This is identified as the *point of no return*, where resilience can no longer function as a buffer, like an elastic band that stretches so far until it finally breaks (Holling, 1973). This section outlines how intense external pressures have contributed to the destabilization of small-scale fishery commons and the lagoon's SES, pushing systems to a critical threshold, or a new state of decommonisation.

When systems are pushed past their resilience thresholds, they lose the ability to recover from disturbances, leading to system collapse or transformation into a different state (Holling, 1973). With the weakening of regular resilience mechanisms, Chilika's SES appears near a tipping point; if recovery and stability remain possible for the ecology and small-scale fishery communities, Resilience Theory underscores the need for strong protections of internal management.

Current and historical external systems of decision-making have yet to ensure that the commons management system for small-scale fishery communities is protected. Chilika's SES has adapted to external pressures, such as market-driven shrimp aquaculture and ecological shocks from natural disasters, however, these pressures have intensified, challenging the SES's resilience mechanisms, and producing measurable signs of strain. For instance, there are evident ecological shifts such as declines in fish populations, salinity fluctuations, and sedimentation, which have altered the lagoon's ecological makeup (Sahu et al., 2014; Nayak, 2014). Pollutants from shrimp aquaculture, such as nutrient-rich effluents, resulted in eutrophication, algal blooms, lowering oxygen levels, and increased fish mortality, contributing to reduced fishing yields (Sahu et al., 2014). Salinity levels which fluctuated drastically post-inlet construction altered ecosystem dynamics essential to local fisheries such as the composition of fish species (Sahu et al., 2014). Fish biomass, have also reduced, intensifying hardship for Chilika's small-scale fisheries, whose livelihoods are directly tied to the health of fish stocks (Sahu et al., 2014) evident in Nayak's (2011) photo documentation:



Figure 6: Photo Documentation of Low Fish Stocks (Nayak, 2011, p. 164)

While Holling’s (1973) Resilience Theory can be a useful framework for understanding how systems experience strain, breakdown, and change, its language can obscure deeper structural issues. Researchers such as Tuck (2009), and Côte and Nightingale (2012), critique ‘resilience’ for placing the burden of adaptation on marginalized communities, often portraying them as endlessly capable of recovering, without addressing the systems of violence and inequality that cause harm. Tuck (2009) warns against focusing on frameworks that are ‘damage-centered’, which define communities by suffering, and Côte and Nightingale (2012) highlight how resilience discourse can mask power asymmetry and structural exclusion by depoliticizing adaptability. They emphasize that resilience framings often sideline questions of power and inequality:

“Resilience thinking is therefore appealing because it offers a dynamic and forward looking approach to human-environment change. Its holistic perspective and the emphasis on unpredictability, change and complexity across scales create avenues for better integrated work across a diverse range of scientific work and with lay epistemologies. While it is therefore useful as a heuristic for thinking about human-environment dynamics, its applications as a stand-alone formal theoretical framework are more problematic. We find it inadequate in part because it repeats the weaknesses of earlier approaches in risk and hazard science that overemphasized the role of physical shocks and undertheorized that of political-economic factors in conceptualizing vulnerability” (Côte & Nightingale, 2012, p. 478)

Both Tuck (2009) and Côte and Nightingale (2012) stress that diagnosing system strain and collapse is not enough; there must also be understanding of social and political relations that push social-ecological systems toward critical thresholds. In Chilika, social resilience has diminished alongside the ecology, as recurring economic and governance-driven stresses have degraded the ecosystem and marginalized local communities, causing hardship, exclusion, and greater out-migration of small-scale fishers to other regions or urban areas (Nayak, 2014; Nayak, 2017b). Nayak (2014) describes this as an ‘alienation’ of fishers from their essential livelihoods and ecosystems, a condition

exacerbated by governance systems that privileged external interests over local sustainability. Nayak, Oliveira, & Berkes (2014, p. 1) argue that these “institutional processes” are akin to “impoverishment processes”, with mechanisms that accelerate poverty such as economic exclusion, social marginalization, class exploitation, and political disempowerment.

Béné (2003) underscores poverty in small-scale fisheries globally, including India, as not merely a consequence of resource decline but one actively reproduced through socio-institutional mechanisms of exclusion, marginalization, class exploitation, and political disempowerment that determine who can access and control resources. This mirrors experiences in Chilika as evident in Nayak (2017a), which assessed the conditions for governance of tenure among fishery communities in the Lagoon and highlighted the erosion of long-standing local institutions that once anchored fishers’ control over resources. Nayak (2017a) notes that:

“Fishers in Chilika have experienced the loss of many community fisheries related institutions in the recent past... [such as] the Central Fishermen Cooperative Marketing Society (CFCMS), many Primary Fishermen Cooperative Societies (PFCS) at village level, and the weakening of the caste assembly (Jati panchayats) that have contributed to serious weakening of fishers control over fish resources. The right to have their own institution is a demand that results from this particular experience” (p. 174).

Nayak, Oliveira and Berkes (2014) note caste-driven power dynamics and political disenfranchisement have limited fishers' access to resources, pushing them closer to a social-economic threshold that may lead to increased poverty and out-migration. Nayak (2017b) adds that governance decisions and external resource demands have pushed out local fishers, exacerbated economic hardships, and intensified their vulnerability to poverty. As detailed in Section 2.3a, these shifts were not inevitable ecological processes but the result of state decisions, aquaculture expansion, and external interventions that altered Chilika’s resilience; forcing them to respond through changes in community operations. This is evident in the findings of Nayak (2017b, p. 9), as communities have adapted in a myriad of ways with the desire to keep their commons:

“With the onset of the livelihood crisis the fishers took up several strategies to deal with it... [including] (1) coping for subsistence, (2) intensification, (3) extensification, (4) diversification and (5) out-migration... Some of these livelihood strategies have already been used by Chilika fishers in the past, such as taking loans, mortgage and purchase on credit from village shops. Other strategies recorded are completely new (e.g. migration from Berhampur and others under intensification and expansion). For some of the previously used strategies, their intensity and frequency have increased during the crisis”.

Nayak (2017b) documented that in response to decommissioning through the livelihood crisis, many community members of Chilika’s fisheries took out loans and cash advances from fish traders, mortgaged or sold household items and fishing gear, bought food on credit, reduced quality and quantity of meals, and discontinued education for children. Many families reported extreme indebtedness with high interest rates from 36-60% per year, even higher for some (up to 120%), as a result of health and other expenses. Some fishers in Nayak’s (2017b) study removed customary size and seasonal restrictions and began fishing year-round and well outside of the village boundaries, targeted all available species including juveniles and high-value species such as crab or patua fingerlings, dried a wider range of fish, adopted synthetic fine-mesh nets and began using motorized boats. A minority even began selling post-larvae shrimp to the neighbouring illegal aquaculture ponds (or working for them) and poaching migratory birds. Some fishers engaged in daily wage

labour, and some men out-migrated to cities for construction or security jobs but earned too little to repay debts, leaving families to depend on loans in their, sometimes, long absences (Nayak, 2017b).

Communities have been forced to adopt additional coping mechanisms that reflect social-economic strain, rather than resilience and adaptability, within the commons small-scale fishery system; examples include taking out high-interest loans to purchase motorboats, in-fighting over territory from displaced fishing grounds, and turning to temporary migration to find work outside the fishery to offset low fish yields (Nayak, 2017b; Nayak, Oliveira & Berkes, 2014; Dujovny, 2009). Nayak (2011, p. 205) discusses how the need to adopt coping strategies resulted in outcomes with,:

“serious implications for inter-household equity... fishing has become capital intensive, and therefore expensive, leading to the exclusion of several poor households... This has increased the gap between rich and poor... further widened by the lack of options for poor households to diversify their livelihood activities. Landlessness... emerged as a major barrier to farm-based livelihood diversification. While households with land assets tried to use available natural capital through cultivation and plantations, the landless poor could not do so. These households also find it difficult to diversify into other non-fishing activities [without] financial capital that is available to some well-off households... [while] richer households tried to initiate a small business... the poorer households... have primarily gone into daily wage, including out-migration. Therefore, growing equity concerns as a result of various livelihood strategies are emerging as factors for marginalization of Chilika fishers”.

Overall, as a result of these external drivers, the community’s social system witnessed much out-migration, territorial loss and landlessness, increased inequality and vulnerability to their livelihoods among other shifts; and the ecological system has seen changes in underwater topography, water quality and flow, fish health and fish stocks, the introduction of new sea creatures, among other changes. This evident strain on Chilika’s social-ecological balance, as Resilience Theory reveals, suggests that the social-ecological system (SES) that existed in the small-scale fisheries before shrimp aquaculture, the dredged sea mouth, encroachment, and other decommissioning drivers, has been forced to drastically change and shift into a different, new system. These diverse and creative strategies and responses indicate that as a result of the system interruptions from external actors, the fishery commons system communities relied upon before is no longer sufficient to their needs.

2.3c Recovery Discourse

As noted in the previous section, Tuck (2009) warns that focusing solely on damage and community strain risks flattening the rich complexity and experiences of communities, reducing them to suffering. Instead, she advocates for “desire”-based frameworks that document not only the pain and brokenness but also the wisdom and hope of “lived lives” (Tuck, 2009, p. 416). There is a desire by small-scale fishery communities in Chilika to recover, re-establish, maintain and protect their commons system (Nayak, 2017a). When considering recovery, Folke (2006, p. 257) warns that:

“The engineering interpretation of resilience exists to date in many facets of ecology... [it is] often addressed in terms of *recovery*, which is the time it takes to return to *the previous state* following disturbance... [i.e.] a coral dominated state after a coral bleaching event... The system may look similar but it is not the same system, because like any living system it is continuously developing... Scholars involved with resilience in relation to complex adaptive systems increasingly avoid the use of recovery and prefer... renewal, regeneration and re-organization following disturbance”.

Indeed, returning to an identical SES as before would not be possible with such large scale and permanent disturbances, such as the new sea mouth. As the community will not return to the same system, the above suggested terminology highlighted by Folke (2006) mirrors the definition of ‘new-commonisation’ in that resources are converted into “*new* transformative arrangements with refined rules and management systems”, rather than returning to the previous state by refining the existing rules and system, as is the case with re-commonisation (Nayak & Berkes, 2022, p. 11). Folke (2006, p. 257) also warns against over-simplifying recovery processes in complex SES, stating:

“But as stated by O’Neill (1999): ‘current ecosystem theory has a deceptively simple representation of recovery. In actual practice, recovery is affected by the frequency and extent of disturbances and by the spatial heterogeneity of the ecological system’. Disturbance events and spatial heterogeneity cause each recovery trajectory to be unique, and the complexity of the system combined with unanticipated compounded effects can make recovery trajectories difficult or impossible to predict”.

Equitable new-commonising for Chilika’s small-scale fisheries operating within this different SES would likely comprise of ecological recovery where possible, new or re-established commons spaces, and new protection mechanisms to sustain the commons during persistent external threat. Chilika’s fishery communities have experience managing CPRs in systems of political disempowerment, having already been excluded from many decision-making processes, which has readily affected them (see Section 2.3a). The extent of new disturbances they would experience during any process of new-commonisation will depend on present external parties. Ruddle (1998, p. 117) notes that scholars of resource governance literature often assume that *flexibility* should be built into SES to better respond to shocks; however, he warns this assumption is largely untested, and may place an undue burden of change on fishing communities, especially in contexts with persistent interruptions:

“Further, the inherent flexibility of traditional community-based management systems, although widely assumed, remains a vague and untested assumption. Although there is ample evidence to demonstrate that such systems are inherently flexible enough to cope with short- and medium-term cyclical and even gradual linear changes, there is equally abundant evidence to demonstrate their inflexibility when confronted with the rapid and complexly interrelated changes of the present... Further, flexibility could be legislated, and will probably be in many localities, to accommodate competing and often incompatible demands on coastal-marine resources and space”.

Decommonisation in Chilika Lagoon is deeply tied to external pressures that their complex social-ecological system has endured for centuries, thus any process of new-commonisation will necessarily examine governance frameworks that work with external actors, particularly those enabling small-scale fishery communities to maintain autonomy over resource use. Several governance frameworks have been advanced to guide the management of CPRs as well as external relationships. However, as will become evident in the following Section 2.4, the effectiveness of each largely depends on wider socio-political and ecological contexts, and may not fully address or protect from external pressures that threaten future decommonisation. Additional mechanisms, such as the proposed codification of commons arrangements, will then be discussed regarding protection and maintenance of community decision-making and access to CPRs in Chilika Lagoon.

2.4 Commons Resource Governance Frameworks

As outlined in Section 2.2, three major governance frameworks for commons management of natural resources are adaptive governance, polycentric governance, and community-based natural resource management (CBNRM) (Ostrom, 1990; Chaffin et al., 2014; Dressler et al., 2010; Akamani & Wilson, 2011; Johannes, 2002; Schoon et al., 2015). Each framework has characteristics that help strengthen autonomy over CPR management by communities, as well as limitations that could risk commons stability. These community-centred frameworks provide essential mechanisms for commons governance (i.e. multi-level support, mechanisms for learning, additional resources), but their structural vulnerabilities (i.e. power imbalance, donor dependence, fragmented authority) could leave the commons exposed unless anchored in mechanisms that protect them. As Côte and Nightingale (2012, p. 480) argue: "...normative factors, including power relations and cultural values, are integral to social change and to the institutional dynamics that mediate human-environment relations". These frameworks are therefore considered within Chilika's political, social, and ecological dynamics, including power imbalances, abrupt interventions from fragmented external authority, and the exclusion of community voices; key themes that recur as limitations across many governance frameworks, despite attempts to minimize them. Particular attention is given to mechanisms that protect fishery commons from external drivers of change.

Should Chilika go through a process of new-commonisation to rebuild and maintain their fishery commons, the limitations of these frameworks underscore the need for additional protections of the commons to mitigate these risks. This section ultimately proposes that any process of new-commonisation, regardless of the governance structures relied upon, should include legal protection of the commons. This too, however, is not a panacea without risks or limitations; every governance reform is shaped by the political, social, and historical conditions of its context (Côte & Nightingale, 2012). Therefore, subsequent chapters present case studies of other communities that pursued legally protected commons and draw practical insights for Chilika's SES.

2.4a Adaptive Governance

Adaptive governance has gained prominence as a framework to manage complex and sometimes unpredictable SES more effectively than traditional top-down governance models (Chaffin et al., 2014). It incorporates multilevel, collaborative structures in decision-making to address complexities and uncertainties inherent to SES through three mechanisms: nesting, institutional variety, and analytic deliberation (Dietz et al., 2003). Nested enterprises integrate multiple levels of authority in decision-making in a cross-scale of management (i.e. local, regional or national governments) (Akamani & Wilson, 2011; Chaffin et al., 2014; Dietz et al., 2003). Institutional variety seeks to rebalance power by including a diverse set of voices (i.e. community, scientists, policymakers, and NGOs) (Berkes, 2007; Armitage, 2008; Armitage, Berkes, & Doubleday, 2007; Nayak & Armitage, 2018; Dietz et al., 2003). Finally, analytic deliberation relies on ongoing monitoring and revision, recognizing that no single solution works indefinitely (Huitema et al., 2009; Dietz et al., 2003).

Adaptive governance includes built-in learning through feedback mechanisms that allow multiple groups to influence evolving governance strategies (Chaffin et al., 2014), combining scientific and community knowledge for more contextually appropriate solutions (Berkes, 2007). Like Resilience Theory, iterative learning strengthens a system's capacity to absorb shocks and reorganize, renew and transform while maintaining core functions (Akamani & Wilson, 2011; Berkes, 2007; Folke, 2006). Its flexibility, multilevel collaboration, learning through adaptation, and resilience building respond to negative drivers and unpredictable pressures (Akamani & Wilson, 2011; Chaffin et al., 2014).

Folke et al. (2002) and Folke (2006) emphasize that adaptive governance depends on social memory, flexibility of multi-level institutions, and speed of change for ecological variables. Holling and Gunderson (2002) and Folke (2006) describe the interaction between slow processes of change (i.e. gradual ecological shifts) and fast ‘release’ and ‘reorganization’ phases (i.e. abrupt political decision-making) as part of an adaptive cycle or ‘panarchy’, in which fast disturbances and slow processes interact. Despite both requiring attention, Folke et al. (2002, p. 438) discuss learning as more effective with slow-moving systems because, “it is difficult to design assessment programs that learn as fast as thresholds change”. These principles have shown success in settings dealing with gradual ecological shifts (Akamani & Wilson, 2011); for instance, multi-stakeholder collaboration in Murray-Darling Basin, Australia helped regional actors navigate persistent drought (Chaffin et al., 2014).

Folke et al. (2002) also argue that ecosystems can flip suddenly to a degraded state; the likelihood of this occurs more frequently when their management is rigid and control-oriented, rather than one of openness and flexibility that pays attention to both fast- and slow-moving variables. They suggest using structured scenarios as a tool to understand the ongoing dynamics of SES resilience-building, so that, “by envisioning multiple alternative futures and actions that might attain or avoid particular outcomes, we can identify and choose resilience-building policies” (Folke et al., 2002, p. 439). They see active adaptive management, including policy design, as a set of experiments that are used to test resilience in SES, both in building and sustaining it. Policy design would incorporate a mechanism to change depending on sustainability outcomes, measured through built-in indicators warning of threshold shifts in human-nature interdependence, identified with the help of resource users (Folke et al., 2002). Armitage, Berkes and Doubleday (2007) suggest combining iterative learning with negotiated power-sharing, by strengthening trust between a cross-scale of multi-level actors.

Folke et al. (2002) state that such a learning and experimental system can only work if those within the SES system maintain a “social context with flexible and open institutions and multi-level governance systems that allow for learning and increase adaptive capacity without foreclosing future development options” (p. 439). Similarly, the analysis of Armitage et al. (2007) shows that long-term success depends on the quality of social learning, institutional diversity, and policy environments that allow for experimentation and the integration of different knowledge systems. Adaptive governance is appealing for ecosystems such as Chilika Lagoon, which face a wide range of ecological and socio-political challenges. However, as outlined by Folke et al. (2002), Folke (2006), and Armitage et al. (2007), success depends on enabling conditions and dependencies that are historically weak in Chilika’s SES. It also does not account for formal sanctioning mechanisms to prevent the issues that have arisen in Chilika, nor clear accountability or legal safeguards to protect commons in the long term, which may make it insufficient on its own to address the scale of pressures.

Adaptive governance provides tools for power redistribution; however, their focus is often on communities (i.e. capacity building) which underplays dependence on the ethical conduct of external actors (Zhao et al., 2024). Chilika’s political history reveals persistent power imbalances unfavorable to small-scale fisheries (Nayak, 2014; Dujovny, 2009), reflecting Gramsci’s (1971) notion of *cultural hegemony*: dominant ideologies are considered ‘common sense’, undermining local knowledge and governance. Similar patterns are reflected in other commons by Villamayor Tomás and García López (2021) and Ostrom (1990), as economic policies are frequent drivers of decommissioning:

“Privatisation policy reflects the numerous initiatives carried out by governments to allocate community rights to private corporations, including not only use rights but also exclusion and alienation rights... This has been frequently done under the (incorrect) assumptions that customary land is being used in unproductive and/or unsustainable ways... or not used at all; and that private property regimes can promote increased

efficiency, productivity and capital investments (and therefore economic growth), as well as sustainable management” (Villamayor-Tomás & García-López, 2021, p. 259).

“...gaining compliance to the rules - no matter what their origin - often is assumed away by analysts positing all-knowing and all-powerful *external* authorities who enforce agreements. In the cases described here, no external authority has had sufficient presence to play any role in the day-to-day enforcement of the rules in use. Thus, external enforcement cannot be used to explain these high levels of compliance” (Ostrom, 1990, p. 93).

In Chilika, fishery commons have had to continually adapt to abrupt policy changes and shifting power dynamics that are beyond their control; creating institutional uncertainty and deepening vulnerability (Dujovny, 2009; Nayak, 2014). Adaptive governance is designed to support gradual transformative change in SES through trial-and-error and piloting and learning, provided it can rely on stable social networks and institutions, which inherently resist radical change (Chaffin et al., 2014; Akamani & Wilson, 2011). Chilika’s history of repeated shocks and governance reforms, outlined in Nayak and Armitage (2018) who term it ‘regime shifts’, indicates that adaptive approaches can result in continual cycles of adjustment where each disturbance requires renewed learning and change. This echoes Huitema et al.’s (2009) observation that adaptive co-management is difficult to sustain and demands ongoing experimentation. In this context, entrenched power imbalances can erode the very learning, equity, and flexibility adaptive governance seeks to promote.

Another core component of adaptive governance is its requirement for broad stakeholder participation. Yet, the distinction between government agencies, NGOs and community actors is often blurred, and external parties frequently dominate decision-making (Akamani & Wilson, 2011). In Chilika, Dujovny (2009) highlights that community members have often not been consulted, and when they are, they are treated more as advisors than equal governance partners, leaving their role in actual decision-making marginal. This pattern reflects Huitema et al.’s (2009) broader observation that participatory processes in adaptive governance frequently remain consultative and risk reinforcing existing hierarchies. As Chilika has experienced a persistence of external power imbalances that dominate its governance, it is not enough to request input from small-scale fishery communities; they must be the core decision-makers for their commons (Nayak & Berkes, 2022).

Although adaptive governance seeks to address power imbalances through the promotion of equity and inclusion, without genuine power-sharing, this framework risks slipping into another veiled top-down management structure (Armitage, 2008; Armitage, Berkes, & Doubleday, 2007; Nayak & Armitage, 2018). Nevertheless, Nayak and Armitage (2018, p. 92) outline that occasionally the response of communities requires multiple strategies: “In some cases, the focus of governance will be on navigating or adapting, but in other cases the focus will be on steering towards more fundamental social transformation to avoid regime shifts before they happen”.

Adaptive governance remains a valuable framework for guiding Chilika’s management, but its learning-by-doing, and broader participatory approaches do not by themselves provide the safeguards or accountability mechanisms needed to guarantee that the leadership of fishery commons will be protected in decision-making, and that communities are not forced to bear the burden of persistent adaptation to external actors. Cosens et al. (2021) summarize it well by stating:

“Where government is absent or ineffective, interests may be left out, delay tactics by those benefiting from the status quo may postpone solutions, local processes may be captured by powerful interests, and highly innovative solutions stifled. Legitimacy is threatened when only powerful interests have the resources to participate. Equity is

threatened when there are no checks on who bears the burden of change, and who receives resources for adaptation and transformation. Justice is threatened when there is no means to address corruption and provide review for failure to meet the goals” (Cosens et al., 2021, p. 5).

Given Chilika’s history of abrupt external interventions and entrenched power asymmetries, the opening of decision-making processes for additional support and learning, could allow for more powerful interests to steer outcomes, if there are no adequate safeguards (Zhao et al., 2024). Any process of new-commonisation for Chilika’s fishery commons would necessarily be transformative and might benefit from the addition of components of adaptive governance into institutions: for communities to regain authority over commons, neighbouring actors must cooperate, the ecological system will need to recover, and communities will need to learn and adapt once more (Nayak & Armitage, 2018; Nayak & Berkes, 2022). Cosens (2013) argues that without being embedded within a foundation of legitimacy grounded in law, learning and adaptation risk exclusion and instability. Similarly, Cosens et al. (2017) suggest law serves to remove barriers to ensure adaptive management processes can occur within frameworks of accountability and protection. They caution that governance relying solely on informal arrangements might overlook equity, justice and power dynamics, echoing concerns voiced by Nayak and Berkes (2022) regarding the vulnerability of commons. Finding ways to explicitly secure fishers’ authority and agency, such as through law, so that fishery commons can fully benefit from the potential of adaptive governance, may be critical to ensure that community decision-making remains the foundation of governance.

2.4b Polycentric Governance

The main focus of polycentric governance is the overlapping responsibilities among multiple collaborating authorities to decrease reliance on any single actor (Ostrom, 1990). The term polycentric governance was first introduced by Vincent Ostrom, Charles Tiebout, and Robert Warren in their paper *The Organization of Government In Metropolitan Areas: A Theoretical Inquiry* (Ostrom, Tiebout, & Warren, 1961). In this paper, polycentricity was described as a framework for organizing metropolitan areas in which multiple independent decision-makers operate under a set of rules that can be adjusted collectively.

Elinor Ostrom later extended the concept to the governance of common-pool resources (CPRs) and complex social-ecological systems (SESSs), arguing that overlapping and multilevel governance structures could be more effective than centralized or purely local systems in managing resources (Ostrom, 1990). The goal is to shift decision-making from a single, large-scale governance structure to a more inclusive system involving multiple levels of actors, where decisions are informed by diverse sources of authority on the vertical scale. In her 2009 Nobel-winning lecture, *Beyond Markets and States: Polycentric Governance of Complex Economic Systems*, Ostrom emphasized that polycentric governance supports learning, adaptation, and conflict resolution at the local level, while also enabling scaling up at regional and national levels (Ostrom, 2009; Nobel Prize, 2009). She argues this allows more effective CPR management than monocentric systems by enabling greater experimentation and tailored solutions.

Berkes (2017) further expanded on this concept in relation to CPRs, highlighting polycentric governance’s role in fostering resilience and adaptability. He emphasized that diverse institutional arrangements and decision-making across multiple scales can better address the complexity and uncertainty typical of environmental management. Nayak (2017a) likewise identifies existing multi-level institutional processes in Chilika and argues that strengthening these nested and networked arrangements can enhance commons stewardship. These theoretical contributions, its vertical integration across scales (local, regional, national, international), and its emphasis on

decentralization, flexibility, and collaboration, have helped establish polycentric governance as an appealing way to manage complex and diverse SES. Multiple centres of authority in institutions overlap so that if one actor fails, others can absorb the shock, preventing system-wide collapse (Armitage, 2008; Armitage et al., 2007; Cosens et al., 2014). Nayak, (2017a, p. 184) states:

“...there is a need to recognize the challenges to governance of tenure from the perspective of institutional plurality, i.e. influence from different institutions with overlapping jurisdictions and capabilities... cross-influence of multiple hierarchical institutions can be effectively managed through polycentric governance arrangements that helps build relationships among these multiple authorities with overlapping jurisdictions... This has the ability to create inclusive foundations for effective implementation and governance of tenure in small-scale fishery systems”.

By contrast, the situation in Chilika (see section 2.3a) demonstrates both the appeal of polycentric governance and its limitations. Chilika Lagoon is a fragile, complex ecological system that supports many endangered plant and animal species and has been home to small-scale fishery communities for hundreds of years (Nayak, 2014). Managing such a complex SES through polycentric governance, by elevating local voices through multiple levels of political decision-making, is appealing in theory and is supported by empirical work in Chilika (Nayak, 2017a). Nevertheless, historical and current power asymmetries and weak coordination among state agencies, NGOs, and fishing cooperatives limit the effectiveness of existing multi-level arrangements (Armitage et al., 2007). Nayak (2017a) presents polycentric governance as a way to navigate Chilika’s institutional plurality through fostering relationships across overlapping authorities. He argues that its effectiveness ultimately hinges on external authorities building trust, and its enabling conditions; such as secure tenure, clarity of property rights, and strong local institutions; give fishers the capacity to participate meaningfully. Where these conditions are weak, polycentric arrangements remain vulnerable to the same power asymmetries that have long constrained governance of the lagoon (Nayak, 2017a).

Further, Nayak and Berkes (2022) highlight that unequal power relations in Chilika make negotiations difficult and constrain the influence of fishing communities over decisions affecting their livelihoods. A clear example, discussed earlier, is when the Chilika Development Authority (CDA) consulted many levels of decision makers to dredge a new sea mouth, yet inadequately consulted with local fishing communities (Dujovny, 2009). This major intervention altered water flow, underwater topography, and introduced dangerous marine species, severely disrupting small-scale fishery commons (Dujovny, 2009; Nayak, 2014). With the absence of co-designed solutions, external actors have imposed interventions without considering the lived experiences and knowledge of those who have relied on the lagoon for centuries (Nayak & Armitage, 2018; Dujovny, 2009). This disconnect has contributed to a persistent erosion of trust of external institutions, which is necessary in polycentric governance (Nayak, 2014; Dujovny, 2009; Nayak & Armitage, 2018).

These challenges in Chilika resonate with broader critiques from the literature, such as Djosestro and Arts (2024) and Baldwin et al. (2020), which caution against assuming polycentricity is replicable in all contexts, without robust structures in place for its success. For example, Djosestro and Arts (2024) note that in Suriname, polycentric conservation arrangements remain only moderately developed and are vulnerable, functioning largely through donor projects and therefore requiring both structural funding beyond donors and stronger institution-building to sustain collective action:

“Based on decades of in-depth research on institutions and the environment, Ostrom et al. (2012) claim that the same rules that work well for a resource or species in one setting might be part of failing systems elsewhere... there are no ‘optimal’ rules that

can be applied to all fisheries, forests, or water systems. Hence, a particular governance structure for nature conservation depends on a series of context-specific factors (e.g., nature of the resource system, rule-following by resource users, enforcement by local authorities, collaboration between managers and communities, etc.)” (p. 602).

Similarly, Baldwin et al. (2020) conducted a systematic review of 179 empirical studies that discuss polycentric governance. They identified recurring positive features, such as flexibility to match local circumstances, opportunities for experimentation and learning, and greater resilience to ecological or policy shocks, which help tailor governance rules to changing conditions. They also reported negative patterns in polycentric systems, such as high transaction costs to maintain coordination across decision-centres during larger problem solving, weakened democratic accountability if authority is diffuse, exclusion of marginalized groups from key decision-making, and opportunities for powerful actors to capture or dominate governance processes by creating procedural hinderances such as veto points or other obstacles that can block collective action (Baldwin et al., 2020).

Polycentricity can be used as a tool to help manage multiple authorities, however it does not guarantee success, and is not a panacea. These critiques highlight why polycentricity in Chilika may remain fragile without additional protective measures. Polycentric governance has proven effective under certain conditions where overlapping authorities and multilateral cooperation either operate within contexts with well-defined legal mandates, or actively work to strengthen such mandates, grounding collaboration in a shared commitment to elevate community voices and build trust. For instance, the Rhine River Basin’s pollution control efforts succeeded because of institutionalized cooperation and shared commitments among stakeholders (Moss, 2004). Similarly, Nepal’s Community Forestry Program demonstrated how strong legal frameworks and meaningful community participation can facilitate power-sharing and trust (Ostrom, 1999).

Nayak (2017a, p. 184) describe rights in Chilika as operating in a setting of “multiple or mixed property rights regimes which mutually contradict each other”, where privatization for aquaculture, state-declared sanctuaries, and customary commons overlap and conflict. Implementation of property-related rights to both stationary and mobile resource units, “requires progressive negotiations on a constant basis” (Nayak, 2017a, p. 184), not through a single entitlement but a ‘basket of rights’ spanning livelihoods, institutions, decision-making, and legal protection.

“The absence of a law to govern Chilika exposes the lagoon and its fishers to multiple threats and the often contradictory policies of numerous government departments... the right to the rule of law will provide legal protection to tenure arrangements and other rights of fishers, and strengthen the legal and political environment influencing fisheries” (Nayak, 2017a, p. 184).

Nayak (2017a) presents polycentric governance as a way to build relationships at scale, and to lean on overlapping jurisdictions to create inclusive and effective implementation and governance of tenure for small-scale fisheries. His analysis shows that while polycentric arrangements can strengthen linkages across scales and help manage the institutional plurality of Chilika, they do not themselves provide legal recognition, which fishing communities identify as a necessity for secure tenure (Nayak, 2017a). Reliance on multiple levels of decision-making after building strong relationships and trust may have merit for commons resource managers, however, the literature cautions against assuming its success before embedding robust structures to protect communities and highlights the desire communities have to see legal protection mechanisms in place.

2.4c Community-Based Natural Resource Management (CBNRM)

Community-based natural resource management (CBNRM) is a resource governance approach that emphasizes centering local communities in management, with a focus on both ecological and social sustainability (Dressler et al., 2010). Unlike frameworks such as adaptive or polycentric governance, which focus on broader institutional or system-wide coordination, CBNRM centers on building governance strategies around the sustainability of the resource itself (Fabricius & Collins, 2007); balancing conservation goals with socio-economic benefits for local populations (Dressler et al., 2010; Measham & Lumbasi, 2013). It recognizes local communities as essential stewards of the environment and values their participation, historical knowledge, and lived experience. Although these goals align with the needs of Chilika's complex social-ecological system (SES) (Nayak, 2014; Nayak & Armitage, 2018), CBNRM also presents challenges such as long-term success.

CBNRM emerged in the 1980s as a response to top-down, often coercive, conservation models that excluded local communities and prioritized elite or tourist interests (Measham & Lumbasi, 2013). One of the earliest and most influential examples of CBNRM is Zimbabwe's Communal Areas Management Programme for Indigenous Resources (CAMPFIRE), which aimed to devolve authority over wildlife and other natural resources to share conservation benefits with local populations (Measham & Lumbasi, 2013). Since then, it has also become a widely used governance approach in Oceania's Pacific Islands' small-scale fisheries (Johannes, 2002).

The foundational principles of CBNRM are equitable benefit-sharing; local decision-making; and clear roles between community, scientists, ecologists and government; linking social wellbeing to conservation (Measham & Lumbasi, 2013). Fabricius and Collins (2007) describe the interaction between communities, scientists, and government as a "trialogue," in which communities act as direct stewards of natural resources, scientists provide data and technology, and government takes responsibility for long-term development planning and conservation strategy. Scientists collect and disseminate data using tools such as GIS, GPS, and modeling, and contribute to policy development and resource monitoring. Governments are often the legal landowner of communal or adjacent lands and act as the main authority for long-term natural resource management through land-use decisions, conservation strategies, and decisions about development planning (Fabricius & Collins, 2007).

The goal is to assess and design management practices, to promote sustainable livelihoods while ensuring that resources do not exceed the regeneration capacity of ecosystems (Dressler et al., 2010; Dekker et al., 2020). A successful CBNRM framework requires strong institutional frameworks to resolve conflicts and withstand external pressures, along with ongoing capacity-building to equip communities with skills, resources, and support (Fabricius & Collins, 2007; Dressler et al., 2010). The benefits derived from resources, such as harvesting or income from tourism, are distributed equitably among community members (Brehony et al., 2018; Adeyanju et al., 2021).

While widely advocated as a positive participatory governance approach, its effectiveness remains highly debated, as it has not consistently demonstrated long-term success in diverse socio-political settings (Dressler et al., 2010; Villamayor-Tomás & García-López, 2021). Villamayor-Tomás and García-López (2021) show that CBNRM regimes are at a continuous risk of decommissioning from a variety of threats (they highlight 16 drivers) that are difficult to control and may require heavy community mobilisation and significant social, political, and economic capital to overcome. CBNRM is particularly criticized in systems that have weaker governance over resources and limited institutional support (Dressler et al., 2010; Adeyanju et al., 2021). As external actors, such as government agencies, NGOs, or local elites, can easily dominate decision-making without many mechanisms in place to restrict their influence, the literature frequently grapples with its legitimacy as a governance framework that meaningfully elevates community voices, rather than only engaging

them consultatively (Dekker et al., 2020; Dressler et al., 2010). Villamayor-Tomás and García-López (2021) caution that science-driven conservation policies can act as a driver of decommonisation when formal scientific knowledge is prioritized over local worldviews and practices:

“This can occur in post-colonial contexts because of the formation of new governments or in the aftermath of political transitions. In Alaska, the state “assumed jurisdiction over all marine mammal species not covered by international treaties... by establishing and enforcing seasons, bag limits, methods... and programs of scientific research...”. This was done without any consideration of the existing Alaskan Native hunting and fishing rights... These policies can be motivated by economic concerns, similar to the case of lobster regulations in Southwest Nova Scotia, where standard trap limits were established by the federal government to reduce “the total cost of fishing efforts and hence increasing the net incomes of fishermen...” (p. 259).

While CBNRM aims to decentralize resource management, the redistribution of power is not guaranteed (Adeyanju et al., 2021). This not only perpetuates existing inequalities but also erodes trust in the governance framework once established, as it is seen as less effective in addressing the needs of the entire community (Dekker et al., 2020). Critically, an additional limitation of many CBNRM initiatives is their reliance on external donor funding, which often fails to ensure long-term sustainability. When funding ends, Dressler et al. (2010) found that institutions established for resource management frequently collapse, disrupting both conservation and community development efforts. Short-term, externally driven interventions can undermine the long-term sustainability of community-based governance structures, as Adeyanju et al. (2021) demonstrate in other contexts such as Ghana and Zambia. Villamayor-Tomás & García-López (2021, p. 256) emphasize its susceptibility to change depending on its context, stating, “CBNRM regimes can be understood as outcomes/manifestations of commonisation processes and vulnerable to decommonisation processes. Both... are influenced by the prevalent social, economic, political and ecological drivers”.

Like adaptive and polycentric governance, the socio-political context of Chilika poses significant challenges to the long-term viability of a CBNRM-based governance framework alone, as, in the absence of safeguards to prevent external actors from dominating decision-making, the lagoon remains vulnerable to power imbalances and elite capture.

2.4d Synthesis of Governance Frameworks & a Call for Legal Rights

Adaptive governance, polycentric governance, and community-based natural resource management each offer mechanisms that can assist communities in re-establishing commons after periods of decommonisation. Adaptive governance contributes learning, experimentation, and institutional flexibility. Polycentric governance supports nested decision-making and cross-scale relationships that can distribute authority and reduce dependence on any single actor. CBNRM emphasizes local stewardship, participatory planning, and the integration of scientific and community knowledge. At the same time, extensive research documents limitations across these approaches: dependence on external donors, risk of capture of benefits by local elites or powerful actors, high coordination costs, and entrenched power asymmetries that can erode trust and exclude the very communities they aim to empower. Cosens et al. (2021, p.1) emphasize that governance frameworks are very effective in managing complexity, yet, “while new governance forms are emerging, they are not yet doing so rapidly enough to match the pace of environmental change... [and] do not yet possess the legitimacy or capacity needed to address disparities between the winners and losers from change”.

Brando et al. (2019) emphasize that governance models focused on environmental protectionism, are structured in an underlying opposition between management being top-down or bottom-up with some

scholars, “allocating the primary decision-making authority to higher levels (usually linked to international agreements and institutions) due to their ability to produce more beneficial and efficient outcomes for a larger number of people, and to deal with collective action problems” (p. 567). They state, however, that in commons theory, it is typically considered a bottom-up hierarchy, with people living in the area and using the CPRs holding primary authority as, “the communities that dwell within the spaces affected, can ensure a more sustainable protection of goods and a more democratic approach to governing them through [their] active engagement” (Brando, et al, 2019, p. 567).

These lessons suggest that while the mechanisms found in these frameworks can support processes of new-commonisation, safeguarding community authority may mitigate some of their weaknesses. In Chilika, community members have emphasized the need for secure rights and protection from contradictory government policies (Nayak, 2017a). They describe the right to fish as integral to their identity and expressed a desire for protection during Nayak’s (2017a) consultative study:

“Right to speak will allow us to voice our concerns against the atrocities we face from the government as well as the nonfisher caste elites, and seek appropriate protection when necessary, in order to freely express our freedom and rights,’... Such a right will lead to fisheries related decision-making powers resting with community institutions... The most important right in this category is the right to decide one’s own occupation which the fishers think has integral links with them being fishers by caste. A number of fishers think that ‘being a fisher by occupation is our caste identity, and if we are not fishers (and/or not fishing for a living) then we are not complete humans’. In recent years, significant occupational displacement has taken place in Chilika... Fishers demanded that their right to have a fishing occupation needs to be fully protected by the state” (p. 174-175).

Cosens et al. (2021) point out that the wider literature is also beginning to point towards legal solutions to solve some of the gaps in governance frameworks:

“The integration of new governance literature also helps address the weakness in the adaptive governance literature — namely, the failure to address agency, power, and empathy. Literature on new governance expresses concerns with the weakening role of the state and the corresponding increasing role for private actors in public governance, a formula that may result in lack of attention to the attributes of legitimacy, equity, and justice, that is only recently seeing uptake in the adaptive governance literature (8, 9, 55). Those expressing concern look to an increase in the role of government primarily through legal systems (8, 37, 43, 55)” (Cosens et al., 2021, p. 5).

Clear, legal arrangements of the commons could provide the durable rights and authority required to protect the lagoon and the communities that depend on it after re-gaining commons through a process of new-commonisation. This will be explored further in the following sections. The following table provides a summary of the three governance framework’s strengths, limitations and practical challenges discussed in section 2.4.

Table 1: Relevance of Commons Governance Frameworks to Chilika Lagoon

Framework	Strengths	Limitations	Relevance to Chilika
Adaptive Governance	Flexible; fosters resilience through iterative learning; promotes multi-level collaboration	Struggles in systems with entrenched power dynamics; community input sometimes marginal; weak formal sanctions	Lacks mechanisms to counteract strong external pressures existing in Chilika
Polycentric Governance	Overlapping multi-level authority decreases risk of collapse due to one singular actor; elevates voices at multiple political scales	Weak in systems with fragmented governance or coordination failures; dependent on building trust; maintained risk of external dominance	Chilika currently has a fragmented external governing system and there is a lack of trust in external actors
CBNRM	Centres resource; ties conservation to socio-economic benefit; supports local stewardship	Risk of elite capture; often relies on external funding/ attention; long-term support not guaranteed	NGO dependency risks perpetuating inequalities; not many long-term examples

2.5 Toward Legally-Backed Commons Governance

Ruddle (1998) notes that there is a concern among governance and development practitioners that codifying (legalizing) traditional resource management systems might undermine their flexibility. However, he argues that these fears are often overstated: “there is no reason for assuming that codification would be any more deleterious to traditional community-based management systems than any of the other contemporary pressures that confront them” (Ruddle, 1998, p. 117). Similarly, Mansuri and Rao (2004) caution that informal governance systems, without formal safeguards, can enable elite capture and deepen inequality. Ruddle (1998) challenges the assumption that informal, flexible systems are always superior and suggests that, with thoughtful legislation, flexibility can be built into codified systems as well. Although, this indicates that if designed poorly, codification can also risk reinforcing exclusions or rigidities; thus, the type of codification should be considered carefully per context, a tension discussed further in this section. In these theoretical conversations about recovery, or re-organisation, the literature suggests embedding codification into commons as a means to protect against these constant disturbances. This section introduces the concept of legal rights of the commons as one possible mechanism for enabling the long-term security of the commons and lays the groundwork for the case study analysis in future chapters, where concrete examples will be examined and compared in detail.

2.5a Theorizing the Codification of Commons

Chilika Lagoon’s small-scale fisheries have long experienced decommodification. In Nayak’s (2017a, p. 175) consultation, community members identified the problem stems from lacking legal rights:

“A fishers’ sub-group emphasized that ‘there is chaos and foul play in the absence of the rule of law, and Chilika continues to suffer from the lack of a Lagoon law made to protect it and the fishers’. Other fishers complained that ‘Asia’s largest lagoon does not have a law to govern it and that violates our right to have the rule (protection) of law’. Fishers further assert that without the rule of law tenure arrangements are bound

to fail with serious adverse consequences for the small-scale fisheries and fishing people”.

As discussed in Section 2.4, many conventional frameworks assume a cooperative political climate and overlook the realities of power imbalances, particularly as external government authorities challenge or override the rights of commons-users to devise, monitor and enforce their own institutions and rules. Cosens et al. (2021, p. 5) argue that:

“The reality of democratic systems of governance is that the best such systems can do is to establish and maintain the governmental (i.e., legislative, executive, and judicial) processes to provide legitimacy, equity, and justice. The role of law in this effort is to set the stage for the best possible outcome from emerging adaptive governance and keep it in place while adaptation and transformation unfold. To be sure, such rules are only as good as the ethics of those in power, but the fact that agency and power may act as the "trickster" and upset all the best-laid plans for legitimacy, equity, and justice is no reason to avoid setting the stage with the most carefully crafted rules possible. As Sir Winston Churchill is said to have stated, ‘it has been said that democracy is the worst form of Government, except for all those other forms’”.

Cosens et al.’s (2021) point is in line with Ostrom’s (1990) 7th commons management design principle: minimal recognition of rights to organize; emphasizing a political environment that supports community autonomy in commons governance. This underscores the need for protections that go beyond traditional governance frameworks, to ensure that “legal rights and customary livelihoods are respected” (Nayak & Berkes, 2011, p. 143). To address this, any pathway towards new-commonisation in Chilika must prioritize protections that defend against external pressures.

Rodgers’ (2019) work focuses on commons in England’s legal context; he states that legal rights include the recognition of collective entitlements already exercised, not the creation of new public rights or state-devised structures. Codifying the commons means reinforcing pre-existing *de facto* rules rather than replacing them with external *de jure* frameworks; communities retain autonomy while gaining the legal recognition necessary to defend against external threats.

It is important to distinguish commons rights from public, government and private property rights, because codification should protect the “bundle of commons rights” and the social relationships they embody, not aim to collapse them into individual private property or generalized public access (Rodgers, 2019). For example, switching to a system of private property rights would remove the commons, as user rights stem from shared membership of the resources, rather than individual rights. Privatization, through a transference of commons land into public, private or government property, often leads to enclosure, exclusion, or the threat of the tragedy of the commons through public access (Rodgers, 2019). Codification includes collective rights, so a defined group manages a defined space.

Hardin’s (1968) widely cited ‘tragedy of the commons’ assumed internal users inevitably degrade shared resources unless constrained by privatization or state control. This remained unchallenged until the 1980s as policymakers, viewing users of commons as ‘trapped in these dilemmas’, often suggested privatization to solve ecological degradation:

“Some recommend private property as the most efficient form of ownership (Demsetz 1967; Posner 1977; Simmons et al. 1996). Others recommend government ownership and control (Ophuls 1973). Implicitly, theorists assume that regulators will act in the public interest and understand how ecological systems work and how to change institutions so as to induce socially optimal behaviour (Feeny et al. 1996: 195). The

possibility that the users themselves would find ways to organise had not seriously been considered in much of the policy literature until the last decade” (Ostrom, 1999, p. 2).

The theory’s core flaw lies in its misdiagnosis of ecological overexploitation resulting from *internal* users. As Nayak and Berkes (2022, p. 3) argue, privatization and state control have contributed directly to ecological degradation and catalyzed decommissioning in Chilika:

“Many [recent decommissioning cases] involve privatisation and other impacts of neo-liberal policies... Profit motives drove politically powerful aquaculture investors into the lagoon to grow highly profitable tiger prawn... This started the displacement of small-scale fishers and the destruction of their commons arrangements”.

Nayak (2017a) discusses the perception of commons use of resources as largely tied to productivity. If livelihood and economic security are weakened, tenure and institutional arrangements begin to break down, and conflicts arise regarding resource extraction and violation of agreed upon rules. Productivity loss in commons justifies the conversion of commons spaces into different uses by external actors (i.e. the government). Nayak (2017a, p. 180) states, “the productivity logic is also used by many economists and fisheries scientists who see subsistence and local fish production systems as not contributing to increasing global food demands. They, therefore, argue in favour of converting these systems into intensive production units. Such views, and any actions resulting from them, bear significant adverse consequences for tenure rights of small-scale fishers”. An example is Tam Giang lagoon in Vietnam, which saw mangrove and capture fisheries replaced by aquaculture due to ‘low production’. Nayak (2017a, p. 180) states that Chilika Lagoon’s fish production decrease was used as justification for dredging a new sea mouth, causing “ecological and economic disaster”.

Nayak and Berkes (2022, p. 12) critique privatization as part of broader decommissioning in ocean spaces, driven by global markets and shifting power relations; “the push for the privatisation of marine resources (Blue Economy) has the potential to lead to the ‘enclosure’ of ocean space, comparable to the historical enclosure of land resources. This has serious implications for social justice and environmental sustainability involving commonisation and decommissioning processes”. Ostrom (1990) notes that the social-ecological impacts of privatization can undermine sustainability, providing the example of Alanya, Turkey, where unregulated resource competition increased uncertainty and overcapitalization. In response, fishers collectively developed rules which increased access to better fishing locations through fair distribution, ultimately resisting ecological degradation:

“Each September [to May] a list of eligible fishers is prepared, consisting of all licensed fishers in Alanya, regardless of co-op membership... all usable fishing locations are named and listed. These sites are spaced so that the nets set in one site will not block the fish that should be available at the adjacent sites... eligible fishers draw lots and are assigned... From September to January, each day each fisher moves east to the next location. After January, the fishers move west. This gives the fishers equal opportunities... spacing the fishers far enough apart on the fishing grounds that the production capabilities at each site are optimized. All fishing boats also have equal chances to fish at the best spots. Resources are not wasted searching for (or fighting over) a site. No signs of over-capitalization are apparent” (Ostrom, 1990, p. 19).

Privatization would have amplified ecological degradation and tensions due to competition of different fishing sites at different times; collectively shared rules were a better fit (Ostrom, 1990). Erin Ryan’s (2023) paper *Privatization, Public Commons and the Takingsification of Environmental Law* argues that over the past few administrations in the United States, a ‘privatization paradox’ has

been developed, in which deregulation by the government creates durable private property-like rights in public natural resource commons (such as air, water, and public lands). This entrenches privatization, making it difficult for future governments to restore environmental protections:

“A colorful metaphor to convey the strategy is that the new private rights effectively ‘salt the land’ against environmental regulation in the future. After sacking Carthage in the final Punic War in 146 B.C.E., the Romans are said to have salted the earth, so that nothing could grow upon the land and the barren city could not be rebuilt. The two-step privatization strategy outlined here is less dramatic but strategically similar: (1) after weakening the legal protections that had preserved environmental values in public natural resource commons, (2) create private rights of extraction in the formerly protected commons that can impede the restoration of conservation measures with constitutional, administrative, or other legal or political barrier” (Ryan, 2023, p. 648)

Ryan (2023, p. 650) states that although it is possible (yet difficult) to shift back from private to public land, its permanence stems from environmental impact:

“If mining is allowed in a former national monument and then subsequently banned, then even if the mining activity stops, there is now a mine amid a former wilderness. If logging or drilling is allowed and roads are built to facilitate the extractive activity, then even if extraction is halted, the roads are left behind, fragmenting habitat and facilitating forest erosion that weakens healthy ecological function of the watershed. If overfishing is permitted, impacted species may not recover. This is why the paradox so often creates a one-way ratchet toward privatization”.

Governments can entrench environmental regulation; for example, President Obama permanently banned new offshore drilling in the Atlantic and Arctic coasts, and President Biden prevented old growth felling in Alaska’s Tongass National Forest (Ryan, 2023). Both administrations used the Outer Continental Shelf Lands Act (OCSLA), which gives the president permission to prevent unleased lands from further use by oil, gas, and timber. However, this strategy is less effective as “one can always begin drilling on formerly pristine lands, but one can never undo drilling that has already begun” (Ryan, 2023, p. 653). Ryan (2023, p. 622) states:

“This dynamic shows how easy it is to carve private interests from public natural resource commons, and yet afterward, how hard it is to reassert the public interests that remain in the underlying commons without triggering legal claims and political friction. It is a pragmatic problem, and one that we might call the “privatization paradox” of the commons, because the pattern works in only one direction. The conversion of public natural resources into private interests survives policy transitions in what is so often a one-way journey, because private property law norms are stronger - and the rights they create stickier - than public regulatory law norms”.

Conversely, Rodgers (2019) makes the distinction that the greatest risk of CPRs falling into a tragedy of the commons is through ‘public property’ or ‘no property’, where no one has rights but everyone has open access. He highlights the importance of properly defining commons rights from public:

“Resources that are subject to common property rights will fall somewhere in the middle: in some situations, they may be at risk of environmental degradation, while in others they may not. This requires us to think about a further distinction, between open access common property, and limited access common property. An open access common resource will exist where everyone in the world has the right to use it in the

sense of not being excluded from it. Whereas a limited access common resource will arise where the only persons entitled to use the resource are members of a defined community: all members of the ‘community’ have a right not to be excluded from the resource. But they have a right to exclude others, including the wider public. A town and village green would fall into this category: it is a limited access common resource, in that only members of the ‘neighbourhood’ within a ‘locality’ have recreational access to it, and they are entitled to exclude others” (Rodgers, 2019, p. 146).

Brando et al. (2019) are clear that codifying commons is not intended to substitute or eschew the government, it is not ‘anti-state’: “commons will need to be formally recognised as autonomous institutions by public authorities in order to survive” (p. 563). They reiterate that, “although Ostrom clearly stands against a state-centric tradition, external government authorities can in fact be instrumental in ‘nesting’ local commons within higher levels of decision-making”, pointing to their role in the commons (Brando et al., 2019, p. 563).

The distinction between these different legal goals is imperative; codifying commons does not entail converting shared fishing zones into private, public, or government property, rather it involves legally recognizing and reinforcing the community’s own collectively devised and shared rules that are central to their long-term success and sustainability.

2.5b One Would First Need to Imagine it

There are a variety of types of legal recognition for commons governance in the literature, ranging from constitutional protections and statutory reforms to judicial rulings and environmental policies. A few illustrative examples include Indigenous fisheries in Canada, where rights are constitutionally protected under Section 35 of the Constitution Act (1982) and affirmed through Supreme Court rulings such as *R. v. Sparrow* (1990), which affirms rights to fish for food, social, and ceremonial purposes (Canada Department of Justice, 1982; *R. v. Sparrow*, 1990). In Mexico, ‘ejidos’, communal landholdings created through land reforms, grant legal recognition to communities to collectively manage land and natural resources, through the support of the Mexican Constitution and institutions like the National Agrarian Registry (Bray, Merino-Pérez & Barry, 2005). Similarly, Nepal’s community forestry program devolves forest management authority to local user groups, under the Forest Act (1993) and Forest Regulations (1995), legally empowering communities to manage forests, generate income, and sustain local ecosystems (Agrawal & Ostrom, 2001).

The idea of legal rights for commons governance has circulated around Chilika for some time. Nayak and Berkes (2011, p. 143) argue that:

“However, to keep the Chilika commons as commons will require, as a starting point, a policy environment in which legal rights and customary livelihoods are respected. The timing may be good for a policy change: international prawn markets have stabilised and the ‘pink gold rush’ is over. Under new policies, political space for negotiation needs to be created, and processes causing marginalisation reversed. Fishers need to be empowered to re-connect to their environment and reinvent traditions of stewardship, without which there will be no resources left to fight over”.

As Nayak and Berkes (2011, p. 143) state, formalizing de facto community governance cannot be merely a technical or administrative shift, “networks and partnerships are central to this process of capacity-building and social-ecological revitalisation”, and state authorities and other powerful actors will have to cede control. Meta-analyses by Epstein et al. (2015) and Baggio et al. (2016) confirm that effective community governance structures long-term viability is heavily dependent on the

broader legal and institutional environment. It would be inappropriate to gloss over how difficult the process of new-commonisation, and codifying commons would be in Chilika, especially in light of the historical external relationships that will need to be navigated.

Additionally, Bakker (2007) critiques the rise of market-environmentalist reforms in which community-based resource management is promoted as a form of empowerment but often operates within neoliberal logics of privatization, self-responsibility, and market efficiency. She cautions that pursuing community control without addressing broader structural inequalities can shift responsibility to local users without granting genuine autonomy or support, thereby risking the reproduction of exclusion or dispossession rather than its reversal (Bakker, 2007). In Chilika, legal protections such as landmark court rulings against shrimp aquaculture, without enforcement and power have already proven insufficient:

“The question of how the regime of customary rights of caste-based fishers gradually changed into a state of de facto control of non-fishers in the Chilika Lagoon offers complex challenges. We consider that a bundle of commons rights, even when they appear to be de jure rights, is perhaps not enough without a ‘bundle of powers’ (Ribot & Peluso 2003). Effective commonisation would imply locating these ‘powers’ within the social, political, economic, and ecological contexts that shape people’s ability to benefit from resources” (Nayak and Berkes, 2011, p. 142).

Legal rights do not secure commons unless they are enforceable; they must enable and defend (not solely permit) community autonomy (Rodgers, 2019). Rodgers (2019) also warns that commons rights might be re-classified as public property by courts if the codification isn’t clearly defined. He also highlights potential problems with relying on conservation or regulatory law as this can reflect private property rights. Cosens, et al. (2021) similarly state that relying solely on regulation of external bodies is insufficient in complex SES, illustrated in their Figure and description below:

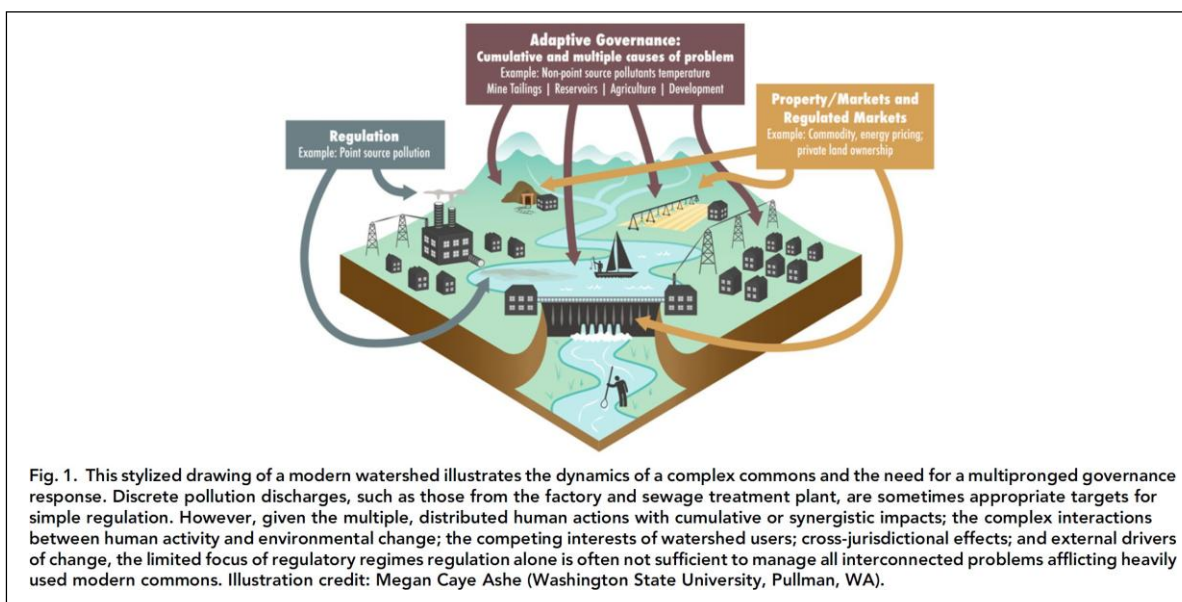


Figure 7: Regulatory Regimes Insufficient to Manage Complexity (Cosens et al., 2021, p. 2).

New-commonisation is not a governance framework but a transformative process in which communities reclaim and re-establish control over commons after a period of decommissionation

(Nayak & Berkes, 2022). Côte and Nightingale (2012) caution that resilience discourse can mask power asymmetry and systemic exclusion by depoliticizing community adaptability. Berkes and Nayak (2018) also argue that without attending to social justice, cultural rights, and local viability, even ecologically sound management will fail in the long run. This could be addressed with help from the various governance frameworks discussed earlier in this chapter (i.e. supporting communities vertically through different levels of authority to dismantle power imbalances). However, new-commonisation is no small undertaking; Chilika's fishery commons would have to navigate embedded power dynamics, where external actors may resist ceding control, a daunting task (Nayak & Berkes, 2022).

Berkes and Nayak (2018) published a paper called *Role of communities in fisheries management: One would first need to imagine it*; throughout the years of writing this thesis, I have had the words 'one would first need to imagine it' running through my mind. Tuck (2009) warns against characterising communities in their suffering; it is vital to also highlight the inner dynamism, knowledge, and collective strength that Chilika's communities have demonstrated already under immense pressure. Chilika's fishers already successfully halted a private shrimp aquaculture company through mass protests: "even though project development activities had started, the company decided to pull out of the area owing to sweeping protests by fishers who were united under the banner of Chilika Bachaoo Andolan (Save the Chilika Movement)" (Nayak & Berkes, 2011, p. 138). The community also already has experience defending themselves in multiple levels of court:

"Fisher cooperatives protested and challenged the 1991 lease policy in the State High Court. After prolonged legal battles, prawn aquaculture was banned by the Odisha State High Court in 1993, the Supreme Court of India in 1996, and the Odisha State Legislative Assembly House Committee in 1997. Finally in 2001, the State Government of Odisha banned prawn aquaculture in the Chilika Lagoon, and cancelled the 1991 lease policy" (Nayak & Berkes, 2011, p. 138).

Nayak (2001) notes that the multiple court cycles and success came at a great financial cost; villages such as Satapada and Kumarpur owed as much as \$200,000 USD each, and enforcement afterwards has been nearly non-existent (Nayak, 2014). Nayak (2017a, p 178) notes that despite this, community members have emphasized the importance of social movements for securing rights:

"... 'it is because of these protests and movements we have been able to hang on to our rights in Chilika. We will all die if the movement dies'. Nayak (2011) has used fishers' metaphors, such as 'for the poor, when hunger becomes unbearable, movement becomes our last resort' to discuss the importance of fisher social movements in protecting their rights. In both the community workshop on rights to Chilika (2009) and the regional consultation (2015), fisher representatives emphasized the role of social movements as key to ensuring governance of tenure rights".

Despite great difficulty, and in situations of severe ecological damage or decommissioning, there are examples in the world of success. In *Ocean: Earth's Last Wilderness*, Attenborough and Butfield (2025) recount a successful story in Cabo Pulmo, Mexico, where a community of commons fishers, facing ecological collapse, mobilized to protect and restore the coral reef. Working with scientists and government allies, they established a no-take marine protected area in 1995, halted fishing, and within a decade, biodiversity returned and the reef came back to life. Below is an excerpt from their book:

"Oh, it is the diversity and density of the coral which first strikes you. The rock here runs like fingers on top of the seabed into progressively deeper water, and that provides

habitats that favour different species. The colours, the intricacies, and the sheer beauty of this underwater world lead many visitors to assume it's a pristine, untouched reef. The coral density here... helps to attract a great diversity and abundance of other marine species. The shoals of jacks here are so vast that the vortices in which they swim have been known to engulf divers. Bull sharks, humpback whales, manta rays, turtles, and sea lions all frequent the waters. And a huge array of bird life here, attracted by so much fish, is considered to be of global importance. You can see why writer John Steinbeck said it 'pulsed with life' when he visited in the 1940s.

But in fact, Cabo Pulmo is not pristine. By the 1980s, its pulse had stuttered and faded. A few fish, echoes of the once vibrant reef community, stubbornly remained. But the great ocean travelers (sharks, rays, turtles, and whales) had not passed by in years. They had joined the long list of locations erased from the travel routes of the ocean's wandering giants. Local fisherman Juan Castro didn't truly think he could make the sharks or whales return, but he did hope he could revive his community... Decades of overfishing, combined with the anchors and weighted nets of boats smashing the reefs, had finally tipped the intricate ecosystem too far out of balance. Fish populations were critically low, and the people were out of options. It would be easy to give up, or, as so many other places have done, use increasingly brutal fishing methods to catch the few fish that remained.

But Juan Castro remembered the rich seas of his childhood, the sharks he had seen while fishing with his father, and the proud community that thrived in this beautiful region. He believed in the power of the sea, and he believed in his neighbours. Working with a local marine professor confirmed that what he instinctively understood from a lifetime of working the sea was also backed up by science. Given both time and protection, the reef his community depended upon could recover... back to life. First, they studied the reef, identifying areas where some healthy coral remained and small shoals of fish could still be found,... campaigned and petitioned the government to turn the reefs into a Marine Protected Area. This would keep the foreign fishing boats out. But that alone wouldn't be enough... they needed a complete no-fishing zone.

For a community largely comprised of fishing families, this was a life-changing request. Juan persuaded them it would be worth it, and in 1995, the Cabo Pulmo no-fishing zone and protected area was established. Jubilation was short-lived, now came the tough part. Having given up their fishing rights, the community's main source of food and income had disappeared overnight. It's hard to imagine what it must have been like for a working community built by generations of fishing families to live on the edge of the sea, yet be unable to fish and rely instead on government food vouchers to support them. The pressure and responsibility Juan and other advocates of the protected area must have felt to deliver results would have been intense and daily. The patience the whole of Cabo Pulmo showed in continuing to resist fishing... is remarkable.

From shore, they saw the seabirds growing in numbers and diving for the fish that people were not allowed to catch. Still, they waited... marine biologists studied the waters... ten long years passed. They could sense a quickening; a positive tipping point had been reached. Biodiversity beget biodiversity; rich seas attracted more species. Healthy corals spawned and gave shelter. Sharks were spotted. Whales returned. Ten years felt like a very long time to Juan and the community of Cabo Pulmo. But for

scientists, the transformation was surprisingly, and delightfully, rapid. This scale of regeneration in such a short space of time gave hope... there was recovery across all levels of the ocean ecosystem, from the smallest reef fish to the largest predators. And that was due to the power of the ocean, and the characteristics of the species that have evolved there” (Attenborough & Butfield, 2025, ‘Coral Reef’).

This story serves as a helpful reminder that, with the help of protections in place, even after significant ecological degradation, an ecology can regenerate; Chilika, too may be capable of leading its own renewal of the fishery commons. The next chapters will delve into case studies from other communities around the world who codified their commons during a process of new-commonisation to learn and illuminate insights and challenges that might occur in Chilika’s unique context. Three case studies will be examined using Process Tracing methodology: a community of yak herders in Shimshal Valley, Pakistan; forest dwellers across India; and coral fishing communities in Papua New Guinea, to explore how communities elsewhere have engaged in the process of new-commonisation while codifying the de facto rights of the commons.

Chapter 3: Methodology

3.1 Introduction

This chapter draws from Gerring's (2007) book, *Case Study Research: Principles and Practices*; using diverse case-selection strategy and process-tracing methodology; to explore the pathways in which, despite persistent pressure, communities codify the commons as a means to move from decommonisation to new-commonisation. Gerring (2007) argues that intensive case studies can advance theory by generating insight from a small number of deeply reviewed cases, making case study more appropriate than cross-case study. Chapter 2 grounded this thesis in commons theory and concluded by hypothesizing that to transform into a state of new-commonisation, Chilika's fisheries may want to advocate to codify the commons. Building on this, the following chapters compare three case studies to gain insight about the processes and pathways communities have used to emerge from the politically-complex contexts of decommonisation into states of codified commons. Figure 8, below, offers a full list of commonisation pathways that are taken to establish or restore commons:



Figure 8: Frequency of Commonisation Pathways Promoted by Social Movements (Villamayor-Tomás & García-López, 2021, p. 273)

Villamayor-Tomás & García-López (2021, p. 271) identify both legal and non-legal mechanisms (i.e. boundary formalization, defending use rights, economic autonomy, social capital building), and demonstrated the numerous methods in which communities legally-formalize de facto commons:

“The [defense of communal rights and territories] tends to align with efforts to formalise rights in laws or constitutions. For instance, in Mexico the struggles of forest communities against state and private timber concessions on their lands led to the passage of the 1986 Forest Law, which recognises communities’ forest management rights... Another recurrent pathway is the creation and defense of exclusive use zones, such as the ‘extractive forest reserves’ promoted by the rubber tappers movement in the Brazilian Amazon, and local forest communities in Petén, Guatemala...; or the ‘trawler-free coastal fishing zones’ reserved for artisanal fishing communities in Kerala and Goa, India... Movements also contribute to the formalisation of boundaries, which take place via the elaboration of maps... and the legal registration of the boundaries”.

While legal recognition is a powerful pathway, it remains understudied as a route to new-commonisation, especially for politically complex settings such as Chilika Lagoon. This thesis explores how codified commons emerge in diverse post-decommonisation contexts and draws lessons to inform potential governance transitions in Chilika Lagoon.

3.2 Research Design and Case Selection Strategy

3.2a Case Study Approach

This thesis employs case study, rather than cross-case study, methodology as established by Gerring (2007, p. 19), who defines case as a, “spatially delimited phenomenon (a unit) observed at a single point in time or over some period of time... created out of any phenomenon so long as it has identifiable boundaries and comprises the primary object... that an inference attempts to explain”. In this thesis, the unit is ‘commons’: communities that collectively manage common-pool resources (CPRs), within social-ecological systems (SES), such as a fishing village, forest community, or other shared system. The study encompasses the period of time during which these commons transitioned from decommonisation to new-commonisation, focusing on cases that successfully established codification despite complex socio-political pressures.

As this study intensively examines a small number of cases, it qualifies as a case study rather than a cross-case study, which draws from a larger sample (Gerring, 2007). For example, Villamayor-Tomás and García-López (2021) use a cross-case approach to identify broad patterns of decommonisation and commonisation (i.e. communities never decommonise as a result of one threat, but face ‘bundles’ of at least three; re-commonisation requires significant community mobilisation across social, political, and economic infrastructure; ‘spillover’ effects can occur in which multiple commonisation techniques occur simultaneously). Gerring (2007) argues that a high number of examples does not guarantee deeper understanding, stating: “case studies may be more useful than cross-case studies when a subject is being encountered for the first time or is being considered in a fundamentally new way... the hallmark of case reporting... is to recognize the unexpected. This is where discovery begins” (p. 40). Gerring (2007, p. 44) also notes, “in the task of investigating causal mechanisms, cross-case studies are often not so illuminating” as they tend to show correlations between variables without clarifying the reasons for those relationships. Villamayor-Tomás & García-López’s (2021) work has been foundational to my study, however while cross-case analysis is ideal for assessing the frequency of an occurrence, this study seeks to understand ‘how’ communities navigate, and ‘why’ particular governance transitions have occurred.

While the concepts of new-commonisation and re-commonisation have been theorized, focusing explicitly on the transition from decommonisation using legal recognition as a tool, remains underexplored. Other pathways to new-commonisation fall out of scope of this study. This aligns with what Gerring (2007) terms a theory-building approach rather than theory testing (such as with pre-defined hypotheses), to generate insight into the conditions and mechanisms enabling this shift.

3.2b Diverse Case Selection & Process Tracing Analysis

In case study research, case selection is not randomized, as with cross-case research, and are chosen purposively. Gerring (2007, p. 87-88), discusses this phenomenon below:

“However, in case study research the sample is small (by definition), and this makes randomization problematic... On average, these small-N random samples produce the right answer, so the procedure culminates in results that are unbiased. However, many of the sample means are rather far from the population mean, and some are quite far indeed. Hence, even though this case-selection technique produces representative

samples on average, any given sample may be wildly unrepresentative. In statistical terms, the problem is that small sample sizes tend to produce estimates with a great deal of variance – sometimes referred to as a problem of precision. For this reason, random sampling is unreliable in small-N research... Cross-case analysis and case study analysis both aim to identify cases that reproduce the relevant causal features of a larger universe (representativeness) and provide variation along the dimensions of theoretical interest (causal leverage). In case study research, however, these goals must be met through purposive (nonrandom) selection procedures... enumerated according to nine techniques, from which we derive nine case study types: typical, diverse, extreme, deviant, influential, crucial, pathway, most-similar, and most-different”.

This thesis uses a diverse case study type for case study selection and has employed process tracing for analysis in accordance with Gerring’s (2007) theory of case studies. Diverse case study type means that each chosen case represents different contexts or situations, still within bounds in that all cases share an ‘X₁’ which is decommonisation, and a ‘Y’, codification and new-commonisation; the key characteristic or phenomenon under study. To reiterate, decommonisation is defined as: the process by which commons resources are privatized or taken over by external actors, leading to the loss of community control and governance (Nayak & Berkes, 2022). Each study represents a type of commons (i.e. grasslands, forests, or coastal waters); and a form of legal achievement (i.e. Islamic law: waqf; country-wide Act; or LMMA defended under other law such as constitutional, or Acts).

Across other cases of re-commonisation (such as those in Villamayor-Tomás & García-López (2021) meta-analysis) there was not a strong assumption that codifying commons would be necessary to re-commonise as there are other techniques employed. It might be inferred that with cases that have been through such full decommonisation, rather than just threats of it, have a far greater hurdle of political drivers to overcome. A good example of this was by Schlager and Ostrom (1992), highlighted in Chapter 3, in which fishers faced elite capture, were confronted with violence, the fishery was overused, and the commons were permanently destroyed. There is a need to carve out space for legal protections, despite the authoritative (and often violent or dangerous) overreach.

The cases analysed in this thesis have faced decommonisation and found ways to codify their commons as a central point in the pathway to new-commonisation (regaining governance over commons). While this study does not formally test necessity, as inclusion of failed cases would be required, the pattern and insights from Chapter 2 suggest that securing legal rights may be a critical enabling condition for restoring Chilika’s commons. The political context of decommonised cases makes it so that the fishery commons cannot be so easily re-established, and in some cases, this may feel too late or impossible (Nayak & Berkes, 2022). What this study asks is how have other cases succeeded? What pathways did they take to get from decommonisation to new-commonisation?

Process tracing means that the case studies in this thesis moved from X₁ to Y through the recognition of legal rights over the commons via varied mediating mechanisms (Gerring, 2007). Beach and Pedersen (2016, p. 838) state that “in-depth, within-case tracing of how mechanisms operate in particular cases produces what can be termed mechanistic evidence”. Whereby, “mechanisms are understood as more than just intervening variables but instead are viewed as a system of interacting parts that transfers causal forces from causes to outcomes” (Beach & Pedersen, 2016, p. 839). This is in contrast to condition-centered design, in which a researcher would analyse when mechanisms break down, with the goal of revising a pre-existing causal theory (Beach & Pedersen, 2016).

Gerring (2007) calls this evidence the ‘causal pathway’, which can be analysed through causal chains of X₁→X₂→X₃→Y, where “the analyst seeks to make sense of... disparate evidence, each of which

sheds light on a single outcome or set of related outcomes” (p. 178). As I am less concerned with the order of actions, I will shorthand this process, of what lies between X_1 and Y , to ‘M’ for mechanisms overall. M is under observation; to analyse M, the kinds of questions asked are what strategies were employed by each case in the form of community action (i.e. advocacy, negotiated ceding of control, mobilization of allies or supporters), and what enabling conditions were met in order for those actions to be able to be taken (i.e. political opportunity, credible allies, global attention)? To best understand what followed the transformation to new-commonisation, other questions include: what new rules, responsibilities or structures did the community adopt, and what impact did this have on them? An example of this might be a strategy to advocate for change, and the condition being that the authority recognized that they needed to cede control. Another example might be, the community knows they must demonstrate why a no-take zone is necessary to neighbouring communities, so they work with a scientific body to help them map out fishing routes and translate that to external parties.

It is important to note that, although some considerations are included, the longer-term success of maintaining new-commonisation post legal-recognition is not within the bounds of this study, though a future study focusing on this would be prudent. Additionally, although cases that failed to transition to new-commonisation were considered, they were ultimately excluded in order to observe the patterns of success, in support of ongoing efforts to re-secure commons governance in Chilika. This is in line with Beach and Pederson’s (2016, p. 840) theory on case selection for process tracing methodology, in which they state:

“...existing guidelines that suggest we should also select negative cases for studying mechanisms... do not fit with the assumptions of case-based research. Studying mechanisms in particular cases focuses on using in-depth empirical analysis of what actually happened in the case to shed light on how a cause (or set of causes) produces an outcome through the operation of a mechanism... Tracing a nonexistent mechanism in a case where we a priori knew it was not present tells us nothing about how the mechanism works in cases where it is present”.

To summarize, diverse case selection guides which contexts are included; process tracing unpacks each case’s activities that explain the shift from decommonisation to new-commonisation. All cases share the same triggering condition (X_1 is state of decommonisation) and the same outcome (Y is state of new-commonisation with legally-backed new commons arrangements). The informed assumption is that after decommonisation, legal recognition and moving to a state of new-commonisation is unlikely, thus process tracing is employed to understand how these cases reached Y despite X_1 , which demands explanation via M . To maintain a simplified understanding of this case study methodology, much of this study will express ‘ X_1 ’ as the state of decommonisation, ‘ Y ’ as the state of legally-backed new-commonisation, and ‘ M ’ will be the mechanisms, strategies, enabling conditions, responsibility-shift, and impact that existed as a part of the overall transformation.

3.2c Case Study Research Design Considerations

Gerring (2007) outlines 8 factors that determine case study vs. cross-case study research design. Though not invariant laws, the case study considerations provide helpful parameters in research design for this thesis. Below is a table with the full list, followed by explanations for each.

TABLE 3.1. *Case study and cross-case research designs: considerations*

	Affinity	
	Case Study	Cross-Case Study
Research goals		
1. Hypothesis	Generating	Testing
2. Validity	Internal	External
3. Causal insight	Mechanisms	Effects
4. Scope of proposition	Deep	Broad
Empirical factors		
5. Population of cases	Heterogeneous	Homogeneous
6. Causal strength	Strong	Weak
7. Useful variation	Rare	Common
8. Data availability	Concentrated	Dispersed
Additional factors		
9. Causal complexity		Indeterminate
10. State of the field		Indeterminate

Figure 9: Considerations in Case Study Research Design (Gerring, 2007, p. 38)

Research Goals

Hypothesis

As stated, this study is not a test of pre-existing hypotheses across a population and instead explores whether and how new-commonisation might be a viable governance pathway if using legal means, and is considered *hypothesis generating*, rather than testing. The analysis will highlight mechanisms, strategies and conditions aiding in this transformation. Legal recognition can be achieved even in harsh political climates, and the transition itself, the governance shift toward codification, is the broader phenomenon requiring further study. This phenomenon includes consideration of ‘critical junctures’, which act as ‘turning points’ for each community (i.e. policy options, ecological crises, global attention and advocacy, and others). These will not be the same across cases, but the phenomenon of disruption and rupture of systems, and the resulting reorganization, will be.

Validity

This study focuses on understanding the *internal* mechanisms behind successfully implemented codification of commons in highly decommonised cases, and how they relate to only Chilika Lagoon. The goal is not to prove this can be generalized externally. The focus is on causal mechanisms, which is why or how it occurs in these cases, rather than how widely or how often it happens.

Causal Insight

This study traces causal *mechanisms* rather than measuring causal *effects*, in line with Gerring’s (2007) emphasis on process tracing within case studies; it explores how communities have activated pathways to legal recognition, by identifying the strategies and institutional mechanisms that enabled the shift to reclaim and protect commons. Key strategies include internal dynamism (i.e. community advocacy, creative problem solving, etc.) and external support (i.e. NGO legal aid, scientific backing, etc.) as described by Khan and Haque (2021) as the two main formations of new-commonisation. Mechanisms might include reinstating customary authority, creative institutional reforms, legal recognition pathways in court, and others. The goal is to understand *how* these transitions occurred, not to generalize average effects, and to consider their potential relevance for Chilika.

Scope of Proposition

This thesis does not include many cases; the analysis is instead intended to be *deep* to develop a rich, contextualized understanding of each transitional phenomenon, rather than of the broader population.

Empirical Factors

Population of Cases

Cases in this study vary significantly in their chosen legal frameworks, historical trajectories, and political contexts, thus they represent a *heterogenous* population.

Causal Strength

Each of the causal pathways succeeded in achieving ‘Y’ (new-commonisation), meaning that the causal strength can be considered *strong*. Studies that failed to achieve Y are excluded.

Useful Variation

Useful variation refers to differences across cases (or within a single case over time if temporal) that are theoretically relevant to the research question and can shed light on causal mechanisms. In cases of decommonisation, afterwards, commons do not always successfully transition to a state of new-commonisation (Y), particularly with the use of legal tools. Additionally, the causal factors that led to Y vary greatly across the cases. Thus, the useful variation can be classified as *rare*.

Data Availability

As stated above, finding cases that meet the criteria is difficult, and they are rare. The quote below helps to identify why the data availability can be classified as *concentrated*:

“The question of available evidence impinges upon choices in research design when one considers its distribution across a population of cases. If relevant information is concentrated in a single case [or a small number of cases], or if it is contained in incommensurable formats across a population of cases, then a case study mode of analysis is almost unavoidable. But if it is evenly distributed across the population—that is, if we are equally well-informed about all cases— and is case-comparable, then there is little to recommend a narrow focus” (Gerring, 2007, p. 58).

3.2d Spatial vs. Temporal

“Note that the spatial boundaries of a case are often more apparent than its temporal boundaries... Yet some temporal boundaries must be assumed. This is particularly important when cases consist of discrete events – crises, revolutions, legislative acts, and so forth – within a single unit” (Gerring, 2007, p. 19-20).

This thesis follows what Gerring (2007) refers to as a spatial comparison as the causal pathway analysis unfolds across space rather than time. The outcome is already in place in varying degrees in each case, which means it cannot be observed or tempered with over time:

“...because these changes are not observable – we can observe only their outcome – the research takes on a different, and necessarily more ambivalent, form. One cannot ‘see’ X₁ and Y interact; one can only observe residues of their prior interaction. Evidently, where there is no variation in the theoretical variable of interest, no experimental intervention can have taken place, so this research design is limited to observational settings” (Gerring, 2007, p. 164).

This framing is appropriate for this thesis as it does not attempt to evaluate whether new-commonisation has been successful in the long-term, but rather *how* it was achieved in diverse

settings (though there is some reflection on the immediate short-term outcomes). To my surprise, Gerring (2007) illustrated this with an example of India's divergent land tenure systems, in place as a result of British colonial arrangements, that are now landlord-based, individually-based, or village-based, which is an observation that can no longer be witnessed in person. The long-term implications of these arrangements are only observable now through patterns that emerged over time; similar to cases having already achieved codification and new-commonisation.

3.2 e Case Selection Rationale

As stated, case study selection must be purposive, and demonstrate diversity through the type of commons governed and the legal rights achieved. To be comparable, the case studies must maintain certain boundaries which include heavy decommissioning as well as achieving new-commonisation as a result of the development of codification. However, a few more boundaries have been added to allow for a closer comparison with Chilika Lagoon. That is, the cases must in some way demonstrate these three key characteristics: the commons are situated in a similarly complex social-ecological system (SES); decommissioning occurred largely due to external actors rather than natural causes or internal dynamics; and legal rights are meant to protect commons governance rather than create individual privatization or state control.

Ecological Parallels: Chilika's Complex SES

Chilika's fishing community maintains a long term and deep cultural attachment to the Lagoon. During the V2V field school, local activists including the leader of the women's group, and community members of all ages, spoke to us about their deep ties, connection and relationship with the lagoon and the kind of change they wanted to see for its future. The community has managed this complex ecosystem, including its endangered or rare species and unique biosphere for centuries. The brackish-water maintains a fragile system, including quality, flow, and underwater topography, and is home to small-scale fishery communities. More on this ecosystem can be read about in Chapter 2. For this reason, the chosen case studies had to exemplify a complex SES.

New-commonisation with the use of codification, has existed across the world, however, not all ecological situations are comparable to Chilika. A good example is the Bologna Regulation, in which 'urban commons' were created with legal frameworks in place to support citizen co-governance of shared resources, such as public buildings and green spaces (Foster & Iaione, 2022). This case illustrates successful implementation of legal recognition, however, as it is situated in an urban space, it isn't comparable to Chilika's complex social-ecological system (SES) and was therefore not included.

Multi-Scalar Dynamics and Decommissioning

As outlined in Chapter 2, Chilika's community has reached a breaking point and a loss of much of their commons. Like an elastic band stretched too far, the system has been absorbing decommissioning pressures for many years. According to Holling (1973), in resilience terms, once a system is pushed beyond the limits of its domain of attraction, it exits its previous state and cannot easily bounce back. A new system forms in its place, often less desirable and difficult to reverse, i.e. decommissioning.

In Chilika, this decommissioning occurred largely as a result of multiple external actors and pressures (see Chapter 2); this study includes cases that experienced decommissioning as a result of similar multi-scalar, political dynamics. Cases that experienced relatively less politically-complex situations, or who had re-commonised in earlier stages of decommissioning were not included. A good example of this is fishing communities in Fiji who established widespread Locally Managed Marine Areas (LMMAs) and Marine Protected Areas (MPAs), with much support from external governing bodies, even inspiring other countries to follow suit:

“Fiji has shown an impressive rate of expansion supported by a national network of NGOs and government organizations promoting “locally managed marine areas”... More than 200 villages spread across the 14 provinces in Fiji have established some form of community-based management measures and the numbers have increased steadily every year over the last decade. This is due in great part to trickle down or snow-ball effects which has seen skills passed from village to village and requests from interested communities surpassing available support capacity” (Govan, 2009, p. 34).

“Following the significant commitment made by the Fiji Government to establish a network of MPAs in 30% of Fiji’s waters, the Federated States of Micronesia at the Convention for Biodiversity... in Brazil, in 2006 committed to establishing MPAs in 25% of their EEZ [Exclusive Economic Zone]” (Govan, 2009, p. 12).

Additionally, although highly relevant, another excluded example are Indigenous salmon and lobster fisheries in Canada, in which many communities had similarly undergone decommissioning (among many other colonial atrocities), and managed to eventually attain legal rights over the commons (Turner, Berkes, Stephenson, & Dick, 2013). For example, in British Columbia, Canada, there was a decline in Pacific salmon stocks as a result of the rise of commercial canneries between 1878 and 1990 (Nayak, 2021; Turner et al. 2013). This paralleled the loss of Indigenous control over fisheries, and many traditional governance systems were dismantled, such as the use of fish weirs, traps and reef nets which were banned for nearly 100 years, until the 1970s, despite their sustainability (Nayak, 2021; Turner et al. 2013). Some rights and practices have been restored, however it does not share the same kind of governance shift that Chilika is looking to make, as the political situation is embedded in a highly settler-colonial relationship. Legal recognition occurs against a backdrop of treaty law, domination by Canada’s governance structures, and long-term erasure of communities and culture (Turner et al., 2013). The political context is very different from what has been experienced by fisheries in Chilika Lagoon, and for this reason they are also out of scope for this case study analysis. In future studies focusing on new-commonisation, I highly recommend their inclusion.

Governance Shift

Finally, as the hope is that Chilika’s fisheries may successfully go through new-commonisation, the final boundary is that case study examples must have successfully shifted their governance structures to include codification of the commons, resulting in maintained community autonomy. Communities that experienced a governance shift that led to privatization or state control, are understood to be examples of decommissioning (see Chapter 2), and are therefore also excluded. Communities that had very little say in the transition were also excluded. For example, Malawi’s Lake District fisheries followed much of the same path towards new-commonisation with legal rights in complex SES and experienced a politically-complex multi-scalar dynamic that resulted in decommissioning, however the governance shift was not led by, nor did it really include, local communities (Nayak, 2021; Msomphora, Njaya & Jentoft, 2022). Msomphora et al. (2022, p. 305) state, “you do not learn much when your only role is to provide answers to other people’s questions”; these fisheries remained decommissioned as the newly formed structures ultimately fell under state control.

Case Selection Criteria

Based on the above rationale, the following criteria for case selection includes:

1. Ecological Parallels: Focus on ecosystems facing ecological pressures akin to those observed in Chilika, such as over-use of the resource by external pressures, habitat loss, vulnerabilities for rare or protected species, natural disasters, or anthropogenic pressures such as encroachment.

2. Decommonisation due to Multi-Scalar Dynamics: Highlight a tension between local decision-making and other scales, (i.e. regional or corporate activities, national policy-making, or global interests). Demonstrate that these pressures have threatened the commons and SES and reflect a critical stage where the system passed a breaking point of resilience through decommonisation.
3. Governance Shift: Show legal rights over the commons and demonstrate resulting new-commonisation. It is likely that studies will not have labelled this explicitly new-commonisation.

Final Considerations for Purposive Selection

How each of the chosen cases fits the above criteria will be broken down further in the subsequent chapters, however briefly, the three case studies chosen include: a community of yak herders in mountain commons in Northern Pakistan, forest dwelling communities across India, and coastal fishing communities in Papua New Guinea (PNG). These three case studies met the inclusion criteria, however, were chosen as exemplary cases for a few additional, purposive, reasons. PNG's fishery provides a water-based example, India's forest dwellers have similar political challenges, Pakistan's yak herders provide a solid and well documented baseline example of new-commonisation. Although many of PNG's fishing communities are only mid-way through the process of new-commonisation, they provide a perspective unique to coastal commons, including implementation challenges that reflect Chilika's own water-based context. As it is historically easier to facilitate rights based on land rather than at sea (Nayak, 2014), an inclusion of a water-based system case study was necessary. India's forest dwelling communities gained rights through the Forest Rights Act (FRA) of 2006 after much advocacy and protest. As they share a country, there may be similarities in the advocacy that will be required from Chilika Lagoon, especially if communities work towards a Coastal Rights Act, which has (observationally) been under consideration. Finally, the success of Pakistan's Yak Herding community is notable; it remains one of the most well-recorded transitions to new-commonisation that I could find in the literature and therefore serves as a baseline for the phenomenon.

3.2f Search Strategy & Use of Secondary Data

As mentioned above, the search for these case studies was purposive; three were included so there is a variety of pathways. This was a targeted search, and the inclusion criteria and process of elimination is identified above. However, the search process also included keyword searches across academic databases, as well as grey literature such as news media, policy archives, community-based websites, NGO and science journals. Search terms included common pool resources, decommonisation, governing commons, formalization of community rights, legal recognition for fisheries, and others.

The search process also involved a targeted review of thematic volumes and foundational works on commonisation theory, especially *Governing the Commons* (Ostrom, 1990), *Making Commons Dynamic* (Nayak, 2021); Govan's (2009) guide on LMMAs and MPAs for fishery governance, all commons literature by Nayak, Berkes, Armitage, Khan, Ostrom, Jeong, Villamayor-Tomás, García-López, and others. Some NGOs; the WWF, World Bank, and LMMA Network, were greatly informative; as well as some conservation-related bodies, such as the Ramsar designation and country-specific ministries. I also drew from previous experience in writing an informal undergrad thesis about Odisha's forest dwelling communities while I lived there and worked with the NGO NIRMAN and KIIT University in 2015-2016.

I was in particular looking for communities who had faced a similar struggle to Chilika, were well documented, showed evidence that the legal recognition worked to help them maintain autonomy over CPRs, and personally I was also looking for situations where livelihoods improved as a result, at

least in the short term - though the actual findings were mixed. If a study was relevant but very little was documented about it, I could not include it as I needed to look deeper into the causal pathways. I also kept an eye out for changes that primarily reflected top-down or externally-imposed governance structures, using new-commonisation as a veil.

As this was purposive, no major coding was performed to find the case studies, as the logic of case selection followed Gerring's (2007) diverse-case strategy, using process tracing to explore causal mechanisms across selected cases. (However, a small code book was developed, in process tracing analysis, simply to be better able to organize causal themes across each case).

The literature review conducted for Chapter 2 largely used works that documented Chilika's experiences, with special attention given to Nayak (2014), which was foundational. Due to a long-standing presence of academic research in Chilika Lagoon, there was sufficient information published on this community's experiences for me to not have to conduct a primary qualitative study with the community on their history or experiences. Should there be another study on legal pathways for Chilika Lagoon, it would be recommended to carefully document their insights, thoughts, and ideas directly, as well as update the literature on their current commons situation. Similarly, governance structures such as polycentric, adaptive and CBNRM are also well documented enough for a literature review to be sufficient for their short consideration in Chapter 2.

3.3 Analytical Framework and Within-Case Observations

As explained by Gerring (2007), cross-case analysis may involve a single observation per case, and case study research provides multiple within-case observations drawn either diachronically (over time) or synchronically (at one point in time). Case studies prioritize variation that happens within-case, rather than across them. In this thesis, each case is treated individually, focusing on what occurred specifically regarding Pakistan's yak herding community, India's forest dwellers or PNG's fishing communities, rather than a direct comparison to each other.

A short context will be built at the start of each case study to describe the commons and SES, as well as each of their pathways to decommissionation; outlining how commons were dismantled, lost, or undermined. As terminology around commons might be underused, this will also help identify the case study as 'decommissioned'. Examples of this could include elite capture, external encroachment, state expropriation or privatization, policy exclusion or others.

Each case will then be analyzed through multiple observations structured around two thematic variables occurring post-decommissionation: (1) community mobilisation and external response; (2) transformation: new responsibilities and community outcomes.

Variable 1: Community Mobilisation and External Response

This variable focuses on how communities responded to decommissionation and the enabling conditions that supported this response. Guiding questions might include, what did the community do to protect or reclaim their commons? What conditions made this possible? Examples of this might be protest and resistant movements, court actions, alliances with NGOs or political actors, external actors, negotiated ceding of power, enforcement practices, and the creation of new boundary rules. This variable also identifies how legal reforms helped to solidify new-commonisation and asks what form of legal recognition was secured, and how did it support community-led governance? Examples of this are constitutional protections, statutory rights, religious endowment, co-management frameworks that legitimately maintained community decision-making and autonomy over the

commons, or other legal codifications of customary systems. If it is possible to observe, Variable 1 includes questions regarding what factors helped to legitimize the legal claim to new-commonisation.

Variable 2: Transformation: New Responsibilities and Community Outcomes

New-commonisation is a transformative process; commonisation and decommonisation are ongoing (Nayak & Berkes, 2022). This variable examines the state of new-commonisation for communities and asks what new rules and responsibilities are in place, and what were the outcomes or impacts of this governance shift on communities? Examples might be local enforcement capacity, cultural shifts, strengthened institutions, regime change, embedded community-led decision-making, or others. This variable also considers what outcomes or impacts occurred post new-commonisation.

A small codebook was developed in order to put quotes from the literature into themes that fit under the two variables. These were: (1) mechanisms, with subcodes such as protest, community planning, establishment of legal rights, strengthened legitimacy; (2) enabling conditions, with subcodes such as global attention, political moment in time, community desire, and ‘luck’; (3) new responsibilities, with subcodes such as trade-offs, financial needs, long-term planning; and (4) community outcomes with subcodes such as demographic changes, changed or unchanged commons rules, community dynamics, and external relations. This is not an exhaustive list, and subcodes were developed iteratively as themes arose from the literature. The quotes were then used to find themes within each causal pathway, which were then summarized narratively as part of the analysis. Following process tracing, findings from each case were synthesized into themes, to identify potential considerations for Chilika, with particular attention on processes and mechanisms that enabled communities to reassert control over the commons, and efforts made to safeguard against future decommonisation.

3.4 Limitations

Case study analysis is naturally limited to only a small number of cases, as identified above. However, there are other limitations to this study that must also be acknowledged. As is required with process tracing, excluding stalled or failed cases, or those that did not gain legal reinforcement, limits the ability of this study to assess which conditions led to failure or alternative outcomes. This could be assessed in another study. Additionally, given that this study selects heterogenous cases purposively, the findings are not intended to be statistically generalizable, but to focus only on Chilika Lagoon. As a result, it might be difficult to translate lessons to other communities experiencing decommonisation and looking to also reinstate their commons without a full review of their situation as was outlined for Chilika in Chapter 2. Similarly, cases are somewhat similar to Chilika, which means other important examples of new-commonisation, such as Indigenous fisheries in Canada or urban cooperatives in Spain, excludes additional, potentially rich insights from alternative transformations to new-commonisation. The analysis also draws solely from secondary data, which means that this study and the literature review in earlier chapters may not capture insights from Chilika’s current situation. This would be prudent upon furthering this subject.

Additionally, this study analyzes cases that have already undergone their transformation to new-commonisation or are nearly through this process. As Gerring (2007) notes, this limits the ability to observe causal pathways in real-time as communities are experiencing them, whether successful or unsuccessful. There may be other, felt-in-time, findings that are not included in this study (i.e. emotional toll on communities, or elements of danger in negotiating for authorities to cede control).

Finally, a key limitation of process tracing methodology is its heavy reliance on the researcher’s prior knowledge, contextual familiarity, and interpretive judgment to identify causal mechanisms, which can introduce bias and reduce replicability compared to more controlled research designs (Gerring,

2007). While some interpretive judgment is unavoidable, this study benefits from the researcher's prior field experience in Odisha from 2015-2016, including six months of residence in Bhubaneswar, qualitative work with forest-dwelling communities (including engagement with forestry department officers), and collaboration with an NGO and the local KIIT university based in the city but also involved in Chilika. The researcher also visited Chilika Lagoon during the V2V field school of 2022. The absence of direct field experience in Pakistan or PNG is acknowledged as a remaining limitation. An additional strength is the involvement of the research supervisor, Dr. Prateep Nayak, whose decades of expertise in commons-based research provide further grounding and oversight, helping to bolster the robustness of the study's interpretations.

Despite these limitations, the study offers one small consideration in the overall study of commons, in its approach of understanding how communities can regain governance over their commons through legal means despite intense political or ecological pressure. The goal is to serve as a stepping stone for other studies and community and supportive action to catalyze support for Chilika and other similar communities. I also hope papers on this subject inspire actors working with communities who manage commons resources to pay far greater attention to their needs rather than assume the actions of the present, which are shortsighted in comparison to thousands of years of knowledge, are correct.

3.5 Conclusions

This chapter has outlined the methodological foundation for this thesis, relying on Gerring's (2007) principles of case study research. Through a purposive, diverse-case selection strategy, and analytical process tracing, the research investigates how communities facing decommissioning have transitioned to new-commons through the development of legal rights. The analytical framework focuses on within-case variation to unpack causal mechanisms (M) that enabled each community to move from decommissioning (X_1) to new-commons (Y).

Cases were additionally selected based on their comparability to Chilika's complex SES, the presence of multi-scalar political dynamics, and evidence of a governance shift that restored community autonomy. While the study does not seek to assume long-term success, nor does it offer generalizable findings, it does aim to generate insight about how legal tools, strategic mobilisation, and enabling conditions may interact in the process of transforming commons governance.

The following chapters analyze each case using the variables and methods described above. The goal is to extract meaningful lessons through secondary literature and narration, which might serve to support Chilika Lagoon with its own path forward.

Chapter 4: Case Study Analysis, Shimshal Valley, Pakistan

4.1 Introduction of Overall Case Study Analyses

Systems of commons governance are impacted by a wide range of political, economic, social and environmental conditions unique to each context (Nayak & Berkes, 2021). As these systems are embedded in specific histories, geographies and power structures, no two commons share the same drivers of change. As Nayak and Berkes (2022) point out, commonisation and decommonisation are processes that occur simultaneously with shifts towards change occurring gradually or suddenly. Nayak and Berkes (2021, p. 3) state, “it is imperative to examine these processes of change, and their implications for how commons can be governed as commons in the long run”.

In Chilika Lagoon, fishing communities have governed common-pool resources (CPRs) for generations through collective action; applying principles of excludability (rules around who is and is not considered a legitimate resource user) and subtractability (resource distribution among its users); with codes of conduct and social sanctions in place for rule violations (Nayak & Berkes, 2021; Ostrom, 1990). However as described in Chapter 2, the introduction of commercial aquaculture, along with shifts in ecological, political and property-rights regimes, led to widespread dispossession of the fishery commons and their communities. Despite their long-standing role in managing the lagoon, these communities lacked legal mechanisms to protect access and decision-making authority over commons and the systems affecting them. This loss of control constitutes a process of decommonisation; a transformation in which the commons loses its core attributes of excludability and subtractability, and becomes vulnerable to privatization, elite capture, or external governance.

As there are no prescriptive examples that can serve as a panacea for all communities experiencing decommonisation, the following chapters explore three communities who have similarly entered a state of new-commonisation, even if they did not label it as such, and examines their successes and challenges upon codifying commons. As outlined in Chapter 3, the intention is to follow *process tracing* methodology, *within-case*, across a *diverse* set of cases, who have all experienced ‘X₁’ (the state of decommonisation) and ‘Y’ (the state of new-commonisation with legally-backed commons arrangements). In line with the variables outlined in Chapter 3, each case will be examined under (1) community mobilisation and external responses, (2) transformation: new responsibilities and community outcomes. The three cases include communities that have shifted toward a state of new-commonisation through legal recognition. The analysis is not intended to be generalizable or prescriptive; as Nayak and Berkes (2021) note, commons governance is inherently context-dependent, and what succeeds in one setting may not work in another. They can, however, reveal parallel challenges, creative and innovative adaptations, and transferable insights that can be used to generate hypotheses for key considerations in Chilika Lagoon.

The cases explored in the following chapters each moved toward a system that legally recognizes their commons. These are: Pakistan’s Shimshal Valley Mountain Region, where yak herders have managed pastural commons through customary institutions, now recognized by the state; India’s Forest Rights Act (FRA), which provides a legal basis for forest-dwelling communities to regain control over ancestral land and resources; and, Papua New Guinea’s coastal fisheries, where locally managed marine areas (LMMAs) maintain customary tenure while being embedded within law. The following chapters analyse two variables: (1) community mobilisation and external response, demonstrating mechanisms, strategies, and enabling conditions that have facilitated the development of codification, and (2) transformation: new responsibilities and community outcomes, which reviews impact of the shift to a state of new-commonisation following decommonisation.

4.2 Context & Inclusion Criteria

4.2a Pastoral Commons in Mountains, Grasslands and Forests

This first case study focuses on a cluster of villages in Shimshal Valley, Karakoram range, Pakistan, home to nomadic and semi-nomadic yak herding communities, who have managed high-altitude (3000 m) pastoral commons spanning 2700 km², for at least four centuries (Khan & Haque, 2021; Kreutzmann, 2025; Khan, Rhaman & Sunderland, 2011). Oral history records an ancestor named Mamusing (possibly Mamu Singh) and his son Sher to be the first to settle in Shimshal and discover and use the pasturing routes, seventeen generations ago (Kreutzmann, 2025; Khan & Haque, 2008). The community, whose cultural identity is deeply tied to yak herding, notably resisted external claims over their grassland commons by the establishment of the Khunjerab National Park (1970s) and Central Karakoram National Park (1993); Kreutzmann (2025, p. 26) states:

“After longstanding confrontations and disputes, a management plan was drawn up twenty years after the establishment of Khunjerab National Park. Agreements were subsequently signed by all communities who accepted compensatory measures, with the exception of Shimshal community, who claimed that the loss of their cultural identity and natural assets was not compensable... They claimed that their cultural identity as farmers who practice combined mountain agriculture was under threat. The conflict was not resolved, but Shimshal Nature Trust agreed to share the common burden of nature protection with the national park management [by] 2001”.

The community asserts that the agreements were an “attempt to expropriate their inherited lands and valuable pastures”, made under a park authority claim that human use was harming the environment (Kreutzmann, 2025, p. 26). Yet, the community’s long-term management of the pasturelands has contributed to their protection; in fact, their potential overuse was tested in a study examining fodder consumption and vegetation cover, concluding: “pasture use was well within the limits of the vegetation’s carrying capacity (Wiedner, 2019)” (Kreutzmann, 2025, p. 26). Communities also noticed that when yak grazing happens in the winter (figure 10), pasture conditions improve greatly.



Figure 10: Winter Yak Herding in Shimshal Valley (Khan & Haque, 2021, p. 296)

4.2b Decommonisation: Competition for Pastoral Lands

Despite their ability to maintain environmental stability, external pressures, such as state-led conservation initiatives, market integration, and infrastructure development, threaten and challenge their commons management systems (Butz, 1996). The forest and mountain regions are complex and fragile, if overexploited and mismanaged, they can easily fall into a degraded state in the form of barren valleys and mountains, evident in neighbouring communities (i.e. Naltar Valley) (Khan & Haque, 2021). Grazing routes are located in a region bordering China, and both countries have at times maintained nearby military presence that made use of the local resources (Kreutzmann, 2025).

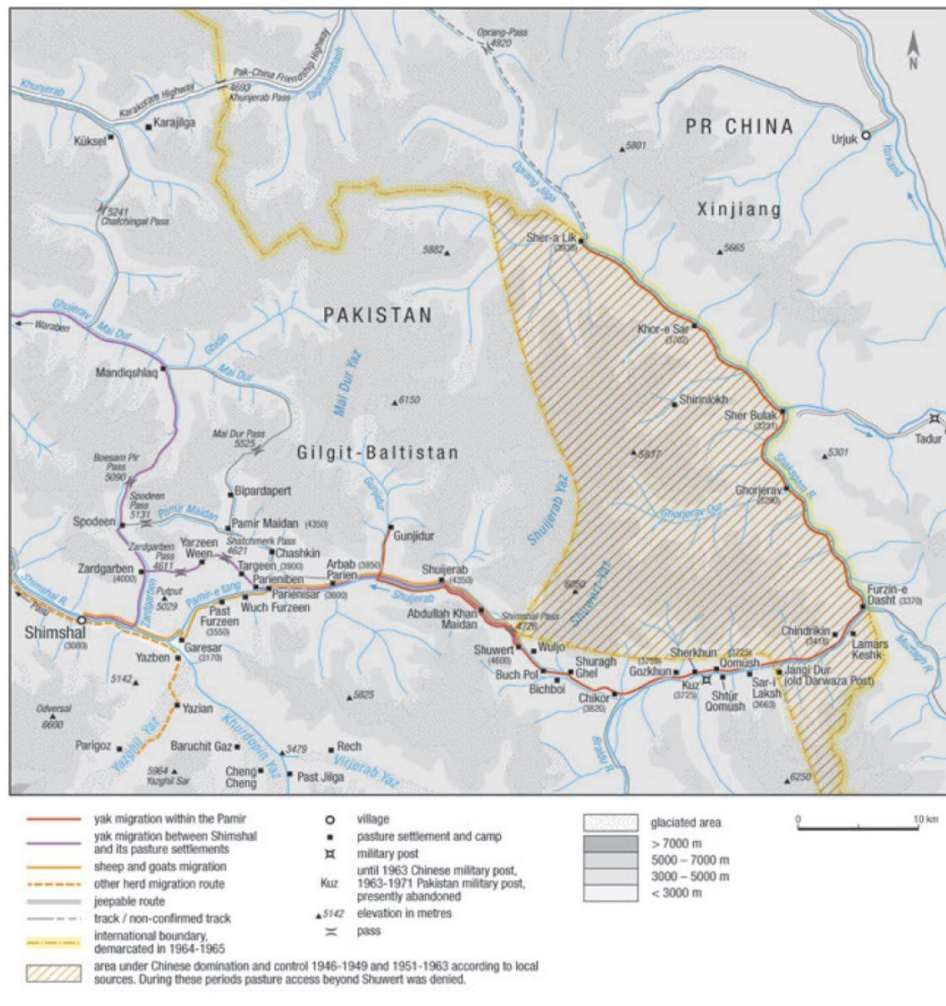


Figure 12: Map of Herd Routes along Geographic Borders (Kreutzmann, 2025, p. 16)

The full history is well outlined by Khan and Haque (2021); more details about the full process of decommonisation can be read there. In brief, in post-colonial Pakistan, all natural resources, including the mountain commons, fell under state control. After the abolition of the Mir's regime in 1974 and the princely states, the principalities were declared state property, with the exception of some areas such as the Diamer district where communities negotiated to retain their tribal system and ownership rights. Centralized agencies in the national government (i.e. forest and wildlife departments), replaced commons authority mechanisms and received royalties from any sale of resources by communities (Khan & Haque, 2021). The Gilgit Private Forests Regulation was soon

enacted to protect scientific management and conserve forests, however it caused some communities, such as Naltar Valley, to quickly decommission. Regulations allowed local communities to access forest resources, such as fuelwood, if they held permits, so long as those areas were not reserved for 'regeneration'. According to a study by Khan and Haque (2021, p. 288), permits were distributed by:

“the forest officer [who] subjectively decided to accept or reject the request... One of the respondents expressed that: ‘I have forest around me but others enjoying the benefit from it. The forest is not in our hands; the government decides whom to give... Why they will give it to us when they get more money from those illegal operators?’”

Simultaneously, new laws allowed the construction of roads, extensive military use, and access for forest contractors of the government who began commercial harvesting (Khan & Haque, 2021). There was little effort to prevent encroachment by neighbouring communities who started developing agricultural land in forest spaces. Overexploitation of the forest resources grew, and “ironically, the state authorities blamed the local people” (Khan & Haque, 2021, p. 287). The community of Naltar Valley witnessed heavy resource degradation, stating:

“‘The forest has been depleted so much that soon there may be no forest left and our valley will be a barren land’... ‘It is not in our hands to control the illegal cutting of the forests. The Government is neither sincere with us nor with the matter of forest management. We used to have dense forests. It was under government control, and now, only patches left as most of the forest got extracted illegally with the help of the forest department. The forest resources were given to the outsiders and we do not get dead trees to use as fuelwood. If you look at the houses of these forest department people, their walls are covered with deodar, the expensive timber. What do you think? Are they protecting the forest?’ - anonymous resident” (Khan & Haque, 2021, p. 288).

The state also took control of Shimshal Valley in the 1970s; Park authorities restricted grazing routes and reduced the number of pastures available by establishing Protected Areas (PAs) (Khan & Haque, 2021). PAs were meant to conserve and protect the region yet perpetuated the view that all human activity is harmful, citing Shimshali yak herding communities as detrimental to the ecological stability of the region, rather than an intertwined part of conservation. This affected the community:

“‘Our traditional routes are now in the hand of the government. If we are confined to a few pastures, we won’t have enough pastures to feed our livestock... The pastures in these areas have low productivity and if we keep our livestock longer then we won’t be able to graze... in these pastures next year. We will have to reduce our livestock because we cannot afford it anymore because there are no other options of livelihood in this area’ - anonymous respondent” (Khan & Haque, 2021, p. 287).

Many communities ignored these new directives and continued grazing and seasonal movements despite official prohibitions (Khan & Haque, 2021). Conflicts arose over resource rights between the government and Shimshal, who were facing the, “emerging loss of control over natural resources and the commons by the local communities...” and, “the local informal institution of Shimshal felt it was losing the power to defend the community against the state” (Khan & Haque, 2021, p. 299).

While all communities initially resisted, only Shimshal eventually secured legal recognition of commons rights in 1997 with the creative use of the ‘waqf’ (inalienable under Islamic law) which gave management authority to the community-developed Shimshal Nature Trust (SNT), allowing the community to take back full rights to their commons (Abidi-Habib & Lawrence, 2007; Khan & Haque, 2021). Those that did not achieve such recognition, such as Naltar Valley, were completely

decommonised, with traditional governance systems dismantled and replaced with state-led control (Khan & Haque, 2021). The Shimshali community underwent a process of new-commonisation and continue to maintain their commons to this day.

4.2c Inclusion Criteria

This case was selected because it meets all three case selection criteria outlined in Chapter 3:

1. Ecological parallels: the mountain commons are fragile, and communities maintain a highly interdependent social-ecological system (SES) reliant on sustainable resource use;
2. Decommonisation caused by multi-scalar dynamics: loss of control over commons and resource security due to external actors, i.e. government agencies, timber harvesters, and encroachment;
3. Governance transformation: used codification of the commons through the SNT's use of the 'waqf', to regain community autonomy over commons management.

In addition, this case is one of the most well-documented examples of new-commonisation that I could find, as a result of the work of Khan and Haque (2008; 2021), Kreutzmann (2025), and other notable researchers, who were all mandatorily vetted by the SNT themselves. Their work outlines how commons rights were eroded through state-led interventions and encroachment by outsiders, as well as how the community responded with codification. This case serves as a valuable baseline of new-commonisation for this thesis. The following sections narrate the two variables outlined in Chapter 3 which will then be synthesised and considered in the context of Chilika Lagoon.

4.3 Process Tracing from Decommonisation to New-Commonisation

In response to the loss of control over lands into the hands of the state, and other persistent decommonisation threats and pressures, the Shimshali community took a variety of measures to achieve a state of new-commonisation. These included resistance and protesting, which eventually led to a new collective response of developing the Shimshal Nature Trust (SNT); codification of their commons arrangements with the use of the legal tool of waqf; and further legitimizing measures in an effort to rebrand themselves, assert their autonomy, strengthen internal rules and institutions, and demonstrate their competence on a wider political field (such as in court, in enforcement measures, and in maintaining other external partnerships).

These mechanisms, the observations that make up the causal pathway to new-commonisation, are split in two groups: (1) the lead up to the turning point of new-commonisation (in this case, the achievement of waqf and the development of the SNT), and (2) the changes to their commons that followed. These are titled Variable 1: Community Mobilization and External Response and Variable 2: Transformation: Outcomes & Responsibilities. Although it is not possible to measure the success of the state of new-commonisation over time (not enough years have passed to for much retrospect), the purpose of this split is to answer: how did they achieve codification, and how did they maintain this and succeed in re-establishing their commons? For Variable 1, the literature was analyzed in two parts which were: (A) mechanisms (actions taken), and (B) enabling conditions. For Variable 2 the literature was organized into: (C) new responsibilities and roles, and (D) community outcomes (impacts felt by the community). In each variable, observations were recorded and synthesized into the below narrative. The number of observations per theme are not necessarily even in size or amount, and each theme may have additional features that were not observed in the literature. For example, though this is not an exhaustive list, the literature showed a few enabling conditions that were particularly helpful such as: the political moment in time, global attention, a collective voice internally which drew disparate decision-makers together, and a small amount of luck in that their

commons was the most remote and difficult to manage compared to the other commons that lost their rights. This section is short yet includes observed enablers that were directly evident in the literature.

These two Variables and four ‘codes’ establish process tracing, which can be read about in Chapter 3 on pages 49-50. The research question ultimately aims to generate hypotheses about what brought the Shimshali community from $X_1 \rightarrow Y$, or decommissioning to new-commons.

4.3 a Variable 1: Community Mobilisation and External Response

A. Mechanisms

The mechanisms are actions taken that led up to achieving a state of new-commons; they are split into four parts: (1) resist and protest; (2) reflection, decision and planning; (3) achievement of codification; and, (4) strengthening the legitimacy of the new commons arrangement.

(1) Resist and Protest

According to Khan and Haque (2021), there was a period of non-compliance by the community who resisted the directions imposed on them after the implementation of the Protected Areas (PAs) and the Khunjerab National Park. The state cited all human activity as ecologically damaging, demanding that communities attain permits, believed to be distributed subjectively, before using any of the natural resources. During this period, Shimshali communities disregarded directions and continued to practice their customary rights and grazing practices. This, according to Khan and Haque (2021), is a technique that many communities took, which was to “resist” such a policy shift, and disregard PA provisions. It has led to a wider-scale failure of the PAs to operate, however, in places where enforcement was stronger, conflict broke out between Park authorities and local communities. Khan and Haque (2021, p. 286) state:

“The Khunjerab National Park (KNP), in northern Pakistan, is a notable example of the conversion of a common resource to a PA replacing century-old herding practices by the local communities along with customary rights under local institutions (Butz, 1996; Knudsen, 1999; Khan et al., 2011; Khan, 2012)”.

Simultaneously, the government pushed Shimshal Valley, and all of the neighbouring communities, many of whom maintained commons arrangements of their own, to sign agreements to no longer use the land, and to accept compensation. All other villages signed with the exception of Shimshal, who refused, citing size of territory and deep cultural and economic dependence on the commons:

“Initially, the category II park classification meant that all human intervention within park boundaries was to be excluded, including livestock grazing and hunting. Of those involved, Shimshal is the only community that has not agreed to abide by park regulations and accepted monetary compensation; the reasons the Shimshali give for this is the large size of their territory, and the “economic and symbolic dependence of Shimshali society” (SNT 1998)” (Abidi-Habib & Lawrence, 2007, n.p.).

They clearly defined their cultural ties to the land, refused direction and compensation, and finally began to protest against the changes in the 1990s: “In the precolonial era, South Asian communities voiced their opposition by gaining the attention of state officials through collective rallies and protest notes. In 1994, that was the way the Shimshalis chose to resist the establishment of the Khunjerab National Park” (Abidi-Habib & Lawrence, 2007, n.p.).

(2) Reflection, Decision-Making & Planning

Though there is not much detail in the literature about the protests themselves, it is clear that it was beginning to affect their reputation as, “they soon realized that all their protests had accomplished

was to give them a negative image...” so, three years later, the community collectively decided to find a new method to gain attention with the goal of maintaining a, “more intellectual and formalized engagement with the state” (Abidi-Habib & Lawrence, 2007, n.p.). Their planning included forming a new institution in 1997, the Shimshal Nature Trust (SNT), which was the pathway in which the Shimshali community succeeded to enter bureaucratic and legal conversations with the state. Through this they were able to negotiate land-use as well as terms of conservation, agreeing to take on additional responsibilities by 2001. They adjusted to the changes in other ways, such as creating new rules to maintain their commons, taking responsibility for larger-scale developmental projects such as building a new road, and handled their own legal battles with encroaching communities. This shifted their politics from reactive protests against a system that systematically excluded these communities from their local ecology, into a new proactive state of governance in which they defined themselves as responsible and capable stewards of the environment and their lands.

(3) Achievement of Codification of the Commons

This plan also included a legal maneuver, in which the community transferred all of their prior customary (de facto) rights to the commons to the SNT, under a principle called ‘waqf’, meaning ‘given away’. This is an endowment inalienable under Islamic law; it cannot be sold, gifted or inherited (Khan & Haque, 2021, p. 299):

“The community transferred the entire pasture commons to Shimshal Nature Trust as Waqf (given away), which was inalienable under Islamic law. The SNT held the common territories of Shimshal under a legal trust against national park paradigms (Abidi-Habib & Lawrence, 2007). In this case, Shimshal Nature Trust earned its recognition, with the power and authority of the local community.”

This creative legal pathway provided the community with a way to regain control. The legal trust fell under the not-for-profit foundation, SNT, which Abidi-Habib & Lawrence (2007, n.p.) call “a small and fast Revolt against national park paradigms”. The SNT defined the ‘environment’ in the region as inclusive of “sociocultural and ecological components in relationship with each other”, and even before the road was built in to the region, the SNT established its vision and mandate, as well as its system of management and governance on their website (hosted with the help of a “Canadian scholar”) (Abidi-Habib & Lawrence, 2007, n.p.). Its goal is to be a representational institution, belonging to all local households where everyone contributes. It is run by elected officers who hold their positions for one year, rather than one “single charismatic local leader”; and there are 13 local institutions, including village councils, volunteer groups, the religious Ismaili council, and others, that are integrated into its governing structure (Abidi-Habib & Lawrence, 2007, n.p.).

(4) Strengthening Legitimacy of New Commons Arrangement

Anecdotally, I spoke with a colleague about the merits of ‘waqf’, and their immediate response was to ask, ‘what is really going to prevent the state from disrespecting waqf?’. This section became necessary as it is possible that without further legitimizing actions, the community’s claim to legal-backing could have been ignored and new-commonisation could have failed. Though not all actions happen in perfect sequence, this seemed to be fitting as a section *after* waqf was achieved. Some of the actions to strengthen legitimacy seemed to have been occurring already; for example, the community already had access to a Canadian scholar to host a website for the SNT. It is not clear in the literature when these actions happened, except that they were in the years just before and after the SNT was formed and all rights were legalized under the waqf. This is an important note, as these activities were immediately legitimizing. Other similar activities that happened later also helped to deepen their legitimacy and will appear in Variable 2 (all of which occurs after new-commonisation).

The following strategies included strategic partnerships with external actors and a few key actions that asserted community autonomy and contributed to solidifying new-commonisation.

External Alliances

Shimshal carefully curated strategic partners, including conservation NGOs such as the IUCN and WWF-Pakistan, as well as academic researchers and other international partners. WWF and IUCN became partner organizations, playing a supportive role (rather than co-management), and helped to conduct wildlife censuses and determine caring capacity (Khan, 2012). Shimshal also selectively engaged with academic researchers; who were vetted carefully “by local leaders in terms of intention, antecedents, and competence... An instance is cited in which a researcher was sent back from Shimshal to rethink his approach” (Abidi-Habib & Lawrence, 2007, n.p.). There were additional international partnerships made, such as with the Aga Khan Rural Support Program (AKRSP), who helped to fund the development of a road, and an annual cultural exchange with a university in Japan, in which scholars, involving schoolchildren and psychologists, explore social balance and happiness between two extreme models of development: metropolis Tokyo and rural Pakistan (Abidi-Habib & Lawrence, 2007). These external partnerships have helped to establish them as a globally-connected community, and as the communities self-reflected, they found that they strengthened their own internal identity and connection to the commons as well (Abidi-Habib & Lawrence, 2007).

Asserted Autonomy & Capabilities

At the time of Abidi-Habib and Lawrence’s (2007) paper, only ten years had passed since the SNT was established in 1997. They summarized additional activities of the community in its first years:

“At the 5th World Parks Congress at South Africa [2003] SNT was the only community-based Pakistani organization to represent itself. Its aim is to ‘comprehensively improve the quality of life in a culturally and environmentally sensitive way, while retaining indigenous control over [the] environment’. As they cascade into broader aspects of society and ecology, SNT’s programs include nature stewardship, a certified trophy hunt, environmental education, village development, Shimshali culture, a tourism and mountaineering school, and women’s development. Their most recent plan is to develop a 25-yr vision for the SNT, an exercise for which they have allotted a year for deliberations, and introduce larger and slower intergenerational renewal cycles” (n.p.).

The community also agreed to take on additional conservation responsibilities in 2001 and handled their own disputes regarding encroachment (Khan & Haque, 2021). Finally, within the mountain passes, there was intended to be the construction of a road to China through that area, connecting to Shimshal for the first time, however the government abandoned the project due to the regions’ difficult and hazardous conditions (see Figure 13) (Abidi-Habib & Lawrence, 2007). Abidi-Habib and Lawrence (2007, n.p.) stated that with great sacrifice, the communities had completed the project themselves by 2003 with financial support from the Agha Khan Foundation (AKRSP):

“The construction of an otherwise impossible road was begun by Shimshal’s own men, who took advantage of the AKRSP’s technical and financial aid. The result, 53 km long with eight bridges across hair-raising ravines, finally embarrassed the government into constructing the middle stretches... A generation of able-bodied men contributed to the construction of this road, and two lost their lives in the process. Annually, the road festival commemorates this landmark in local history”.



Figure 13: The Road to Shimshal (Adibi-Habib and Lawrence, 2007, n.p.)

B. Enabling Conditions

As evident above, a large contributor to the success in implementing new-commonisation can be attributed to the collective voice by the community who came together to devise a plan. Moreover, compared to their neighbours, such as Naltar Valley, Shimshal Valley may have benefited from a small amount of luck geographically, as their commons, especially in the mountain passes, were too remote for external actors to have quickly stripped the resources down upon developing the Parks, which is what happened in other areas such as Naltar Valley (Kreutzmann, 2025). Additionally, two other observations surfaced in the literature that were particularly helpful in allowing the community to be able to codify the commons: the government’s own inability to enforce and manage the natural resources of the PAs, and widespread attention from the national controversy spurred by the PAs.

The Khunjerab National Park, whose boundaries included parts of Shimshal’s historical commons space as well as eight other villages, was established in 1975 to “protect endangered ungulate species in a spectacular landscape and showcase modern nature conservation” (Abidi-Habib & Lawrence, 2007, n.p.). However, the occupation by non-locals and degradation due to timber harvesting and other extractive uses, denotes the mismanagement of the Protected Areas (PAs) (Khan & Haque, 2021). Their view of people and nature as disconnected units asserted, “the presence of communities as a concern and incompatible with conservation” (Khan & Haque, 2021, p. 297). This resulted in failure to achieve conservation efforts and contributed to their degraded conditions and the decommissioning of multiple communities. In remote areas, such as some of the mountain commons of Shimshal that were not yet connected by roads (many remain unconnected), the government did not have the proper resources, the expertise, nor the infrastructure, to manage and monitor the natural resources in the area (Khan & Haque, 2021; Kreutzmann, 2025). Additionally, according to Khan & Haque (2008, p. 5), external authorities did not properly take ecological conditions into account:

“The number of PA’s continues to grow each year. These conservation measures, however, have not always been based on detailed biological information or criteria and many of these PAs are too small and fragmented to guarantee species survival, especially of wide-ranging fauna such as the snow leopard (endangered species) and Himalayan lynx. Boundaries have not been worked out according to ecological considerations, and the main focus has remained on game species”.

Khan and Haque (2021, p. 287) assert that, “if resource rights do not belong to the local community, the resource would become open access, and finally overexploited”; Protected Areas in place of customary rights may more accurately illustrate the breakdown of resources theorized by Hardin’s (1968) ‘tragedy of the commons’. As a result of their knowledge, in 2001, the government asked the SNT to share the burden of nature protection with the national park management, which they agreed to do (Kreutzmann, 2025).

Finally, as there was little initial consultation on the development of park restrictions, over the next 20 years, new usufruct use regimes emerged by local communities, as well as extraction by external actors as a result of new permissions and permits granted by the Park (Abidi-Habib & Lawrence, 2007; Khan & Haque, 2021). Helpfully, this spurred a national controversy between local communities and the government over “contextually inappropriate regulations” in the years leading up to the establishment of the SNT; this led to an attitude shift as subsequent negotiations in Pakistan took local rights into account and park zones were modified (Abidi-Habib & Lawrence, 2007, n.p.).

Overall, the steps taken from resisting and protesting, to community planning and action, to leveraging a legal mechanism to finding ways to legitimize their new institutions, led the community to a state of new-commonisation:

“In the face of stern criticism and in recognition of the failure of a strict conservationist approach, new initiatives were taken to build collective action in managing the common resources that were under pressure for sustainable use; this can be termed the ‘new-commonisation’ process. The purpose of these new initiatives was to conserve resources and biodiversity values, and simultaneously provide livelihood security to local communities” (Khan & Haque, 2021, p. 298).

4.3b Variable 2: Transformation: New Responsibilities and Community Outcomes

Khan and Haque (2021, p. 305) summarise how Shimshal transformed an institution, reorganized themselves, and ultimately took control of the commons, leading them to new-commonisation:

“We conclude by highlighting that the commons are changing and processes of new-commonisation are taking shape in the face of external drivers. The onset of new-commonisation, new initiatives to build communities for collective action in managing the commons that were under pressure for sustainable use, has brought in hopes of the forest and pasture commons in northern Pakistan. Here, commonisation or re-commonisation illustrates a shift in the processes of resource use. The transformation of a traditional institution to a formalised institution in the case of Shimshal depicts a process of attainment of community power in self-governance and self-organisation during times of adversity – expressed through a collective voice by informal institutions to defend their rights over common resources. In our case study, the Shimshal community re-organised themselves to take control of the common resources and exercise their customary laws. This process of new-commonisation is indicative of an empowering process that promises to bring sustainable management of the forest and pasture commons in northern Pakistan.”

This variable seeks to understand what new responsibilities and roles came from this shift in governance, and what resulting outcomes and impacts the community has felt over time. First, such responsibilities and roles have shifted as the community has taken on new legal battles, long term planning for community development, new responsibilities in conservation or enforcement, new subtractability rules, additional financial responsibilities, and others. Second, outcomes have included adjustments to the use of the resources (i.e. yaks, sheep, goats, pastures, grazing routes), the

community re-organizing its structures and institutions, new roles for community members to play, and internal demographic changes among others.

C. The State of the New Commons (Roles & Responsibilities)

As the SNT was formalized through the waqf, customary practices and resource rights, including access, use, and management, became “mutually sanctioned by community and recognised through new legal arrangements” (Khan & Haque, 2021, p. 303). The government recognized the waqf through the Jirga system and no longer interfered with their policies. They also have little involvement with conservation, with the exception of issuing trophy hunting licenses, which have spurred some conflict that the SNT now is responsible to handle. Kreutzmann (2025, p. 26) states:

“Five years later [2006], community-controlled hunting areas were introduced in the Northern Areas, present-day Gilgit-Baltistan, as the introduction of trophy hunting had become one of the compromises through which village communities received a share from high shooting fees and facilitating hunting parties. However, the lucrative proceeds have been the cause of new land disputes between neighbouring villages”.

Regarding new conservation responsibilities, the community, with help from NGOs, identifies medicinal and other important plants, works on the conservation and maintenance of soil and water resources, and creates monitoring indicators and criteria for biodiversity and ecosystem conservation (Khan & Haque, 2021). In future, Khan and Haque (2021) suggest that state involvement may be needed to help create opportunities to support the conservation efforts of communities, including building livelihood options through ecotourism in the area. Additionally, to maintain the legitimacy of the SNT’s role and maintain the commons, leadership has taken on several large-scale initiatives and responsibilities, such as the following:

“obtain recognition of the institution at the regional, national and international levels; ensure economic benefits for the village from the sustainable use (trophy hunting) of wildlife; provide training to the local communities in wildlife survey; introduce environmental education programs for the schools; and, formulate and implement the management of pasture resources with sustainability goals” (Khan & Haque, 2021, p. 301).

Kreutzmann (2025) suggests additional and new critical challenges that the community and SNT must play include adapting to market conditions, balancing cost efficiency, and diversifying livelihoods.

To support all of these new roles, the SNT also created a task force, which is composed of village organizations that the Aga Khan Rural Support Program helped establish, including a women's organization, girl guides and boy scouts, and other volunteer groups that perform tasks to help the villages with daily work (Khan & Haque, 2021). The community also works as a “resource user group” following the mandates and responsibilities laid out in SNT, including village and member representation (Khan & Haque, 2021).

Other organisations maintain “linkages” with the SNT, in that they work “under the umbrella of Shimshal Nature Trust” (Khan & Haque, 2021, p. 301). These include international organizations, as outlined earlier such as the IUCN and WWF-Pakistan who support conservation initiatives, the Aga Khan Foundation, and academics who have contributed consistently to the community through their research, such as David Butz, Abidi-Habib, Shah Raees Khan and others. Also, the Social Action Program supports with drinking water supply, the Naunihal Education Welfare and Development

Organization (NEWDO) is working on establishing an English medium school with the community, and the SNT also maintains a Shimshal Trust Fund (Khan & Haque, 2021).

They also have new responsibilities in handling disputes, such as over trophy hunting, as stated earlier, but additionally, Shimshal is “trying hard to resist encroachment on their ancestral lands and fend off territorial claims from neighbouring communities and external interference that could lead to their dispossession” (Kreutzmann, 2025, p. 12). This need was exacerbated after the road was built in 2003, as new monitoring was required for peripheral lands that were difficult to reach earlier. It is difficult to manage periphery pastoral lands as they take days to reach during normal rotational cycles of herds throughout the year (Kreutzmann, 2025). Some of these cases have turned into legal disputes against encroachment, as well as government pressure to claim unsecured rights to different pasture properties. Examples of this include the villages of Upper Gojal challenging Shimshali communities’ summer use of pastures in Ghujerav Valley, to graze thirty yaks and 2000 sheep; and land that the government has their eye on, which has appreciated in value along newly built roads (Kreutzmann, 2025). As the community diversifies its livelihood, and threats such as additional industrial projects creep in, the risk of further conflict arises:

“Often these spaces and their borders are disputed, either when space is required for communal projects such as biosphere reserves and national parks or when neighbouring communities claim traditional rights over barren lands and pastures. The latter often happens when these lands start being used for other profitable ventures such as mining and trophy hunting” (Kreutzmann, 2025, p. 14).

The SNT has taken responsibility for long-term planning; in around 2007, they committed to developing a 25-year formal management plan, with a vision on intergenerational renewal cycles (Abidi-Habib & Lawrence, 2007). The community intends to maintain and support the commons.

D. Outcomes & Impacts

As evident above, the community's governance structure completely transformed. The cost of transforming to a state of new-commonisation was that some aspects of the community were impacted as well. After decommissioning, it is incredibly difficult for communities to return to managing commons, and if they do, they may not stay the same as before, simply due to the great effort it took to legitimize, and in this case codify, the rights to their customary resources. It might be theorized that new-commonisation *requires* change, as a decommissioned community is also, forever changed. The following are a few observed outcomes from the literature that occurred as a result of this transformative change in Pakistan. These include changes to the financial infrastructure (both the needs and revenue), labour shortages for yak herding, demographic shifts with more women taking on the shepherding responsibilities than men, adjustments to the composition of animals (yaks, sheep, and goats), and the creation of new subtractability rules through the ‘sur’ system.

This community went through a remarkably fast transition of change, which largely revolved around the completion of the first road in 2003, after centuries of isolation (Kreutzmann, 2025). Kreutzmann (2025, p. 15) called the road an “accelerating factor”, as other changes, such as border disputes and regular traffic appeared. The community also increased their educational attainment which led to outmigration and a lack of interest in pastoralism by youth; this resulted in a shortage of people to herd the animals (Kreutzmann, 2025). Now, Resilience Theory, in this new and evolving state, maintains different requirements:

“For pastoral communities, resilience means the capacity to respond to challenges such as territorial dispossession, external developmental interference, socio-economic change, and labour shortages. This could be done in a number of ways: adapting

mobility patterns and herd size and composition based on the available workforce; restructuring local governance; and increasing community participation in herd management practices” (Kreutzmann, 2025, p. 12).

Winter herding routes are quite difficult, and labour shortages mean there are significantly less people available to herd the yaks during those seasons as a result. The community has pivoted by selling many of the yaks, and maintaining significantly more sheep and goats:

“In 2023, it was stated that the number of yaks had decreased in Shimshal Pamir by one-third due to significant sales to bazaars and butchers, while sheep and goats were so numerous that the night pens could hardly provide sufficient shelter to all of them...” (Kreutzmann, 2025, p. 19).

Though the summer carrying capacity for yaks is very high in all pasture areas, the difficulty is ensuring that there is enough movement among pastures to feed the animals during winter herding season (Kreutzmann, 2025).

“According to Cook and Butz (2021, p. 1418), ‘Because yaks are worth more for the market value of their meat than for the subsistence value of their hair and milk (and sheep and goats have almost no market value outside the village), pastoral decisions are being driven primarily by concerns about yak welfare’” (Kreutzmann, 2025, p. 21).

As it has grown more difficult to find skilled workers who can endure the harsh conditions of pastoralism, and pasture management responsibilities have largely shifted from men to women (Kreutzmann, 2025). There are other shifts in the community’s gender roles that have been recorded over time. It was reported in the 1920s that only men were responsible for all herding and milking, when it seems all community members in the early 2000s remember it as always being a shared gender activity. This could be as a result of what Kreutzmann (2025) identified to be the first outmigration of men in the 1950s and 1970s to work with the military, and women’s first outmigration occurring 20 years later. The only known exception to women’s herding activities was when the community decided women should try to avoid certain herding villages as a result of raiding and plundering risks due to the presence of military in the region. This occurred when China controlled the Shimshal pass and winter pastures, and Pakistan had a military post in Kuz (Kreutzmann, 2025).

As of 2023, one of the adjustments that has been made is that women have taken on a lot more of the herding activities and are almost primarily responsible for managing summer pastures (see figure 14), and milking activities (Kreutzmann, 2025). Elderly men, retired soldiers and labourers were once available to support women, however with the movement of some households, these numbers have dwindled too. It may also be a result of women not encouraging men to participate as, “it has been observed that men interfere in decision-making, dominate choices and claim higher professionalism” (Kreutzmann, 2025, p. 22). In the 1980s, Butz (1996, p. 42) recorded shepherdesses equating Shimshal Pamir to a: “haven of relative female autonomy”. Kreutzmann (2025, p. 22) also notes that with both the returning of migrants, as well as expanding “trekking and mountaineering expeditions [who] increasingly visit pasture settlements”, women have reported that their “sense of remoteness and tranquillity is diminishing”. Overall, this demonstrates a complete shift in gender roles in the span of only 100 years and raises concerns of a heavier burden for women:

“It has been suggested that women spend a full five months in Shuijerab and Shuwert on their own, and are occasionally supported by men and children who bring necessary food supplies and return with butter and dehydrated buttermilk. Only during the

shifting of herds do groups of helpers and herdsmen join the women on duty. Gender aspects of the division of labour need to be discussed as women shoulder a large share of the burden of agricultural work and animal husbandry and play the role of stewards of the high pastures” (Kreutzmann, 2025, p. 22).



Figure 14: Shimshal Valley in Summer: photo taken by SNT (Abidi-Habib & Lawrence, 2007, n.p.)

One way that the SNT has been handling the shortage of labour is with the development of the new ‘sur’ system to manage flocks of yaks, sheep and goats throughout the year. There are not enough people who can spare the time to go and stay in these remote parts of the commons. It is easier to find labour for other tasks, such as irrigation, however pastoralism requires “special skills, physical endurance and long absences from home” (Kreutzmann, 2025, p. 15). Over the past few years, new rules have been arranged and a new system called ‘sur’ has been developed which accounts for household responsibility to participate in herding including how many days per year is required based on the number of animals owned; payment when households cannot participate; and, the collective hiring of external shepherds to make up for any gaps (Kreutzmann, 2025).

As hiring labour is costly, the need for greater financial autonomy has grown among households. Historically, management was low cost as animal husbandry took place with labour from households as a community obligation, and the management of water systems were paid for usually with in-kind resources (Kreutzmann, 2025). A new expanded irrigation system has also become costly to maintain as a result of the need for water guards and labour. Additionally, efforts have also been made to improve the routes for hunting parties, which has also meant that the difficult journey to Ghujerav Valley, where the community accesses additional pastures, has become easier. Yet this has also increased competition from neighbouring communities, spurring border disputes, which have cost the community astronomically in legal fees (Kreutzmann, 2025). In fact, Kreutzmann (2025, p. 27) states that “all the village communities involved have spent more time and monetary resources on

employing legal advisers and pursuing court cases than they could ever generate from pastoralist practices on the disputed lands”.

As a result of the increasing costs in maintaining these commons, there have been discussions about pastoralism’s monetary value, which is “not correlated with the steady appreciation of the monetary value of their home territory” (Kreutzmann, 2025, p. 27). New revenue ideas have begun to be incorporated into the daily labour activities of the community, such as sight-seeking and eco tourism, mountaineering, wildlife watching (using trails built by the community), camping, trophy hunting (managed sustainably by the community), a fee for vehicles using the road to enter the lands or pass into China, and sales of yak meat (Kreutzmann, 2025). The community has made an effort to keep wealth local by hiring internally as much as possible. Salaries from external employment, mountaineering services as well as new businesses are now also vital to the management of the SNT commons. Discussions are ongoing about long term pasture use, and their potential for greater wealth generation. One idea has been to promote pastoralism as a ‘respectable profession’, and pay local shepherds the same income as teachers, drivers and shopkeepers through the Shimshal Trust Fund, especially as the demand for yak meat has been growing in Pakistan (Kreutzmann, 2025).

4.4 Conclusions

Decommonisation and commonisation are processes (Nayak & Berkes, 2022), however, the process of decommonisation can occur so quickly and so harmfully that it can be impossible to recover from. As demonstrated in Variable 1, only one of the nine villages that geographically fell under the Park’s boundaries resisted signing away rights with compensation, managing to re-establish the commons (Khan & Haque, 2021). There are certainly more reasons than what are listed here that contributed to the success of the community; I did not mention their historically developed qualities of strength, hardiness, and determination as a group. However, the purpose of this section is to point out the steps that led to their ability to achieve new-commonisation through the use of codification.

Shimshal’s response to decommonisation exemplifies a robust case of community mobilisation that not only resisted externally imposed governance structures but also reconstituted internal capacity for autonomous management. Shimshal had allies and connections that they leveraged strategically. This ranged from finding funds to build a major road themselves and connecting with conservation-based non-profits to help with ecological monitoring, to an annual research partnership with a university in Japan and a Canadian scholar hosting their website. They were also able to build out their new system of commons through the SNT in the midst of national controversy regarding the mismanagement of the PAs, which meant they had the right attention. They also benefited from their remoteness, which is not something other villages were lucky to have, which meant they did not lose their resources as quickly as the others and remained somewhat naturally protected during those years.

As outlined in the analytical framework, this variable sought to trace how communities responded to the erosion of commons governance and what enabling conditions supported those responses. Shimshal’s mobilisation was facilitated by a combination of cultural coherence, legal ingenuity, strategic alliances, and institutional innovation. The foundation built through these efforts not only reasserted control over commons resources but also created the conditions necessary for legal recognition and the emergence of new-commonisation.

Kreutzmann (2025, p. 12) discusses the concepts of ‘modern’ vs. ‘traditional’ management, and questions “what role traditional institutions play in maintaining a practice that has long faced external threats and been exposed to internal challenges”. He challenges the notion that “indigenous

knowledge and familiar activities [are] the mainstay and central aspects of regulation”, as community institutions are often perceived as “stable and stagnant entities that carry on inherited practices” (p. 12). He argues that this view is limited, as it “undermines the dynamic way in which behavioural patterns adapt to changing societal, political and economic conditions”, pointing out how often mountain commons are compelled to change, sometimes on short notice, and adapt and modify their inherited livelihood practices (Kreutzmann, 2025, p. 12). He calls for a new way to think about indigenous knowledge.

I would argue that the dynamism that he is seeking is there in the concepts of re-commonisation and new-commonisation. These are the processes that are in constant motion, reacting to the threats of decommonisation, by adjusting and adapting their rules. Pakistan’s Shimshali yak herding community is remarkable. In comparison to the hundreds of years they have been settled in this region, the past 50 years, since the Park was introduced in 1975, have seen change at an incredibly fast pace. This is likely true of much of the world’s indigenous populations, and is fairly evident in Chilika Lagoon as well.

As seen in Variable 2, in Shimshal’s case it was even faster, as they turned from protest and resistance in 1994 to a state of defined ‘intellectualism’ and codification by 1997 with the development of the SNT and the waqf. And by 2007, they had completed the first road into their region, completely rejuvenated and adapted their systems, and reported to Adibi-Habib and Lawrence (2007) that they were working out a 25 year long management plan within the institution. This was within the span of 13, abrupt years, which took them to a new institutional state of being, while still maintaining their culture and their commons. Kreutzmann (2025, p. 27) states that, “maintaining the status quo based on former rules and regulations would lead to irreparable loss”; for new-commonisation to occur and be maintained in Shimshal, the community had to transform fully.

The following two chapters discuss the two other case studies; the Forest Rights Act developed for India’s forest dwelling communities and the use of the locally managed marine areas (LMMAs) by coastal fishery commons in Papua New Guinea. Following this, Chapter 7 synthesizes information from all three case studies, and highlights the hypotheses generated that might be relevant for Chilika Lagoon.

Chapter 5 Case Study Analysis: Forest Rights Act (2006), Odisha, India

5.1 Context (Commons and Decommunisation) & Inclusion Criteria

After much advocacy and protest, India's forest dwelling communities gained rights through the Forest Rights Act (FRA) of 2006. This allowed long-standing communities to continue to manage their common-pool forest-based resources while being protected from persistent external threats. The FRA (2006) serves as a contextually-relevant piece of legislation, embedded in neighbouring forest-dwelling communities throughout Odisha and India, which may point towards potential future legislative goals for fishers. This chapter analyses two variables: (1) community mobilisation and external response, which will demonstrate mechanisms, strategies, and enabling conditions that have facilitated the development of this codification, and (2) transformation: new responsibilities and community outcomes after codification, which reviews the impact of the shift to a state of new-commonisation following decommunisation.

5.1 a Commons: Community Forest Management in Odisha, India

Forests across India have been managed by forest dwellers through commons regimes for hundreds of years. Communities manage land collectively to ensure that grazing lands, fuelwood, food sources, and non-timber forest products (NTFPs) are not depleted, destroyed by fires, or over-felled, to ensure the environment remains sustainable in the long term. In an article on raising awareness about forest-fire management strategies village-to-village, a community member said: "we collect wild yam, tubers, spinach and mushrooms for the family. If there is a major fire, we have to make do with the rice we get from the government" (Srivastava & Ghosh, 2025, n.p.). Communities have been relying on the wellbeing of forests for many generations.

Nayak and Berkes (2008) outline forest management structures of Gadabanikilia, a village in Odisha that is one hour's drive from Chilika Lagoon. They describe institutions such as a general assembly of all adults to help develop rules, and an executive council responsible for operationalizing them. Rules include managing forest products equitably; distributing mohua fruit to all households; maintaining and seasonally cleaning forests, focusing on regeneration and firewood acquisition; protecting certain species and monitoring the number of trees that are of use for different NTFPs. Cattle grazing is also organized to help with seed regeneration, compost, and fodder need. Communities also manage relationships with neighbouring villages, as they cooperate and support each other, such as with nomadic cattle grazing activities that cross boundaries. There is also a village fund that is contributed to from across the community, supporting development projects, festivals, as well as occasionally providing internal loans (Nayak & Berkes, 2008).

Another example of self-management of the forest commons in Odisha is in the village of Kodalpalli, in which villagers, usually led by women, practice *thengapalli*, which is a rotating patrol system that guards forests from illegal logging (see figure 15) (Vyawahare, 2023). Patrollers also use this role as an opportunity to keep track of the ecological system, often spotting animals, such as peacocks, and finding edible plants, such as mushrooms (Niyogi, 2022).

Nayak and Berkes (2008) state that there are more than 10,000 communities across Odisha with community forest management in place; the rules of forest management vary per community and their needs. For example, Sarin et al., (2003) note well-defined arrangements for temple upkeep, harvesting and irrigating water, plant medicine management for local health practitioners, sal leaf plate stitching, tendu leaf harvest management, and many others. They highlight the centrality of commons governance to India's social and ecological systems as well established across the country:

“In all the studied sites, and as corroborated by several earlier studies (Kant et al, 1991; Jonsson and Rai, 1994; Singh & Singh, 1993 & 1994; Singh, 1995; Vasundhara, 1997 & 1999; Sarin et al, 1998; Conroy et al, 2000), the presence of village institutions, and their prior experience with managing common property resources, was a major factor contributing to the emergence of CFM [community forest management]... All five sites had vibrant village institutions prior to forest protection. In three cases the villagers had prior experience of managing other common pool resources [as well]” (p. 9).



Figure 15: Kodalpalli Patrol - Photo by International Women’s Media Foundation (Niyogi, 2022)

5.1b Decommonisation: National Forest Department Control, Resource Degradation

India’s forested regions and forest dwellers have experienced analogous environmental pressures to Chilika Lagoon, such as deforestation, habitat loss, and resource overexploitation. Across India, developmental projects, such as mining, have been the cause of widespread forest clearing, and the large-scale loss of tree cover has transformed landscapes (Government of Odisha, 2021). In Odisha, during the 2020 fiscal year, 563 km² of forest land had been diverted towards non-forest uses with mining alone accounting for over half of this at around 284 km² (Government of Odisha, 2021). As of 2019, there are approximately 7000 km² of healthy, very dense forest in Odisha; however, the state also has one of India’s largest ‘open forests’, about 23,000 km², associated with habitat fragmentation and degradation as a result of human pressures and reduced canopy density (Forest Survey of India, 2019). Deforestation has also harmed wildlife habitat; disrupted water cycles; and soil stability, with the emergence of soil erosion, barren lands and rock outcrops; and has turned

many once biodiverse regions barren and undefended against floods, landslides, droughts, and further erosion (this is very evident in Kalahandi, Odisha) (Dandapat et al., 2024). Odisha's forest loss has also been linked to microclimate changes including higher temperatures, causing wells to dry up and problems with cultivating farmland (Sahoo, 2014).

Senapati (2024) from DownToEarth notes that mining and stone quarrying in neighbouring states, such as Jharkhand, have caused the destruction of habitats for long-range species like Asian elephant (*Elephas maximus*) corridors; and has led to the siltation and drying of natural streams, waterfalls and rivers, which have pushed elephants into Odisha to find food. Human-elephant conflict has increased, and there are reports of deaths to both elephants and people, as well as crops being raided as a result of blocked migration paths (Senapati, 2024).

Mishra (2018) attributes the threats to forests in Odisha to state-led economic development, such as ports, industrialisation, mining, commercialisation of forests, and to forest fires. Although many Protected Areas (PAs) were implemented across India with the public intention of protecting natural resources, several rights were taken away from common-pool resource (CPR) managers upon implementation (i.e. prohibiting NTFP collection, cattle grazing and foddering) and the biodiversity and sustainability of the ecosystems were left unprotected (Mishra, 2018). Siripurapu et al. (2016) highlight that the National Commission on Agriculture (NCA) commercialized forests in 1976 without providing rights to forest-dwelling communities first, deeming the land as solely for the purpose of timber production, pointing to the real purpose of 'Protected Areas'. Members of Berham spoke with Sarin et al. (2003, p. 9), highlighting the juxtaposition between forests that they manage, verses those the government claimed to manage:

“Although community-based forest protection is not limited to Revenue Forest lands, the villagers' substantial customary rights in these forests, combined with the weak presence of the Forest Department in them, probably facilitated community initiatives. Berham villagers were actively protecting their well-stocked Revenue forests, which they considered their own, while the adjoining Reserve Forest was lying unprotected and highly degraded. The villagers simply said, ‘This (Revenue forest) is ours, while that (Reserved Forest) is theirs (Forest Department's)’”.

Villamayor Tomás & García López (2021, p. 258) similarly criticize the Joint Forest Management (JFM) program stating:

“In the case of India's [JFM] program, developed “to induce local people to help in the forest departments' regeneration efforts... rights were not provided and forest departments have often used the programme as an instrument to extend their authority structures to the village, generate funds from donors to expand their staffing and even take more lands from local people through enforcing no cultivation on JFM plots”.

An example of this occurred in Paikasahi, Odisha, which is a small village with about 75 families, located in Nayagarh (Sarin et al., 2003). In 1990 this community took on the responsibility of protecting 8 km² of the nearby degraded Patia Reserve Forest. Six years later, in 1996, the Forest Department allotted this forest for JFM. However, according to Sarin et al. (2003, p. 20):

“On October 28, 1997, they found a representative of a paper manufacturing company on their doorstep. The Range Forest Officer told them that the Reserve Forest fell under a bamboo working circle and had been leased to Ballarpur Industries Ltd for harvesting bamboo. Despite JFM, rights over bamboo from the forest had been granted to the

paper company without any prior consultation with the so-called ‘joint managers’. JFM’s commitment to benefit sharing with [community] had been totally disregarded”.

There are reports of “timber mafias”, and illegal felling, destroying valuable trees and causing non-timber forest products (NTFPs), such as fruits, nuts, leaves and medicinal plants to disappear; many of which were income-yielding, such as kendu (tendu) leaves, sal seeds and mahua flowers. This has caused wide-spread out-migration as villagers seek work in other regions (Mishra, 2023).

Resilience Theory speaks of systems encountering thresholds, tipping points, beyond which they either transform or collapse (Holling, 1973). Numerous communities across India faced a crisis of the disintegration of commons management by small-scale forest dwellers, their identities, the forests, their livelihoods, and their lives (Mishra, 2018; 2023). Though there are many other situations that could be highlighted about the systematic decommissioning of India’s forest dwellers, a pivotal moment came in the early 2000s when the Ministry of Environment and Forests (MoEF), following a court order, began a mass ‘eviction drive’ of forest dwellers it deemed ‘encroachers’ (Dreze, 2005).

“On 3rd May 2002, MoEF issued a letter to the governments of all states and union territories in India regarding removal of encroachments from forest land. The letter estimated the forest area under encroachment to be 1,250,000 hectares (in eight states) and asked the states to remove all encroachments which are ineligible for regularisation in a time bound manner by 30th September, 2002, explaining that such encroachments ‘...cause great harm to forest conservation (and)... are also seriously threatening the continuity of the Wild Life corridors between various National Parks and Sanctuaries” (Bose, 2010, p. 17).

This resulted in the arrival of armed police, who torched villages and destroyed crops across India, displacing hundreds of thousands of people. By 2004, the MoEF estimated that forest dwellers had been evicted from 1500 km² of land. The approximately 200 activist organisations making up the network for the Campaign for Survival and Dignity (CSD) focusing on the rights of scheduled tribes, estimated that about 3 million tribal families faced the threat of eviction (Dreze, 2005). Many of these evictions were carried out brutally, with houses being set on fire or trampled by elephants, the destruction of crops, the abuse and molestation of women, and kidnapping or wrongful imprisonment of villagers, among other incidents. Dreze (2005, p. 4), provided a quote from a sample of a case in Madhya Pradesh, which illustrates the atrocities of this time:

“The homes of 73 tribal families of Bhandarpaani in Betul District (Madhya Pradesh) were set on fire by the Forest Department on the night of 4 July 2004. People have been kept in different places and families separated – relatives and even members of the same families are unaware of each other’s whereabouts. Their only fault was that their village has been situated on forest land for generations. Eight children are suffering from severe pneumonia and malnutrition; one of them (Kishan, aged 18 months) died on 22 July. Thirty-five persons of the tribe were illegally confined in Ranipur Forest Range Office; 15 were produced in the High Court at Jabalpur on 26 July in a Habeas Corpus petition. Bakhat Singh, after being released in the Court, was taken away by the Forest Department and has been missing since then”.

This incident, along with the built-up atrocities over many years against forest dwellers, led to massive outrage across the country, which spurred the development of the Forest Rights Act (FRA) (2006) (Jahan, 2023). This was considered a radical departure from colonial-era forest governance, such as the Indian Forest Act of 1927, which treated forest dwelling communities as encroachers and centralized power in the state (Jahan, 2023). The FRA provides collective and individual land rights

to Scheduled Tribes and other traditional forest dwellers, country-wide, granting legal recognition of the customary rights of communities, providing them with protections to manage and steward forests they have long relied upon (Forest Rights Act, 2006; Jahan, 2023; Siripurapu et al., 2016). This meant communities who gained rights moved into a state of new-commonisation, as they transformed their rules and systems to fit within the customary rights and boundaries set out in the Act.

5.1 c Inclusion Criteria

This case was selected because it meets all three case selection criteria outlined in Chapter 3:

1. Ecological parallels: forest-dwelling communities across Odisha and India and the forested lands they inhabit are interdependent, communities have sustainably managed the commons of threatened and fragile resources for many generations;
2. Decommonisation caused by multi-scalar dynamics: communities lost control of CPR management due to external rather than internal actors such as government departments, and industrial projects, i.e. timber and mining, as well as powerful forestry officers;
3. Governance transformation: codification of the commons through the Forest Rights Act of 2006, which recognizes customary rights of forest-dwellers to manage commons.

Additionally, forest dwelling communities in Odisha are neighbours to Chilika. As there have been conversations about future formalization of fisher rights in Chilika, and what that might look like, the Forest Rights Act (2006) has come up as a contextually-relevant piece of legislation that could be echoed by something similar, such as a Coastal Rights Act (per obs.). Therefore, the FRA (2006) merits further exploration.

Moreover, I completed an undergraduate thesis on this subject in Odisha, with the support of the NGO I worked with (NIRMAN), and a university in Bhubaneswar (KIIT) in 2016. Although this is an unpublished manuscript, I received ethics approval and conducted phenomenological research in the form of semi-structured interviews with involved external actors, as well as focus groups with three communities in Odisha, who belonged to both Scheduled Tribe (Adavasi) and other forest dwelling (caste-based) communities, who either received or did not receive the rights through the FRA (2006). My findings will not be included in this thesis; however, I developed my own informed knowledge about the difficulties of implementing the FRA (2006), and many of these findings have been reflected in literature over the past nearly 10 years; relevant articles are included.

Finally, as established in Chapter 2, shrimp aquaculture in Chilika is as a result of encroachment by neighbouring forest-dwelling communities into the Lagoon. Though they did not qualify for rights vested in the FRA (2006), should there be further conversation about dismantling illegal shrimp aquaculture practices, these communities will require another livelihood option and possibly another living arrangement. Understanding the FRA (2006) is helpful for this context.

As a result, this case serves as a valuable context-based addition for this thesis, with the inclusion of codified commons in the form of national policy development. The following sections narrate the two variables outlined in Chapter 3, specifically what led to codification for those who received it, and what happened afterwards. This will be synthesised and considered in the context of Chilika Lagoon in Chapter 7, which generates hypotheses in accordance with Process Tracing. Reflections regarding its tumultuous implementation will also be included as there are many who qualify for these rights, and have still not received them, nearly twenty years later.

5.2 Process Tracing from Decommonisation to New-Commonisation

Unlike the Shimshal community, which serves as a clear baseline for the process of new-commonisation, the response to decommonisation has not been so clear cut among forest-dwelling communities, as it occurred as a result of the activity of numerous communities across the country. However, to best highlight how commons-based forest-dwelling communities moved from a state of decommonisation (X_1) to receiving a landmark country-wide set of rights that recognize and formalize customary rights over the commons allowing the community to enter a state of new-commonisation (Y), two variables will be analysed which are: (1) Community Mobilization and External Response, and (2) Transformation: Outcomes & Responsibilities. Similar to Shimshal, not enough years have passed to properly assess the success of claimants of the FRA (2006) over time, especially as many communities have not yet received rights. However, this analysis aims to understand the causal pathway to achieving codification of commons through the FRA (2006), and how some commons-based communities were able to re-establish their commons. Though many communities succeeded in gaining these rights, it is important to note what happened in implementation, and some of the issues that arose for those who did not receive rights, yet qualified.

The mechanisms that make up the causal pathway to new-commonisation are split into two groups: (1) the lead up to new-commonisation through the achievement of the FRA (2006), and (2) the changes to commons management that followed.

In response to a nation-wide loss of control over forest commons governance, and ecological pressures and threats, communities across the country resisted and protested the situation, a new institution that included a coalition of members across the country called the Campaign for Survival and Dignity (CSD) was formed, and eventually, with much advocacy in parliament, the FRA (2006) was developed, which gave customary rights to forest dwellers. Implementation of the Act has been tumultuous, and many communities still have not received rights. For those who have, this granted security and the chance to re-establish the commons, and to demonstrate their legitimacy as stewards.

To reiterate, the literature for Variable 1 is analyzed in two parts which are: (A) mechanisms (actions taken), and (B) enabling conditions. For Variable 2 the literature was organized into: (C) new responsibilities and roles, and (D) community outcomes (impacts felt by the community). Observations were recorded and synthesized into the below narrative, however, as in Shimshal, the amount of observations per theme are not necessarily even in size or amount, and do not need to match other case studies, as this is not a comparative case study analysis. For example, in this case study, it is evident that there was a heavy groundswell of resistance and decision making that spurred the enactment of the FRA which received greater attention in the below narrative; yet as the Act is embedded into national law, legitimizing factors were a weaker observation than that of the waqf, which had to maintain legitimacy. Additionally, the impact and outcomes not only affected those who received rights, but also those who did not, which will be included in Variable 2's analysis.

The two variables are analysed in the form of process tracing, which can be read about in greater depth in Chapter 3. The research question ultimately aims to generate hypotheses for Chilika Lagoon, about what occurred to bring forest-dwelling communities from a state of decommonisation (X_1) to codification and a state of new-commonisation (Y).

5.2 a Variable 1: Community Mobilisation and External Response

A. Mechanisms

The mechanisms are actions taken that led up to achieving a state of new-commonisation, and are split into four parts: (1) resist and protest; (2) reflection, decision and planning; (3) achievement of codification; and, (4) strengthening the legitimacy of the commons.

(1) Resist and Protest

Although resistance and protests occurred nationally, Sarin et al. (2003) discuss the situation of Paikasahi village in Odisha (see 5.1b), who were given JFM rights and found a year later that the land had been leased to a bamboo harvesting company. They describe the ensuing protests:

“Paikasahi villagers decided to protest, supported by other villages in the locality, and formed a Forest and Environment Protection Forum. More than 300 villages participated in a joint protest rally on 9th November 1997, marching silently to the local Range Office with placards reading ‘Aama jungle amara, Purna aain rad karo’ (Our forest is ours, change old policies), ‘Aame baunsa katai debu nahi’ (We will not allow the bamboo to be cut). A memorandum was submitted to the Range Officer, and copied to various senior officials and the Chief Minister. The forum mobilised support from... hundreds of forest-protecting villages from all over [Odisha]. The case received local and national press coverage” (Sarin et al., 2003, p. 20).

The community continued to resist, evident after representatives from the village met with the Agriculture Minister who assured them that they would look into it, as well as the Principal Chief Conservator of Forests (PCCF), who, “disappointingly” asked the villagers:

“‘Who asked you to protect the forest? The Reserve Forests belong to the Forest Department. The bamboo forests have been given on lease to the paper industry, and villagers can have no rights over these forests.’... Forest Department staff visited the village and asked [them] to call off the protest. They were offered higher wage rates for harvesting the bamboo. When the villagers refused to budge, they were threatened. Two days later, the agents of BILT [bamboo company] started harvesting using labour hired from distant villages. A tussle ensued, with the villagers snatching the labourers’ axes. Industry staff were forced to withdraw, and the 18 poles cut in the process were brought to the village and deposited in the forest fund” (Sarin et al., 2003, p. 20).

When the famous atrocities of the 2000s; the burning of forests, kidnapping and wrongfully detaining villagers in an effort to evict them; gained attention across the country, a new coalition was formed:

“The evictions and associated human rights violations led to an outcry by grassroots organizations and political formations... They framed the issue in terms of injustice to vulnerable forest dwellers whose rights had gone unrecognized during the creation of India’s legal forests... The efforts of grassroots organizations to create a national forum to address forest rights and evictions led to the formation of a coalition called the Campaign for Survival and Dignity (CSD). CSD became a key player and interlocutor for the forest rights issue at the national level” (Kumar & Kerr, 2012, p. 756).

“After the attempted evictions in 2002, the ensuing uproar radicalised and mobilised popular movements and a new common cause was recognised between forest dependent groups across the country. This resulted in the formation of a coalition in 2003 – Campaign for Survival and Dignity (CSD). The year 2003 thus inaugurated a spate of multi-pronged campaigning in favour of tribal interests. The CSD represented

a loose federation of grassroots organisations and people's movements spread across the ten states where the issues were most widespread" (Bose, 2010, p. 18).

The CSD maintained a strong network across the country, which helped it make calls for mass demonstrations aimed at all levels of government in the national capital, major cities, and in the districts and towns around the village communities. Examples include a nation-wide protest with 150,000 forest dwellers and a large 'dharna' (sit-in) in New Delhi in 2005 to demand policy change. Later that year, 75,000 people from 10 states participated in a 'Fill the Prison' movement where they courted arrests; similar events happened throughout 2005-2006 (Kumar & Kerr, 2012).

(2) Reflection, Decision-Making and Planning

These consistent efforts created a shared identity across the country and helped to push for the development of a legal bill, recognizing forest-dwellers' customary rights (Kumar & Kerr, 2012). Through this, the CSD strategically leveraged this collective power among politicians:

"The CSD and its constituents strategically combined mass mobilization with constant contact and discussion with MPs, familiarizing them with the complex issues related to forest rights. MPs were also invited to the mass dharnas in Delhi, where many of them made public commitments to pass the law. The show of strength through the politics of mass mobilization and creating pressure on MPs through direct contact at constituency levels gave CSD legitimacy among political formations and parties. Political parties across the spectrum were supportive of the demands for forest rights, primarily because none of them wanted to be seen as anti-tribal and anti-poor. CSD interacted constantly with these parties at different levels; their support was vital in pushing the government to pass the law" (Kumar & Kerr, 2012, p. 765).

It is generally understood that these wide-spread campaigns by the CSD, for rights across the country helped to spur on the existence of the FRA (2006) (Hebbar, 2017; Sarangi, 2020; Kumar & Kerr, 2012). Other than protesting and resisting imposed directives by the forest department, the CSD also engaged in other political measures: "An initial effort by the coalition was a *jan sunwai* (public hearing) organized in Delhi in July 2003, where over a thousand tribal men and women from across the country came and presented their accounts of evictions and human rights violations (ibid.)" (Kumar & Kerr, 2012, p. 756).

The goal of the campaign and the creation of the FRA was to undo and address historical injustice inflicted on forest dwellers and tribal communities throughout India (Bose, 2010). Kodiveri (2016) asserts that the slogan of "jungle, jal, and zameen" (forest, water, and land) shaped the FRA's framing of Adivasi (Scheduled Tribe) communities as inherently environmental stewards, as forest-dependent communities require resources sustainability. However, it is important to note that she cautions that this risks portraying Adivasis as a culturally homogeneous group, despite significant variations in practices and relationships with the environment across regions (Kodiveri, 2016). Bose (2010, p. 11) echoes this, stating: "The beliefs that the tribals know all there is to know about nurturing nature, that they are interested in doing nothing else in life, and that only born tribals can practise traditional conservation are fallacious romanticism".

As new laws for forest rights started to become more possible, conservation organisations and the Forest Department began media campaigns against the Bill stating that granting these rights would harm the forest and the endangered species that rely on it (Kumar & Kerr, 2012; Bose, 2010). Eventually, the CSD achieved the implementation of the Forest Rights Act as a result of the pressure put on the government by the coalition, and the first draft of the FRA Bill in Parliament was presented in December 2005 (Kumar & Kerr, 2012). That draft focused exclusively on Scheduled

Tribes, maintained a 1980 cut-off date for proving residency, and provided very few rights inside PAs. A Joint Parliamentary Committee (JPC) was formed by tribal MPs who provided recommendations; they helped establish the final version which became the current FRA (2006):

“The JPC invited oral and documentary submissions and in May 2006 it produced its unanimous report, which reflected the CSD position. It recommended including non-tribal forest dwellers, extending the cut-off date to 2005, and applying the law to Protected Areas. After taking cognizance of the JPC recommendation, the government submitted a revised Bill to Parliament in December 2006, where it was passed without any significant opposition and became law” (Kumar & Kerr, 2012, p. 757).

(3) Legal Rights

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, also known as the Forest Rights Act (FRA), or “the Act”, was a landmark piece of legislation by the Indian government to provide land rights in order to address the historical injustices faced by forest-dwelling Scheduled Tribes and other traditional forest dwellers (OTFDs) (Forest Rights Act, 2006; Sarap et al., 2013; Siripurapu et al., 2016; Kodiveri, 2016; Satpathy, 2017; Sarangi, 2020). The FRA facilitated a governance shift towards new-commonisation by granting legal recognition to the customary rights of forest-dwelling communities, providing them with protections to be able to self-manage and steward forests they have long relied upon.

The FRA uses specific selection criteria to recognize both individual and community forest resource (CFR) rights, allowing forest-dependent communities to protect, regenerate, conserve, and manage their forests (Oxfam, 2017; ACCORD, 2014). According to Siripurapu (2016, p. 2):

“The act allows local communities to claim both individual rights (on parcels of forest land under cultivation), as well as community forest resource (CFR) rights on forest lands. In summary FRA 2006, recognizes three types of rights: (1) landownership rights; (2) right to collect and use minor forest products (MFPs)/non-timber forest products (NTFPs); and (3) right to protect and conserve forests and biodiversity”.

The Act includes criteria for proof of residency; Scheduled Tribes must demonstrate presence prior to December 13, 2005, while other forest dwellers must be able to prove at least 75 years of residence prior to that date (Forest Rights Act - Rules, 2008). This has been a major undertaking in a country with vast forested regions and many unrecognized communities (ACCORD, 2014). Sarap et al. (2013, p. 62) outline the rights gained by communities who received claims:

“(1) Ownership rights to forestland (subject to a maximum of four hectares)... (2) Right to dwell perpetually in small houses constructed on forestland to those living in them. (3) Right to settlement of old habitations and unsurveyed villages. (4) Right to habitat and habitation for primitive tribes. (5) Right to conversion of forest villages into revenue villages. (6) Right to conversion of pattas or lease or grants issued by the state government on forestland to titles. (7) Right to rehabilitation if illegally evicted or forcibly displaced. (8) Right to ownership, and access to collect and dispose of minor forest products that have been traditionally collected within or outside village boundaries, and grazing rights. (9) Right to protect, regenerate, conserve, or manage community forest resources. The community forest resources may be in a reserved forest, protected forest, or protected areas such as sanctuaries and national parks to which the community has access. (10) Community rights to intellectual property related to forest diversity, cultural diversity, and any other traditional right customarily enjoyed by forest-dwelling communities, excluding the right to hunting. (11) Other

community rights to use or entitlements, such as fish and other products of waterbodies, grazing, and access to traditional seasonal resources for nomadic or pastoralist communities”.

Though the rights to the customary lands are heritable, this is not private land, as the rights are not alienable or transferable; they cannot be sold or mortgaged (Sarap et al., 2013; Mishra, 2018).

With these rights, communities were able to manage the commons forest resources without threat or hassle from external actors, such as neighbouring communities, forest officials, timber or mining industries, and others (Kumar & Kerr, 2012).

(4) Strengthening Legitimacy of New Commons Arrangement

Bose (2010) describes the multi-scalar and heavy involvement in the creation of the FRA, including actors such as the Forest Department, ‘hard-core’ conservationists, the Campaign for Survival and Dignity (CSD), the Ministry of Tribal Affairs (MoTA), the Ministry of Environment and Forests (MoEF), and others. The movement of the Forest Rights Act (2006) under the jurisdiction of the MoTA rather than the MoEF, is described as a paradigm shift that saw this as more of a humanitarian, rather than forest or environmental, issue (Bose, 2010, p. 20):

“The Supreme Court has been handling cases related to encroachment for quite some time and the MoEF had been fielding most of these cases. With the paradigm shift from the issue of encroachment to the issue of tribal rights, it was also felt that the nodal agency in matters of framing laws regarding rights of tribals should be the Ministry of Tribal Affairs (MoTA), rather than the Ministry of Environment and Forests (MoEF)”.

A turning point in establishing legitimacy over the claims of the forest dwellers was the backing received by the Prime Minister, who took an interest in the situation:

“The concluding part of the Prime Minister’s address to Chief Ministers of states, delivered at New Delhi on April 5, 2005, clarified the mood of the government: ‘We must realise that dissatisfaction and alienation (of the tribals) are a result of pent up grievances against economic and social deprivation. Therefore the onus is on us to provide good, effective governance that provides a ray of hope to all and a stake in our collective future...’” (Bose, 2010, p. 20).

As the development of the FRA (2006) came from ‘protest’ or ‘campaign’ politics, as described below, Bose (2010, p. 18) emphasized the continuous monitoring of the implementation of the FRA:

“... organisations like the CSD remain conscious that ‘Our rights will not be recognised unless we fight for them on the ground. The law is but a tool, not a solution in itself. The FRA emphasises legal recognition and recording of rights of adivasis, which is a necessary first step in bringing control over forests back to the people, but it is above all a tool of struggle’”.

B. Enabling Conditions

The success of the introduction of the FRA largely came from the CSD coalition’s work, however there were other enabling conditions that helped the FRA (2006) to become successful. Firstly, there is already a long history of grassroots resistance in India. Sarin et al. (2003) describe the Chipko movement, which spurred a global tree-hugging movement in the 1970s, in which villagers from Uttarakhand, mostly women, prevented commercial felling by physically climbing into the trees and guarding them with their bodies (Gershon, 2019). Some elements of this resurged with communities

claiming that the Forest Department and its officers still did not take the needs of communities into consideration (Sarin et al., 2003).

Secondly, this situation gained a great amount of media attention in Odisha and across India, with stories shared widely of the overexploitation of forests (Bose, 2010; Mishra, 2019; Mishra, 2023). For example, the New Indian Express, when discussing forested areas in Balangir said, “A large part of the region, which had an unending stretch of lush green forest less than 50 years back, now has been converted into barren land mass” (Mishra, 2019, n.p.). OdishaTV has been reported saying that forest fragmentation and mismanagement in Odisha’s open forests has put wildlife on the “run for their lives” from poachers and habitat loss; and dense forests that once buffered rainfall and housed diverse flora/fauna are now covered by logging roads and mines (Mishra, 2023, n.p.).

As mentioned before, these brutal evictions sparked widespread outrage and a national movement for justice whereby Adivasi (Scheduled Tribe) groups, academics, and grassroots NGOs worked together with the Campaign for Survival and Dignity, and met with the MoEF and Prime Minister Singh, to push for the case of forest dwellers as integral to conservation rather than enemies of it (Dreze, 2005). This groundswell of resistance helped to re-define the roles of forest-dwelling communities as stewards, rather than encroachers (Kumar & Kerr, 2012), and aided the shift of government to coordinate with communities in the future:

“Eviction of tribal communities and other forest-dwelling communities from forest areas will be discontinued. Cooperation of these communities will be sought for protecting forests and for undertaking social afforestation” - Common Minimum Programme of the UPA government (Dreze, 2005, p. 2).

It can also be mentioned that a lot of the support came from ‘protest politics’ in which no politicians wanted to be seen as ‘anti-tribal’ or ‘anti-poor’, meaning the political moment in time was in favour of the CSD’s efforts (Kumar & Kerr, 2012). Finally, after implementation, NGOs, such as Vasundhara, community councils, local leadership and other social networks helped to disseminate information about resistance and the FRA (Sarangi, 2020; Satpathy, 2017). There was also much support from NGOs who played a pivotal role in helping communities map customary use, document claims, and understand the provisions in the Act (Sarangi, 2020; Vyawahare, 2023). Additionally, some of those who gained FRA entitlements were eligible for water and land improvement activities, school scholarships, and other programming which helped to spread the news about the FRA entitlements (Sarangi, 2020).

5.2b Variable 2: Transformation: New Responsibilities and Community Outcomes

India’s forest dwellers, who gained legal recognition for their customary rights, stepped into a state of new-commonisation in accordance with its definition, in that their resources were converted into “new transformative arrangements with refined rules and management systems complementing resource use and protection in synergy with traditional practices and values” (Nayak & Berkes, 2022, p. 11). However, not all communities received such opportunities for synergy, and many did not receive rights who were eligible for them. Although those who received rights saw the increase of positive livelihood opportunities, implementing the FRA was incredibly difficult and contributed to a greater process of decommonisation for those who have not yet, or will not, receive such rights. Of those who received rights, Satpathy (2017, p. 265) asks:

“By now, it is claimed that more than 16 lakh [1.6 million] IFR titles have been distributed in India, and 150 million forest dwellers have gained forest rights recognition over a minimum of 40 million hectares of forest land within more than 170,000 villages (RRI, 2015). Amidst these impressive statistics of ground-breaking

progress of the FRA in India, however, the ground realities of FRA implementation remain a matter of concern, especially relating to bureaucratic apathy, institutional ambiguities and political indifference. Hence, the key question becomes whether the claimed redressal of historical injustices to local tribal people, in particular, is going far enough. Is it really effective to secure their basic rights?”.

This variable seeks to understand what new responsibilities and roles came from this shift in governance with the FRA, and what were some of the resulting outcomes and impacts that forest-dwelling communities have felt since its inception. Though there are many positive outcomes, there was also deepened inequality, insecurity and inequality for those who did not receive rights.

C. The State of the New Commons (Roles & Responsibilities)

With the recognition of customary rights under the FRA (2006), the primary institution for commons management were the gram sabhas (village council), which were tasked with creating, enforcing, and monitoring rules for forest protection, biodiversity conservation, and sustainable use, including the power to veto harmful development projects (CFR-LA, 2016; Satpathy, 2017). This goes far beyond earlier initiatives such as Joint Forest Management (JFM), where communities had consultative roles but no ownership and now maintain substantive authority (Hebbar, 2017). There were also Forest Rights Committees (FRCs) formed to work with the gram sabhas to support claims processes and documentation, and handle interfacing with district-level authorities (Sarangi, 2020). The committees are usually made up of both men and women from all the different villages and many in these roles believed they had a greater chance of receiving claims if they volunteered (Mishra, 2018).

Communities also assumed direct governance responsibilities over land and forest resources as the FRA vested rights to access, use, collect, and sell non-timber forest products (NTFPs), such as sal seeds, tendu leaves, and bamboo, with communities mandated to manage these resources sustainably (Sarangi, 2020; Sarap, Singh & Singh, 2013). At the household level, individual titles allowed families to cultivate agricultural plots, and make decisions over crop choice, fencing, and other management practices. As stated earlier, these are not considered private lands, and the titles are non-transferable and cannot be sold or mortgaged (Mishra, 2018). Both households and communities are required to manage conservation by protecting and regenerating forests, however, many communities were unaware of this upon receiving rights due to limited training and communication by the government (Mishra, 2018). Additionally, although conservationists largely argued against the FRA (2006), Mishra (2018) argued that forest dwellers that had claims were now able to regulate and stop any activity that could harm the biodiversity of the forest including its wild animals. Moreover, there is a special provision of compensation for relocation of communities in the National Park and Wildlife Sanctuaries if an area is considered a Critical Wildlife Habitat (CWH):

“After declaration of CWH, these areas are reserved only for maintenance of a viable wildlife population and cannot be subsequently diverted by the state government or the central government or any other entity for other uses. These observations suggest that there is a possibility of enhancement of wellbeing of forest dwellers without disturbing the viable wildlife population in the PAs” (Mishra, 2018, p. 133).

Upon gaining rights, forested areas shifted to community-led forest governance with the government’s role becoming supervisory rather than managing forests directly (Forest Rights Act, 2006). With these rights, communities through the gram sabhas also had the ability to spearhead new income-generating and development initiatives such as bamboo cooperatives, projects to improve watersheds, new NTFP enterprises, and in some cases, ecotourism ventures (Sarangi, 2020; Vyawahare, 2023). Receipt of FRA entitlements also enabled access to additional government

schemes, including land and water improvement programmes, housing support, and school scholarships (Sarangi, 2020). These changes created new livelihood opportunities for communities and gave them the sense of security to build up and develop the forests (Sarap et al., 2013). Though, it is worth noting that Mishra (2018, p. 140) documented this sense of security as possibly stemming from a lack of clarity about future rights of these lands:

“However, households are confident that their rights are hereditarily transferable and that their future generations would not face any type of trouble or conflicts while enjoying their rights over these lands... According to the informal rules-in-use, these lands are treated as private lands and households know about the legal boundary of their cultivated lands. The cultivation right is fully vested with that particular household... to take decisions on what crops to be grown, how much investment to be made, who can enjoy the rights... Even though households are not aware of the absence of alienation rights over these lands, they feel more secure than before. They believe nobody in future can take away their rights over these lands”.

Additionally, there are provisions in the rules to include women, other traditional forest dwellers (OTFDs), and to grant collective claims for whole communities. However, despite these encouraged changes, the majority of titles were issued to men, even with the option for joint ownership, and women’s required participation in gram sabha decision making has largely been formal rather than substantive; OTFDs have been frequently excluded, even if they can prove the required 75 years of residence; and the FRA claims were overwhelmingly provided to individuals rather than to collective claims (Mishra, 2018; Satpathy, 2017; Sarap et al., 2013).

Overall, though the new rules of the FRA are intended to ensure livelihood and food security, while strengthening the conservation of forests (Forest Rights Act, 2006), there have been a number of implementation issues as well as positive and negative impacts from its establishment.

D. Outcomes/Impact

(1) Implementation

Under the act, other traditional forest dwellers (OTFDs), includes anyone who lives in the forests but are not officially granted the recognition of “Scheduled Tribe”, a title granted in the 1930s and 50s according to the following, presently considered outdated (Compass by Rau’s IAS, 2023), requirements by the Government of India’s (1965, p. 7) Department of Social Security:

“It will be observed that in [1931, 1935, 1950 and 1956]... every tribe need not be regarded as requiring special treatment; the list of 1931 was of ‘primitive tribes’ while the list of 1935 was of ‘backward tribes’ and primitiveness and backwardness were the tests applied in preparing the lists in 1950 and 1956. In revising the list of Scheduled Tribes, we have looked for indications of primitive traits, distinctive culture, geographical isolation, shyness of contact with the community at large and backwardness; we have considered that tribes whose members have by and large mixed up with the general population are not eligible to be in the list of Scheduled Tribes”.

OTFDs include anyone else living in the forests, which also includes Scheduled Castes, who, despite the abolished practice of untouchability in 1955, were still defined by it, as stated below:

“The relevant records show that in drawing up the list of Scheduled Castes, the test applied was the social, educational and economic backwardness arising out of the historical custom of untouchability. The list of Scheduled Castes drawn in 1950 was a revised version of the list of Scheduled Castes under the Government of India

(Scheduled Castes) Order, 1936, made under the Government of India Act, 1935, which, in turn, was the continuation of the earlier list of ‘depressed classes’... castes, contact with whom entails purification on the part of high caste Hindus... [they were] denied access to temples... had to use separate wells or... remain outside a school house or suffer similar social disabilities” (Government of India, 1965, p. 5).

Originally, the FRA (2006) was to include only Scheduled Tribes, however, Bose (2010, p. 22) notes that “the non-tribals by way of ‘other forest dwellers’ were included on the ground that the process of scheduling tribes, since colonial times, had been faulty”. Social activists made it clear that this exclusion of OTFDs would lead to social conflict, “between people who have historically lived in a mutually beneficial relationship vis-à-vis the forests” (Bose, 2010, p. 22). Thus, OTFDs were included, however with different eligibility requirements that were ultimately considered inequitable in much of the literature (Bose, 2010; Kumar & Kerr, 2012; Sarap et al., 2013; Kodiveri, 2016; Hebbar, 2017; Sarangi, 2020)

Unlike Scheduled Tribes, OTFDs, including Scheduled Castes, must use documentation, geological evidence, or the testimony of elders to prove that their family has resided on the same plot of land for 75 years prior to 2005, in order to make a claim. Bose (2010) argued that these are unreasonable requirements which exclude the largest group living in the forests, the Scheduled Caste communities, who found it nearly impossible to produce evidence of their residence since the 1930s. Of those that were able to produce the evidence, many were rejected, and despite enquiring as to why, they were unable to receive valid reasoning from the forest officials (Mishra, 2018).

Kodiveri (2016) also draws attention to the exclusionary effects of entrenched caste hierarchies in village societies, despite all forest dwellers relying on and managing the same resources. By subsuming Scheduled Caste communities under the OTFD category, and subjecting them to the stringent evidence requirements, the Act reproduced their invisibility in environmental governance and severely restricted their access to rights. Kodiveri (2016) states that even when Dalits (Scheduled Caste) attempted to step outside the Hindu fold through conversion to Christianity, their caste identity persisted, as poverty and landlessness remained the material markers of exclusion. In areas like Kandhamal, Odisha, where Dalit communities live alongside Scheduled Tribes, the FRA reinforced some of these inequities by creating a hierarchy for land claims, providing them to Scheduled Tribes first, and more easily (Kodiveri, 2016). Scheduled Castes were left vulnerable to landlessness and dispossession, and some claimed that they too should have Scheduled Tribe status, as they speak the same language, share a culture, and live in the same region (Kodiveri, 2016); outlined well below:

“In an interview, a Dalit politician vehemently argued that moving outside the Hindu fold does not transform caste identity but changes the religious basis of discrimination, as landlessness and poverty continue to act as markers of being Dalit. The constant threat of land grabbing by the Scheduled Tribes in the Scheduled Areas has perpetuated the landlessness of Dalits in Kandhamal. The change in status is not to be viewed as one of washing away Dalit identity but as claiming rights which is presently restricted to Scheduled Tribes” (Kodiveri, 2016, p. 52).

Overall, this meant that there was a structural power imbalance between communities depending on if a community was considered a Scheduled Tribe or OTFD, and elite capture was evident in the form of ‘land grabbing’, as described above. This indicates a form of new-commonisation for one community, and one of further decommonisation for another.

Additionally, Mishra (2018) found that most households first learned about the FRA through relatives or neighbouring villages rather than from formal government channels. While some information was conveyed by forest officials and PRI members, officials were generally reluctant and pessimistic about the Act, fearing a loss of authority, increased forest degradation, and greater conflict between humans and wildlife. Their communication of FRA provisions was sporadic and incidental, rather than proactive (Mishra, 2018). In remote areas, particularly within PAs, forest officials often avoided staying in designated ‘beat houses’ due to inadequate amenities, resulting in infrequent patrols and limited engagement with residents. Other government agencies also avoided these areas, which further restricted the flow of information about FRA implementation (Mishra, 2018).

Mishra (2018, p. 133) noted that “people living inside the PAs are more vulnerable than people living in any other types of forest areas due to restricted livelihood access (Vasundhara, 2004), growing human–animal conflicts (Madhusudan, 2003), crop depredation (Jackson & Wangchuk, 2004), inadequate compensations against live and livestock damages (Tiger Task Force, 2005) and faulty relocation policies (Karanth, 2007)”. He argues that PAs should participate adequately and respect the rights from the FRA (2006), as, with proper implementation, it will mean greater long-term investments in wildlife management (Mishra, 2018).

During the application period, communities did not receive an adequate level of support:

“Given the low literacy... and their limited access to different channels of information, many potential beneficiaries have not been able to apply for benefits under different provisions of the Act. And the claims of many of those who applied without all the supporting documents have been rejected. The implementing agencies at the local level have neither played a proactive role in helping beneficiaries with proper guidance nor in providing evidence in support of their claims... officials have been prone to rejecting applications on flimsy grounds” (Sarap et al., 2013, p. 62).

Evidently, in some locations in Odisha, the first six months after the FRA began to be implemented were crucial, as once the meetings with the implementing officers occurred, communities had 90 days to provide the proper evidence (this was soon changed to an ongoing process) (Sarap et al., 2013). In Sarap et al.’s (2013) study, they describe the initial days as ad hoc with not much systematic preparation nor wide publicity about the Act throughout relevant areas. They also note that awareness building reached little over half of the villages by civil society organisations and only some villages received a copy of the Act in their local language (Sarap et al., 2013). Meetings with the communities were reportedly ‘hurriedly called’, and members from different groups, such as Scheduled Tribe, Scheduled Caste, and other OTFDs were nominated as Forest Rights Committee members. Women took up approximately 1/3rd of the attendees to the meetings, though it was noted that the communities often treated their involvement mainly as a formality, rather than as a substantive participant (Sarap et al., 2013; Satpathy, 2017). Sarap et al. (2013) summarize some the complications that occurred after the implementation of the FRA in their study in Odisha:

“Some of the claims submitted by women households have not been accepted, leading to allegations of gender discrimination... [Those] whose land straddles state boundaries have been considered eligible under the FRA on one side but not the other. There are also many cases where the implementing agencies... rejected claims on the ground that they are not on forestland, although they ought to be according to the state circular on the FRA (ibid). All this has led to the deterrence of many potential claimants” (p. 65).

“In effect, the process of executing the different provisions of the Act has translated into distributing land to individual beneficiaries, sidelining tribal-friendly provisions such as community forest rights (CFRs). Given that forests and its products have been under the state for long, there is little inclination among the forest bureaucracy to forgo its control. The interpretations of several provisions of the FRA, including those to do with community forest rights and OTFD, have been ambiguous” (p. 63).

Mishra (2018) also discussed officials demanding bribes for land verification, or for communities to cover their costs during the period they were present, including from households whose claims were later rejected (such as Scheduled Caste). Both Sarap et al. (2013) and Satpathy (2017) indicate that part of the reason for this was an inadequate provision of funds by the government to prepare the map for the claimants and verify their paperwork. In fact, many who received claims still did not have a map years later (Satpathy, 2017). Mishra (2018) also found that in PAs, claims were usually dismissed outright on the assumption of future relocation, such as in Odisha’s Badrama Wildlife Sanctuary, and in tiger reserves, such as Similipal and Satkosia. Even when claims were processed, forms were often filled in by officials themselves, leaving out specific rights such as access to firewood, grazing space, or NTFPs. Satpathy (2017) also found that forest officials sometimes tried to ‘sabotage’ claims and would prevent necessary village meetings to set up the FRA.

As hinted earlier, women's rights were also sidelined, with applications, including for joint titles, frequently ignored (Mishra, 2018; Satpathy, 2017). Satpathy (2017, p. 269) states:

“A striking feature in all these institutions, ranging from informal community institutions to formal forest institutions, was the negligible participation of women... As noted, participation of women in FRA implementation is only a prerequisite to attain the quorum, acting as silent spectators of the entire implementation process. Even their decision to attend meetings is controlled by their husbands. During a discussion, one woman said: ‘We usually attend meetings when we are told by our husbands. We only sit there silently and listen.’ It is evident that officially, from FRC [village] to SLMC [state] level, minimum participation of women is formally mandatory, but the voices of women remained unrecognised in the rights recognition process”.

Satpathy (2017) also highlighted the conflict that ‘hard-core’ conservationists and forest officials had with human rights groups regarding the FRA, which led them to file nine court cases in High Court:

“A Divisional Forest Officer claimed: ‘Distribution of forest lands under FRA will eventually compress the forest area. The only thing is that, now we are legalising exploitation of forest resources through FRA.’ Contradicting the rigid conservationist approach, human rights groups strongly favoured FRA implementation... there have been ideological conflicts between the various actors in forest conservation” (p. 269).

She criticizes the overall FRA (2006) system saying, “no doubt, devolution of powers remains important, but it also leads to formalisation of institutions, which by itself cannot provide communities with meaningful livelihood security... Here, too, just making better laws is not enough to secure meaningful justice” (Satpathy, 2017, p. 270).

The implementation of the FRA (2006) left many communities without rights or with worsening situations of decommonisation. However, for communities who did receive rights, the following section outlines how this created a state of new-commonisation for them.

Communities that Received Rights:

Eventually, various communities began receiving rights, though it took many years. For example, Kodalpalli, in Nayagarh, Odisha, received their title in 2021, with the help of local NGO Vasundhara, to map out and claim their rights (Vyawahare, 2023; Rai, 2024). This allowed the 40-year patrol through thengapalli to be further legitimized to enforce rules. The community has documented their customary regulations for sustainable use of the forest and are already exploring new livelihood options, like community-run ecotourism, and selling NTFPs, under the management of the gram sabha (Vyawahare, 2023).

There are many examples across the country of forest communities reviving their commons upon receiving community forest rights. In Mendha-Lekha, Maharashtra, the community established a bamboo harvest that was previously banned and used it to invest in community welfare and forest protection (Jamkar, 2015). The community famously declared, “we have our government in Delhi and Mumbai. But in our village, we ourselves are the government”, after receiving forest rights in 2011 (Jamkar, 2015).

Inspired by the success of Mendha, other districts in Maharashtra, such as Gadchiroli and Pachgaon Village have claimed CFR rights. Pachgaon established a bamboo business that generates significant revenue and improved livelihoods. The gram sabha played a pivotal role in managing the business and ensuring equitable distribution. Due to their success, the community has seen a reduction in out-migration, have funded local infrastructure, and have invested in education (Srivastava, 2024). Similarly, in Gadchiroli, federations have been formed to collectively market products like tendu leaves and bamboo which have increased incomes and been invested in local wellbeing (Sahu, 2020)

The forest cover in these areas has remained stable, or has improved, which has helped to establish local communities as leaders of conservation, granting them protections over management of their commons, and have countered notions that local use would lead to degradation (Sahu, 2020).

Once granted, FRA rights provide communities with a sense of security (Sarangi, 2020; Mishra, 2018; Satpathy, 2017; Sarap et al., 2013). Prior to receiving rights through the FRA, due to JFM restrictions and farmland conversion, some of Odisha’s forest-dwelling communities had access to shrinking amounts of land for grazing cattle, and poor-quality land that produced low yields for crops (Sarangi, 2020). Once FRA titles were granted, they provided tenure security that enabled land levelling and water development, and in many communities, such as Bhramanimal, Rambhai, and Anandpur in Odisha, these changes happened within a year of receiving rights (Sarap et al., 2013).

Communities who have the claims paperwork are eligible for some social programs, such as the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) which provided watershed development to some communities (Sarap et al., 2013). For school-going children, grants became available, such as the Indira Awaas Yojana, which some gained (Sarap et al., 2013). It is important to note that these funds and initiatives have not been adequately granted to communities, and Satpathy (2017) found in her study that by 2015, few FRA title holders had benefitted.

After receiving rights, villages found that conflict with the Forest Department decreased, as communities no longer faced the same level of harassment or eviction threats (Sarap et al., 2013; Sarangi, 2020). Communities gained formal legitimacy to cultivate land and members of claim-holding households were more easily able to get caste and residential certificates, without hassle (Sarangi, 2020; Sarap et al., 2013). Community members must show these certificates to receive certain community grants, such as scholarships and free books for school-going children; Sarangi (2020), found that these communities had more access than before the FRA.

Saranghi (2020) also found that social standing and financial capital improved in their study locations after receiving rights; communities were less likely to be excluded from decision-making platforms, and the income potential and output increased in agriculture and forest collection of NTFPs.

5.3 Conclusions

Variable 1 demonstrated that in India, the shift toward codification of forest commons, and thus new-commonisation for many, was driven by a powerful combination of grassroots mobilisation, strategic coalition-building, sustained protest, and political engagement. Community actors, most notably the Campaign for Survival and Dignity (CSD), leveraged media attention, protest politics, and multi-scalar alliances to push for the recognition of customary rights. The Forest Rights Act (2006) was a landmark legal framework that re-framed forest-dwelling communities as rightful stewards of the commons, rather than encroachers in the forests. Those who gained rights were able to move to a state of new-commonisation, protected from atrocities of the past. However, while this new law marks a significant achievement towards humanitarian considerations, its implementation requires continuous monitoring and support to ensure its legitimacy is upheld, and communities retain meaningful control.

Variable 2 demonstrates that despite its “utopian” rhetoric (Siripurapu et al., 2016, p. 3), the FRA (2006) has been fraught with complications that are deeply embedded in colonial legacies around the rights granted to various groups of ‘Scheduled Tribe’ and ‘Scheduled Caste’ communities, persistent gender disparities, and inequitable implementation by the forest department, which at times hindered communities’ access to rights. For those that did not receive rights, the literature indicates a sobering reality in the difficulties that the FRA (2006) has had in implementation and the deepening inequalities that it has persisted for other communities in its design; an indication of decommonisation.

For those who did succeed in receiving Forest Rights Act (2006) claims, there was a shift in communities being able to govern their commons with new protections and responsibilities in place. Communities are responsible for managing the conservation of the forests and found that the legal rights provided a certain level of legitimacy in governance, allowing them to work towards diversifying livelihoods and investing in welfare, education, and infrastructure. Additionally, rights to customary land have provided a certain level of security, as conflict with the Forest Department has reduced, and the number of human rights atrocities have decreased from mining and timber ‘mafias’. FRA (2006) rights have enhanced social standing, reduced out-migration, stabilized or improved forest cover, and affirmed forest dwellers as legitimate stewards of their commons. Communities who received rights entered a state of new-commonisation, where they re-established and formalized customary rights through codification of the forest commons. Thus, for those communities that received rights, a form of new-commonisation has taken root through deepened legitimacy of the presence and activity of communities to improve their livelihoods and reinvigorate environmental stewardship. There is, however, persistent inequality between and within villages, such as uneven implementation, gender exclusions, and caste-based inequities, which threaten this shift’s sustainability and caution against mirroring its design with other similar policies, such as a potential Coastal Rights Act for Chilika Lagoon.

The next chapters discuss the final case study in Papua New Guinea (Chapter 6), which demonstrates the use of LMMAs by fishery commons, followed by the final Chapter 7 which will conclude with considerations from all three chapters for Chilika Lagoon.

Chapter 6 Case Study Analysis: Fishery LMMAs, Papua New Guinea (PNG)

6.1 Context (Commons and Decommonisation) & Inclusion Criteria

While previous laws intended to protect commons governance in Papua New Guinea (PNG) fisheries have difficulties with enforceability, many of PNG’s coastal fishing communities have gained legal rights to govern common-pool resources through the more contextually-specific Locally Managed Marine Areas (LMMAs), embedded in Local Level Government (LLG) laws. This has largely occurred through the support of external scientists and NGOs who have also helped communities to map out and establish ‘no-take’ fishing zones to support fishery regeneration. LMMAs have gained prominence throughout fisheries across the world, evident in the global LMMA Network, however fisheries in India have not yet implemented this initiative. LMMAs therefore serve as a potential new legal pathway specific to fisheries that also help to maintain and protect commons management. This chapter analyses two variables: (1) community mobilisation and external response, demonstrating mechanisms, strategies, and enabling conditions that helped facilitate the development of LMMAs, and (2) transformation: new responsibilities and community outcomes after codification, which reviews the impact of the shift to a state of new-commonisation following decommonisation.

6.1a Commons: Coastal Fishery Commons & Customary Marine Tenure in PNG

Papua New Guinea (PNG) is a part of the Coral Triangle, referred to as CT6 for the six countries and 120 million people who rely on it for fisheries, coastal protection, and tourism (Asian Development Bank, 2014). The other five countries are Indonesia, Malaysia, The Philippines, Solomon Islands and Timor-Leste (see Figure 16). Its nickname is the ‘Nursery of the Seas’ as it is the most diverse marine area on Earth; hosting approximately 600 species of coral (75% of all known species), 3000 species of fish (30% of global reef fish), whale sharks, manta rays, dolphins, whales, and many turtle species (WWF, 2009; Huber, 1994; Asian Development Bank, 2014). PNG also hosts the largest and one of the most floristically diverse mangrove forests in the Indo-Pacific Region (Sillanpää et al., 2024).

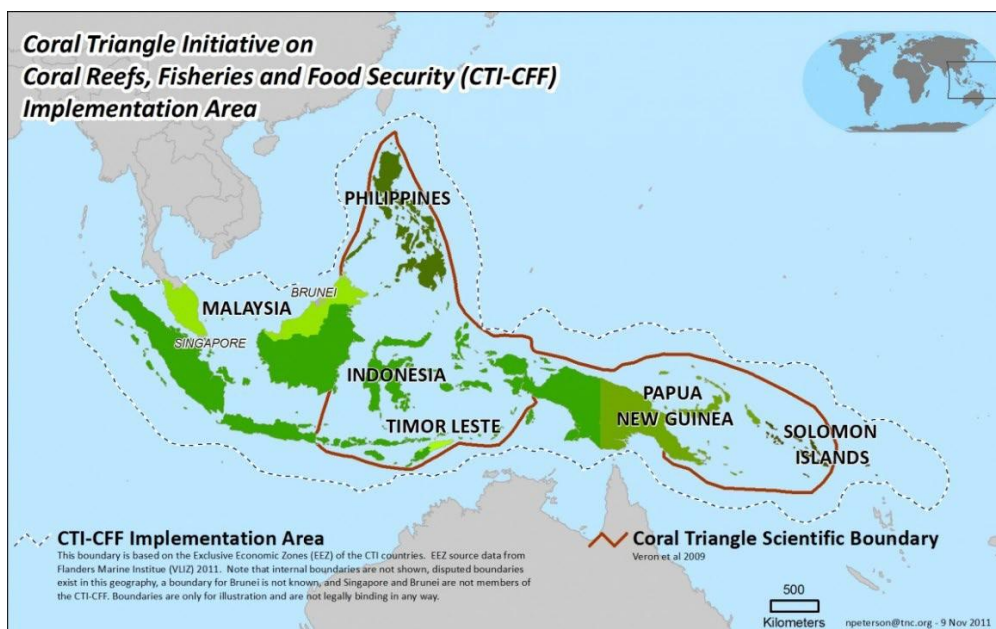


Figure 16: Map of the Coral Triangle Region (CTI-CFF, 2013)

PNG's reefs include fringing and patch reefs, atolls, coral pinnacles (important for vertical reef complexity and fish habitat), and barrier reefs such as the Papuan Barrier Reef (Huber, 1994; Galbraith et al., 2021). The country hosts most of the world's remaining vulnerable population of dugongs as they (and turtles) rely on seagrass beds and reef flats for their habitat, which is abundant in the lagoons (Asian Development Bank, 2014). Approximately one-third of PNG's total reef area is concentrated in Milne Bay, however, the Exclusive Economic Zone (EEZ) spans approximately 3.12 million square kilometers, including over 20,000 km of coastline. More than 61% of the population lives within 100 km of shore, relying heavily on marine ecosystems for food and livelihoods (Asian Development Bank, 2014; Huber, 1994). Coastal fisheries contribute about 15% of the total national animal protein intake, which is at significantly higher rates nearer to the coasts (CCIF, 2013).

Fishing is an important part of daily life for most of the coastal population, largely made up of small-scale fisheries who have managed coastal commons for many generations, frequently establishing no-take zones to manage the ecology (Huber, 1994; McInahan & Cinner, 2008). The caption of the below photo is: "A fisherman in Papua New Guinea shows his catch for a ceremonial feast. Communities there are successfully managing their local reefs by observing temporary fishing closures that end in time to celebrate the traditional feast" (Smithsonian Ocean, 2010, n.p.).



Figure 17: 'Harvest' (Smithsonian Ocean, 2010, n.p.)

Unlike the other case studies, PNG's Constitution already recognizes customary marine tenure rights (Government of PNG, 1975), further protected by national legislation such as the Fisheries Act (1994), and by several Marine Protected Areas (MPAs) (White et al., 2014). Section 53 of the Constitution guarantees protection from unjust property deprivation; Schedule 1.2 affirms the legal standing of customary law (Government of PNG, 1975). Very few countries provide this level of constitutional protection for Indigenous communities; others include Vanuatu and Solomon Islands (Republic of Vanuatu, 2013; REDD+ Solomon Islands, 2015-25). Around 97% of PNG's landmass and coastal waters have customary ownership, passed down through families (by men) through the tenure system formally recognized upon independence from Australia in 1975 (Government of PNG, 1974). The other 3% is considered government or alienated land (Asian Development Bank, 2015).

Section 3 of the Fisheries Act (1994) exempts traditional fishing from licensing requirements, and Section 36 states: “The rights of the customary owners of fisheries resources and fishing rights shall be fully recognized and respected in all transactions affecting the resource or the area in which the right operates, and owners of resources and rights shall not be deprived of their traditional fishing rights” (Government of PNG, 1994, p. 17). The Land Act (Government of PNG, 1996, p. 2) further solidifies these rights by defining custom, customary land and customary rights as the following:

“‘**custom**’ means the customs and usages of indigenous inhabitants of the country existing in relation to land or the use of land at the time when and the place in relation to which the matter arises, regardless of whether or not the custom or usage has existed from time immemorial; ‘**customary land**’ means land that is owned or possessed by an automatic citizen or community of automatic citizens by virtue of rights of a proprietary or possessory kind that belong to that citizen or community and arise from and are regulated by custom; ‘**customary rights**’ means rights of a proprietary or possessory kind in relation to land that arise from and are regulated by custom”.

In addition to these Acts, The Fauna (Protection and Control) Act (1996), The Organic Law on Provincial Governments and Local Level Governments (1996), and The Fisheries Management Act (1998), were also created to support community-based marine governance (Govan, 2009). Marine Protected Areas (MPAs) are established throughout the country, defined in the IUCN Guidelines as a: “defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values” (Dudley, 2008, p. 8). The updated guidelines clarify that only areas where biodiversity conservation is the primary goal qualify as MPAs (Day et al., 2019). Other goals are excluded, such as industrial activities and infrastructure development, including mining, oil and gas extraction, and industrial fishing. Small-scale extractive activities are allowed in MPAs if they have a low ecological impact and are, “sustainable, well managed as part of an integrated approach to management, and fit within the definition and category of an IUCN protected area”, other fishing activities are excluded (Day et al., 2019, p. 8). Wildlife Management Areas, Marine Parks, Historic Reserves, and Provincial Parks are all considered MPAs. In 2014, there were 59 MPAs covering 4558 of the 7256 km² of reefs; though only 35 have legally recognized boundaries (White et al., 2014).

6.1b Decommonisation: External Exploitation

Despite having a plethora of legal rights, customary users of PNG’s coastal waters have faced considerable external pressure and threats, including degradation of the reefs and encroachment by external users (Huber, 1994). This might be attributed to weak law enforcement and environmental monitoring due to the perception that the waters were ‘pristine’ (Huber, 1994). It is thought that this contributed to the limited ecological documentation and monitoring of marine resource use and degradation, species distribution, productivity, and reef condition (Huber, 1994; Govan, 2009; Asian Development Bank, 2014). Missing long-term data, coupled with weak regulation enforcement, makes planning for emerging threats difficult (Govan, 2009; Preston, 2005).

“The conventional wisdom is that PNG's reefs are nearly all healthy and pristine. This may in fact be the case - certainly the reefs appear to be in far better condition than those in much of Indonesia and the Philippines. There are inadequate data, however, to assess the present state... Baseline studies and monitoring have been undertaken at only a handful of locations. There is circumstantial and anecdotal evidence that PNG's reefs may be under more serious threat than is generally acknowledged... For some reef

fisheries the Department of Fisheries and Marine Resources (DFMR) has recently enacted management measures including harvest size restrictions, gear restrictions, and even complete harvest bans. Enforcement is virtually nil, however; indeed, many DFMR are not aware of the regulations” (Huber, 1994, p. 70).

Many of the MPAs established across the country were implemented through top-down approaches, failing to adequately incorporate PNG’s customary marine tenure (CMT) system nor consultation and support from communities. As a result, enforcement is ineffective, leading to their characterisation as ‘paper parks’, for their usefulness only on paper (Foale & Manele, 2004; Govan, 2009).

Huber (1994) outlined many major threats, including reef harm from blast fishing, notable damage from mining, sedimentation from industrial activities, mangrove deforestation, eutrophication, and pollution in some localized areas (i.e. urban centers). As coral reefs are fragile and make up much of the fish habitat, these threats contributed to the degradation of fishing commons along coasts. By the mid-1990s, soil erosion, siltation and sediment on coral reefs were frequent due to unregulated small-scale agriculture along riverbanks and the allocation of nearly half of PNG’s loggable forests to clear-felling (Huber, 1994). The reefs have a heightened vulnerability to sedimentation from erosion since they are mostly nearshore and downstream of steep, deforested watersheds. The timber industry’s poor management, and the lack of monitoring systems, meant there were insufficient safeguards against sediment, chemical spills, or leaching from treated logs (Barnett, 1989; Huber, 1994). Although environmental impact assessments (EIAs) and plans were required, marine concerns were inadequately addressed (i.e. seagrass, mangroves, reefs or fisheries), and the focus was only on log-shipping sites and rarely enforced buffer zones near riverbanks (Hughes & Sullivan, 1989; Huber, 1994). Little data is available on the impact of government-backed agriculture projects in watersheds (i.e. oil palm, copra, and rubber) as they usually did not require an EIA (Hughes & Sullivan, 1989).

Huber (1994) also noted the lack of comprehensive survey data on water contaminant levels from subsistence and market gardening, and from pesticides, fertilizers, and other chemicals used in large-scale agriculture. Eutrophication through sewage discharge from urbanization such as in Port Moresby, and inadequate infrastructure in smaller coastal towns also contributed to degradation of reefs and affected seafood markets if they were close to incidents of sewage outfall (Huber, 1994). Huber (1994) also noted that water quality and sewage-related diseases near coastal towns had no systematic monitoring system; coliform bacteria counts were measured on an ad hoc basis.

Coral reefs in Papua New Guinea are threatened by coral bleaching and by mining activities, including the dumping of tailings and other waste into coastal waters, which exacerbates reef degradation (Asian Development Bank, 2014). Huber (1994) observed that while mining projects are technically subject to EIAs, management plans are often poorly enforced or rarely account for downstream marine impacts. Several mines, including Ok Tedi, Lihir, and Panguna, have discharged waste rock and tailings directly into the ocean, while others have caused direct damage to coral reefs, such as Misima Island (Huber, 1994). Baseline data were not collected before Lihir gold mine was constructed; its environmental impacts (along with small-scale alluvial mining), remain unmeasured.

The Panguna copper mine on Bougainville Island was ultimately shut down following civil unrest over tailings-related damage that affected roughly 100 km² of sea floor (Huber, 1994). Notably, soft rock waste from Misima Island’s gold mine was deposited directly on 9 km of fringing reef, with additional tailings released into deeper waters via a slurry pipeline. These practices were deemed acceptable by the government in the project’s environmental plans, and their long-term ecological

impacts remain poorly understood (Mineral Policy Institute, 2015). Sillanpää et al. (2024) highlight the degradation of mangrove ecosystems (which buffer reefs from sedimentation), citing agriculture, aquaculture, unsustainable fishing, and the oil and gas industries as key contributors. This is particularly severe in Daru and other regions with intensive *bêche-de-mer* (sea cucumber) harvesting, as mangrove wood is commonly used as fuel for processing (Huber, 1994).

The Coral Triangle draws global attention as it provides over 10% of the global tuna catch, specifically skipjack and yellowfin tuna (CCIF, 2013; WWF, 2016). There has been minimal oversight and management of foreign tuna fleets, offshore trawlers, or illegal, unreported and unregulated (IUU) boats. Though some tuna fleets operate with legitimate license agreements, they have been reported to exceed sustainable quotas, enter restricted zones and deplete tuna stocks and other species through bycatch, risking food and economic insecurity for communities (Preston, 2005; Ruddle, 1998; Wright & Richards, 1983; CCIF, 2013).

Offshore trawlers have grown in number with international demand, as PNG's waters supply much of the live fish market; however, their activity has also lessened fish stocks and caused the siltation and death of coral reefs (Huber, 1994; Gillett & Tauati, 2018). Wright and Richards (1983) reported an example of a fishing company that exhausted stocks of stonefish (*Synanceia horrida* and *S. verrucosa*) before turning to coral trout, which was then heavily fished. That this company had high mortality rates for by-catch, which accounted for 90% of their total catch (Wright & Richards, 1983). Overfishing also caused the collapse of *bêche-de-mer* (sea cucumber) in the early 2000s, prompting a 7-year species ban in 2009 (Gillett & Tauati, 2018).

Although blast fishing (home-made explosives stun or kill fish) is illegal, there was little enforcement capacity due to coordination issues between agencies (Huber, 1994; Govan et al., 2008). The practice is highly destructive to coral reefs and illegal in most Pacific Island countries (Govan et al., 2008). Regular fishing gear also impacts the ecosystem as line fishing targets larger, higher trophic level species, which can cause trophic cascades; gill nets used for smaller species occasionally entangle corals and damage reef structures; and, spearguns may target a wide variety of species, including herbivores which may unintentionally cause algal overgrowth on reefs (McClanahan & Cinner, 2008). Some rules around when and how to use the different fishing tools has been discussed, such as whether the restricted use of nets might be beneficial for corals after a bleaching or disease event, changing the size of the mesh or the material so it does not easily entangle with corals, or using nets in only non-coral reef habitats (McClanahan & Cinner, 2008). Additionally, overfishing by some communities was noted in areas that had easier access to cash markets (Huber, 1994; CCIF, 2013).

Although cyclones do not frequently reach PNG, some have caused widespread destruction and loss of life, such as Cyclone Guba in 2007; as well as significant mangrove deforestation, particularly in the Gulf of Papua (Sillanpää et al., 2024). There are also outbreaks of crown-of-thorns starfish (*Acanthaster planci*), which, if not managed, can each consume up to 6 square meters of live coral tissue per year (Asian Development Bank, 2014). Finally, Huber (1994) discussed the presence of old munition stockpiles from World War II which reportedly went off in lagoon areas, often due to storms and starfish. Damage to reef systems overall was moderate, though detrimental at concentrated blast sites, with most of the incidents reported along the coasts closest to Madang and Port Moresby (Huber, 1994). Coral has had difficulty growing back in damaged locations (Govan et al., 2008).

Papua New Guinea's governance transformation is unique as communities already hold legal rights to customary marine tenure, yet external decommonising threats, such as industrial overfishing, mining runoff, and weak enforcement, persist. In response, many communities initiated Locally

Managed Marine Areas (LMMAs), which serve as a decentralized legal option to commons protection (Booth, 2021; CEPA, 2014), marking a shift towards new-commonisation.

6.1 c Inclusion Criteria

This case was selected because it meets all three case selection criteria outlined in Chapter 3:

1. Ecological parallels: PNG, like Chilika Lagoon, is a coastal system where communities depend on small-scale fisheries for livelihoods, wellbeing, and cultural identity, while facing mounting environmental pressures;
2. Decommonisation caused by multi-scalar dynamics: despite constitutional recognition of customary tenure, external forces including industrial overfishing, forestry and mining runoff, and weak enforcement mechanisms have driven decommonisation for fishing communities;
3. Governance transformation: communities have responded by developing legally-backed Locally Managed Marine Areas (LMMAs), which formalize boundaries and enable fishers to reclaim ecological governance of their commons.

There were a few other reasons to consider PNG as a case study such as its water-based ecology, its similarities to a CBNRM framework and its varied legal-backing. As Nayak (2014) states, there is a unique “in-betweenness” on coasts, as they are placed where land and sea meet and laws diverge.

“In contrast to many other areas of natural resources law, water law has long recognized that water rights cannot be treated the same as conventional real property rights, because—in contrast to land, from which an owner can exclude her competitors if she wants—water moves through multiple, competing claims of rights during its cyclical journey from sky to sea. The same water that flows through a farm upstream may later flow through a downstream hydropower dam, may have provided critical habitat further upstream the day before, and may end up in the potable reservoir for a municipality, all before it is ultimately discharged into a large lake or ocean, where it becomes the medium for fishing, swimming, and navigation. So, at any moment in time, who actually ‘owns’ that water? The impossibility of answering that question is why water rights are considered a usufruct—a right of use, rather than a right of possession— which should rightly trigger a different quality of takings protection than the right to possess a home against random government expropriation. Indeed, before we can meaningfully apply any takings constraints to water rights, we must establish the precise contours of the right at issue—what it is, exactly, that the claimed right entitles the holder” (Ryan, 2022, p 696).

Therefore, it is necessary to include a water-based case study as this complexity is shared with Chilika Lagoon. It is also helpful to include a coastal example, as coastal fishers face different challenges than those on inland lakes, including more severe weather, unregulated ocean use, and overlapping international laws.

Additionally, Johannes (2002) describes governance in PNG’s Coral Triangle fisheries as resembling a community-based natural resource management (CBNRM) framework. As noted in Chapter 2, CBNRM is known to struggle with long-term success because it often fosters dependence on external actors like NGOs and donors, whose eventual withdrawal can destabilize communities (Dressler et al., 2010). However, during initial exploratory readings, it appears that communities are more supported by NGOs rather than co-managed by them. Thus, it may be useful to explore this aspect further.

Finally, I had hoped to find that their system, which has normalized the legal rights of customary tenure to communities, would demonstrate an example of security for fishers. Yet, despite present legal-backing for customary resources users, it also showed a state of decommissioning, as communities struggled to maintain autonomy over resources as a result of weak enforcement mechanisms and monitoring tools, among other threats. Discovering their more recent use of LMMAs, which are also legally-backed (Wangunu, 2004; Govan, 2009; CEPA, 2014; Booth, 2021), as a solution that elevates individual community rights, rather than nation-wide or Act-specific rights, helps provide an example of water-based governance that is not heavily reliant on the Protected Area (PA) structure.

6.2 Process Tracing from Decommissioning to New-Commonisation

Coastal communities in Papua New Guinea (PNG) have adopted various responses to growing external threats facing their marine ecosystems. As evident in section 6.1b, damage to coral reefs and fisheries has led to the gradual degradation of local social-ecological systems (SES) through declining fish stocks from industrial fishing and poor enforcement over Protected Areas (PAs), including the eventual species collapse of *bêche-de-mer* (sea cucumber); as well as more abrupt impacts, such as coral bleaching from siltation from mining runoffs and trawlers, damage from old munitions stockpiles, blast or poison fishing, and others. Communities, local leadership, government, and NGOs have each responded in order to work to defend customary fishing territories.

To reiterate clearly, this thesis does not include a comparative, cross-case study analysis, and each case study's pathway to new-commonisation is inherently unique. For instance, there has been some resistance and protest in PNG, but this appears far less in the literature as a strategy for change than among India's forest dwellers and Shimshal Valley's yak herding communities. Although these threats did cause some protest, as will be briefly outlined, the real shift happened because of the presence of NGOs and conservationists who realized that the present sweeping laws, and the PA systems in place were not working and were not properly enforced. The first section; A. Mechanisms, is longer than the other case studies as they have a longer history of legal rights to explore.

In the 2000s, it was an Australian NGO and university who first introduced the system of LMMAs to a few communities across the country, followed by other NGOs' implementation and support. The success of these initiatives varied; some as a result of inadequate consultation with communities, and others due to donor-dependency (endemic to CBNRM-based work as discussed in Chapter 2). However, it appears that since then, communities have become more self-directed with support from NGOs. In fact, some fishing communities are still implementing new LMMAs, yet with far more agency, and it is still being cited as the best method to maintain codified commons management over fisheries in PNG. As a result, the history that led to new-commonisation among PNG's fishers has been indirect, is still ongoing, and is not necessarily as ordered as the other two case studies. Despite this, PNG's case study will still be presented in the same order of Variable 1: lead up to new-commonisation and the governance shift to LMMAs through (A) Mechanisms, and (B) Enabling Conditions; and Variable 2: experiences after the shift in governance through (C) New Roles, Rules and Responsibilities, and (D) Outcomes and Impacts.

6.2a Variable 1: Community Mobilisation and External Response

A. Mechanisms

The mechanisms are activities that led to a state of new-commonisation, split into four parts: (1) resist and protest; (2) reflection, decision and planning; (3) achievement of codification; and, (4) strengthening the legitimacy of the commons.

(1) Resist and Protest

Many of PNG's examples of resisting and protesting against decommissioning threats occurred through self-run resistance as well as through the support and encouragement of NGOs. Certain activities, such as blast fishing, were difficult to prevent due to poor coordination between agencies and weakened enforcement (Huber, 1994; Govan et al., 2008); NGOs, such as the Melanesian Environment Foundation, encouraged communities to expel outsiders engaged in blast fishing themselves (Huber, 1994). Additionally, communities will chase away external illegal fishing boats if they spot them in their customary fishing zones, however, Cinner (2011) notes that fishers are often limited by their use of non-motorized canoes.

There have also been many protests against mining activities across the country, and resistance; a notable example is Bougainville Island's Rio Tinto Panguna copper mine. An article in *The Guardian* (2025) estimates that at one point 45% of the country's total exports came from this one mine, yet less than 1% of its earnings reached communities on the island. Huber (1994, p. 70) notes that it was "civil unrest" from communities opposing the damage caused by tailings (affecting roughly 100 km² of sea floor), that led to the mine's closing in 1989. Allegedly, communities sabotaged mining operations, including blowing up power lines (*The Guardian*, 2025).

Attempts to restart the mine by military force, "sparked a decade-long civil war that led to the deaths of as many as 20,000 people", from conflict as well as starvation and illness, as communities fled into the mountains' dense jungles (*The Guardian*, 2025, n.p.). Terms such as 'war', 'battleground', and 'rebel fighters' are used to describe the communities' resistance, and there is a Remembrance Day for veterans annually since a peace settlement was achieved in 2001 (*The Guardian*, 2025). Panguna's environmental impacts have persisted, with a landmark investigation documenting ongoing toxic leaching and confirming, "major environmental damage and life-threatening risks to communities" (Human Rights Law Centre, 2024, n.p.). Footage from the Human Rights Law Centre (2024) reveals entire river systems that have turned an unnatural blue (see Figure 18 below). As a result of this history, Bougainville's leadership has gradually assumed more political power from the government, with some aiming to eventually petition for independence from Papua New Guinea (*The Guardian*, 2025).



Figure 18: Effects of the Rio Tinto Panguna Copper Mine (Human Rights Law Centre, 2024, n.p)

The Bougainville conflict illustrates the intensity of community resistance against large-scale environmental and political threats, and it also underscores a historical lack of meaningful national support for protecting constitutional customary rights.

(2) Reflection, Decision-Making and Planning

Since the 1990s, Marine Protected Areas (MPAs) have been used nationally as a conservation tool, to protect open-water and coastal environments, through banning human activity and placing quota-specific restrictions on commercial fisheries. However, they are often deemed ‘paper parks’, for their inability to effectively manage resources and address external threats, due to insufficient enforcement and monitoring mechanisms, funding, and community buy-in (Govan, 2009; Foale et al., 2011; Booth, 2021). Booth (2021, p. 5) states: “Originally, environmentalists promoted MPAs for their biodiversity conservation outcomes. However, many fisheries scientists considered marine spatial management an unsuitable tool for managing fisheries because of concerns that MPAs would displace local fishing activity and increase regional fishing effort”.

As a result of its limitations, MPA design in PNG has largely moved away from the original ‘one large area’ concept (though a few of those remain) and has been re-defined (Booth, 2021). They now consist of networks of smaller ‘MPAs’, with different management types, including marine reserves (banning all human activity), restricted zones (allowing specific catch rates and gear), and a range of other protections at much smaller scales with varying shapes and sizes per location. MPA networks are usually established by scientists, NGOs, and local communities who coordinate to identify boundaries for physical and biological processes, allowing for a more ecosystem-based management approach (Booth, 2021). An example of this would be ocean upswelling or water currents, which deliver nutrients and larvae between regions with different MPAs, necessitating cooperation between them. Networks also tend to be considered cost-effective due to their flexibility and collaboration (Booth, 2021).

While these networks were being established, international NGOs introduced the concept of Locally Managed Marine Areas (LMMAs) to communities across the country in the early 2000s, and many continue to be implemented or created to this day. LMMAs are a well-established and widely used approach to conserve nearshore areas managed by local communities across the Pacific Islands, and, according to Govan (2009), are often the only real viable approach due to how embedded customary rights are in the region (LMMA Network, 2025).

They were first introduced to PNG by The Nature Conservancy (TNC), who had been working since the 1990s to conduct marine ecological monitoring and rapid assessments in Kimbe Bay, with scientists from Australia’s James Cook University (Booth, 2021). From 2004 to 2007, TNC continued conducting assessments, and arranged a series of technical ecological workshops, education and awareness programmes for local communities in partnership with Mahonia Na Dari (MND), a local marine conservation-focused NGO. Their initial goal was to create a Network of MPAs to protect ecological spaces of interest such as turtle nesting areas and fish aggregating sites (Booth, 2021). The 14 “areas of scientific interest” became LMMAs, which were what collectively made up the Kimbe Bay MPA Network (Booth, 2021, p. 28). They also created an LMMA on Dyual Island that same year (Waldie et al., 2016).

Since then, a number of other LMMAs were created across the country with support from TNC and other NGOs, such as the Wildlife Conservation Society (WCS) and Conservation International (CI) (van Helden, 2005; Govan, 2009). By 2015, more than half of PNG’s coral reefs were in the geographic region of an LMMA site; Maison and Graham (2015) mapped their spread (see Figure 19), showing LMMAs clustered in regions such as Kimbe Bay and New Ireland.

Papua New Guinea’s Locally Managed Marine Areas are part of a growing global trend among coastal fishing communities, to maintain a framework of self-governance of their marine social-ecological systems (SES). More can be read about other countries’ initiatives who have joined the

global network called LMMA International on their website, which aims to maintain a “grassroots network dedicated to advancing locally-led natural resource management”; of note, India is not currently one of the countries included in this network (LMMA Network, 2025, n.p.). The network has an online Learning Centre that describes the purpose and goals of LMMAs:

“A Locally Managed Marine Area (LMMA) is an area of nearshore waters and its associated coastal and marine resources that is largely or wholly managed at a local level by the coastal communities, land-owning groups, partner organisations, and/or collaborative government representatives who reside or are based in the immediate area... An LMMA can vary widely in purpose and design, but two aspects remain constant: (1) A well-defined or designated area; (2) Substantial involvement of communities and/or local governments in decision-making and implementation” (n.p.).

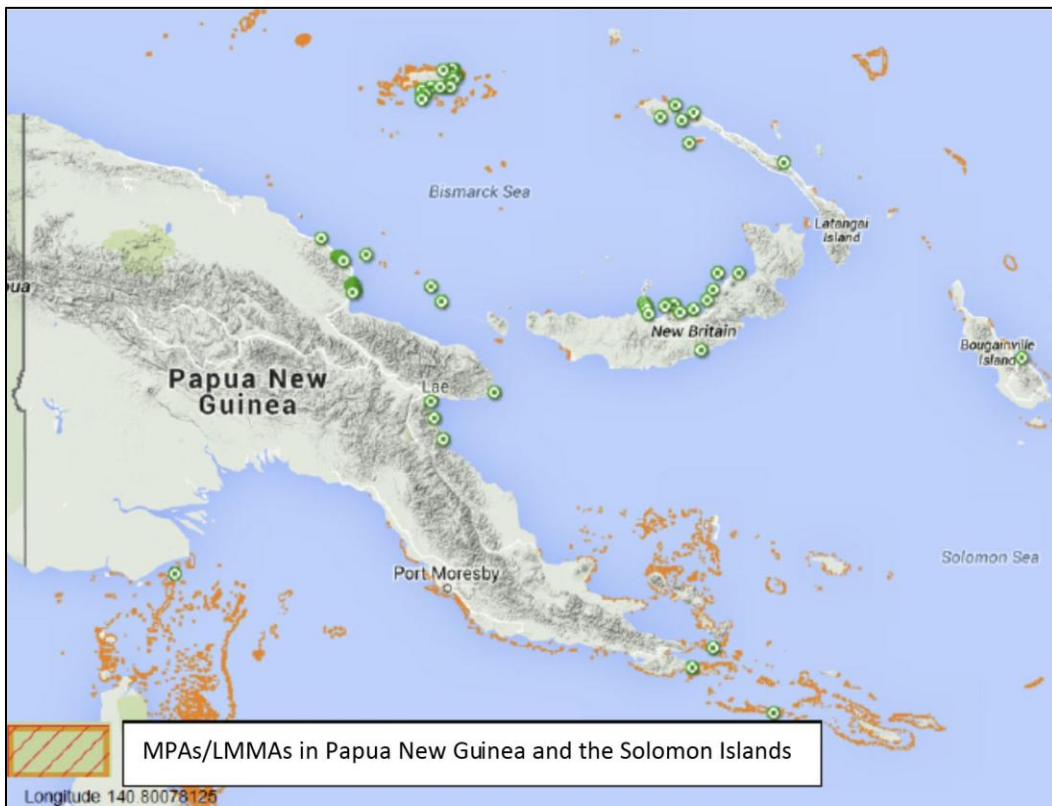


Figure 19: LMMA Locations in PNG (Maison & Graham, 2015)

Presently, there is a practice among communities, government and researchers, such as Green et al. (2009), to use the term MPA in place of LMMA (i.e. Kimbe Bay Network of MPAs), however this is a common practice among LMMAs globally and should not be confused with more formal MPAs:

“LMMAs are characterised by local ownership, use and/or control, and in some areas follow the traditional tenure and management practices of the region, whereas MPAs in the formal sense are typically designated via a top-down approach with little if any local input. LMMAs describe a process of ensuring meaningful local discussions, local priority setting based on local challenges and aspirations for resource use, such as food security and livelihoods, and moves on to practical, locally-enforced local rules. While LMMAs are often confused with MPAs, LMMAs are the entire fishing grounds, which

communities typically set aside at least part of an LMMA as a no-take reserve (oftentimes referred to as an MPA, but with a different meaning than the formal definition above). But they can also impose certain gear, species, or seasonal restrictions to allow habitat and resources to recover from fishing pressure, or to sustain or increase fish catch” (LMMA Network, 2025).

LMMA are managed and established at the local level by customary landowners, community groups, and local government representatives who reside in the boundary area (White et al., 2014). It is up to customary landowners to initiate the process of LMMA, often with requested support from NGOs, science bodies, or local government, and retain authority over access and use.

The Centre for Locally Managed Areas (CLMA) was established in 2002, to support community-based marine resource management (Maison & Graham, 2015). They now provide training, promote knowledge exchange, and help with standardizing tools such as gear restrictions, species-specific bans, and the creation of no-take zones. CLMA also serves as a coordinating body, linking communities with NGOs, researchers, and government agencies to strengthen policy influence and implementation capacity (Maison & Graham, 2015).

Green et al. (2009, p. 495), state that initiating LMMA occurs through a structured, community-based planning process, which combines the Global Network methodology with Conservation Action Planning strategy in the following six steps: “community engagement, community visioning, participatory conservation planning, community development of a locally managed marine area plan, preparation of a draft plan and agreement, and stakeholder consultation and finalization of the plan and agreement by the community”. Similarly, Govan et al. (2008) illustrate implementation (see Figure 20), where the process usually unfolds across four main phases: community request, awareness-raising, adaptive management, and ongoing review. Implementation may vary depending on the context and needs of the community.

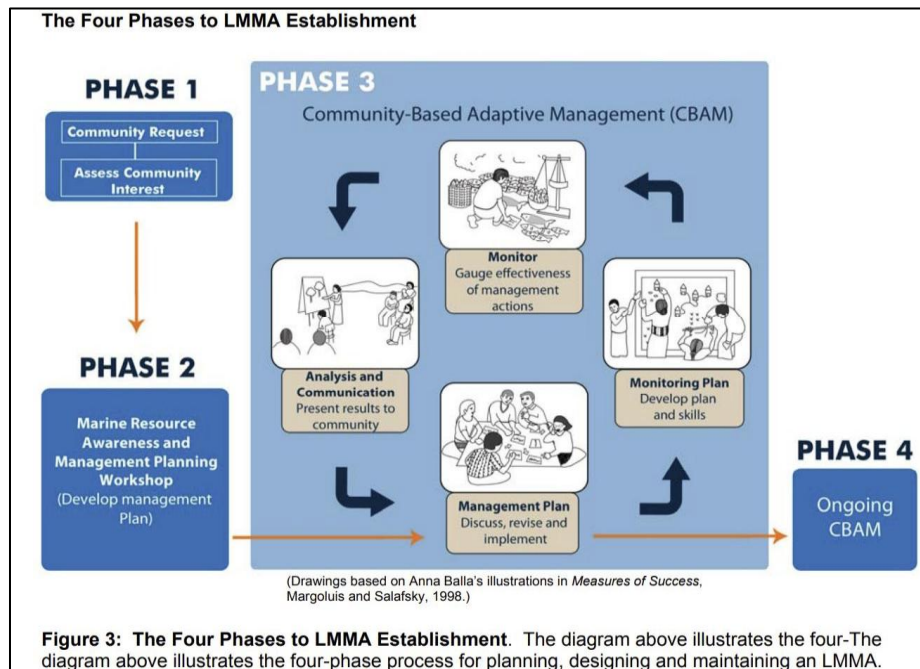


Figure 20: Phases of LMMA Implementation (Govan et al., 2008, p. 6)

Once a community has decided to register for an LMMA for their region, the process in PNG typically involves acquiring support from an NGO who helps the community identify their goals, map out the LMMA area, and prepare the registration application (Govan et al., 2008; Govan, 2009). In their guide, Govan et al. (2008) strongly emphasize that facilitation must be grounded in humility, care, and respect for the community; avoiding assumptions of superior knowledge; and supporting rather than leading the process. The first step usually involves consultation with the community, or from a cluster of communities, to ensure there is strong overall community buy-in, and that the next steps in planning come from them and reflect their priorities and goals:

“The spread and endurance of these LMMAs is attributable in great part to the perception of communities that benefits are, or are very likely to be, achieved. Such benefits include recovery of natural resources, improved food security, increased economic opportunities, improved governance, access to information and services, health impacts, improved security of tenure, cultural recovery and strengthening community organization. Less explicit benefits also include opportunities to exclude outsiders to the “fringe benefits” and “resource capture” of working with outside agencies, some of which offer incentives or payments for conservation, or promise alternative livelihood and income generation projects” (Govan, 2009, p. 7).

One example comes from New Ireland’s capital, Kavieng, where WCS facilitated a large-scale consultation with a cluster of communities (Morse, 2023). Over 9000 people from 100 communities were involved in shaping the LMMAs’ governance rules (Morse, 2023). As Annisah Sapul, WCS’s former program manager, described: “The communities have created the rules themselves. So with the science that we have given, and also with their traditional knowledge, they were able to say, ‘Okay, these are the rules that will help us to minimize the threats, and also to allow us to reach the objectives of what we want to see in our marine space’” (Morse, 2023, n.p.).

In another example in Bolsurik, the LMMA was established with collaboration between the community and TNC (Hausheer, 2016; Waldie et al., 2016). Social surveys were conducted with every other household (32) in Tok Pisin on Dyual Island, as well as a few community members from the island’s interior (Waldie et al., 2016; Hausheer, 2016). Interviews were conducted with the head (women and men) of the household (defined as a group that lives and eats together), before and after implementation of the LMMA in 2004 and 2014 (Waldie et al., 2016). Both times, respondents were asked to rate their support for the Bolsurik LMMA and to assess its impact on their livelihood, community, and environment using Likert scales. They were also invited to suggest management improvements and asked about poaching activity, including whether they had heard of, witnessed, participated, or recognized those involved, and knew of any consequences (Waldie et al., 2016).

Initially, community opinions of the LMMA were mixed (less than half reported initial support), however follow-up surveys showed most residents believed it had a positive impact on the environment and their wellbeing; especially benefitting both fisher livelihoods and ecological health (Hausheer, 2016; Waldie et al., 2016). In the second survey, 72% suggested improvement of enforcement; other suggestions included expanding the no-take zone and introducing more periodically harvested areas. Approximately one quarter of respondents believed there was no system to punish poaching violators; over half had witnessed poaching, and a small number had participated in it themselves. All poachers who were reported were known, neighbouring community members (Waldie et al., 2016). Since then, there has been ongoing support from the TNC (Hausheer, 2016).

After community consultation and surveys, the LMMA implementation process typically moves into a structured planning phase. While planning approaches may vary, currently, they are often guided

by standardized methodologies developed by regional networks and NGOs (i.e. Govan et al., 2008). These frameworks help communities transition from expressing interest and identifying local priorities to designing and formalizing management plans. With help from the NGO, they then map current customary use zones, elect local committees, draft subtractability rules (enforceable by village courts) such as seasonal or gear-specific bans, and plan for additional management strategies and changes (Goven et al., 2008; McClanahan & Cinner, 2008; Green et al., 2009; Wangunu, 2004). The community can choose to delineate borders or areas of interest and develop a network of marine protected areas, depending on their management plans (Green et al., 2009). The management plan includes review cycles and allows communities to request revisions (Morse, 2023).

(3) Legal Rights

PNG’s legal history occurred in four distinct phases: (1) the foundational recognition of customary marine tenure (CMT); (2) the development of legal policies, such as the Fisheries Management Act, Organic Law, and others; (3) the implementation of Marine Protected Areas (MPAs); and, (4) the emergence of LMMAs embedded in local laws (LLGs). These phases are outlined below in Table 2.

Table 2: Phases of Recognition of Commons Governance by Fishing Communities in PNG

Time Period	Mechanism	Key Features	Role in Governance Shift
1975 to present	Customary Marine Tenure (CMT) embedded in Constitution	Community-based rights over reefs, lagoons, and mangroves; embedded in culture and law	Provided the base for community control, lacked enforcement mechanisms
1994 - present	Fisheries Management Act, Organic Law on Provincial and Local-Level Government, Land Act, The Fauna (Protection and Control) Act	Further recognized customary fishing rights in law; rules laid out for conservation	Legal scaffolding for CMT; did not ensure protection or enforcement
1990s - 2000s	Marine Protected Areas (MPAs)	State-led, often without community consultation; many became “paper parks”	Highlighted the limits of centralizing conservation in larger regions
2000s - present	Locally Managed Marine Areas (LMMAs) embedded in Local-Level Governments (LLGs)	Community-driven, flexible, supported by NGOs and local law; rooted in CMT and Acts	Allowed for decentralized control by communities to maintain governance authority

With the first establishments of the MPAs/LMMAs, Wangunu (2004) indicated that there were a few laws that communities could choose from for recognition:

“The program will work very closely with the village councilors, ward development committees (WDC), clan members and families within a community to undertake the formalization activities with relevant authorities responsible. These include the formulation and follow-up with either the National Fisheries Authority, or the

Department of Environment and Conservation [now Environment, Conservation, and Climate Change] with regard to the type of gazettal procedures stipulated under subsequent conservation and management acts. The community will have two options to decide where to have the MPA gazetted: under the Fauna (Protection and Control) Act, and the Fisheries Management Act” (Wangunu, 2004, p. 6).

In 2014, the Department of Environment and Conservation became the Department of Environment, Conservation and Climate Change. That same year, the Papua New Guinea Policy on Protected Areas (PAs) was released, formally including LMMAs as part of the national protected area system (CEPA, 2014). This national policy acts like a blueprint for PA legislation and management arrangements on land and at sea (CEPA, 2014). The policy states: “LMMAs are recognized in national legislation but are enacted and managed under Provincial, District and Local Level Government laws... LMMAs do not require NEC or other national-level approval for creation and management, but will be registered as part of the PNG Protected Area Network to give additional support and strength to their management. These areas are chosen by customary landowners” (CEPA, 2014, p. 35).

The below figure 21 outlines the step-by-step process for formal large scale MPA registration, and smaller scale LMMA recognition through gazettal under Provincial and LLG legislation:

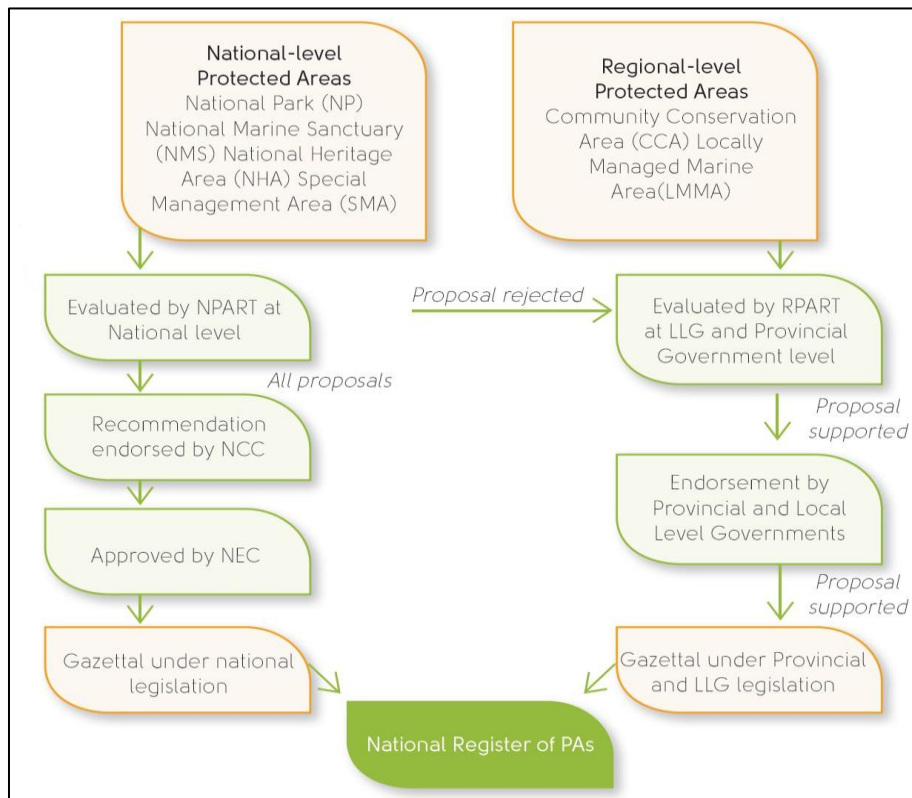


Figure 21: Process of Legal Gazettal of LMMAs (CEPA, 2014, p. 64)

LLG laws are made formal through the (1995) Organic Law on Provincial and Local-Level Government (LLG) (‘Organic Law’) (CEPA, 2014). CEPA (2014) stated that some changes to the Organic Law will be required to accommodate new Protected Areas legislation, to enable Provincial governments to gazette these areas more easily. It appears the Organic Law has not yet been updated, however, conversations about its amendment have been occurring throughout 2024 and 2025

(Government of PNG, 1995; National Parliament of PNG, 2025).

With the use of the various Acts, communities have collectively reinforced the recognition of Customary Marine Tenure (CMT) by: requiring fishing license holders to respect local customs and community laws; self-establishing Wildlife Management Areas (WMAs/MPAs) governed by locally elected committees and community-developed rules; and, grant authority over natural resource management to provincial and local governments (Govan, 2009). Communities have been able to participate in conservation agreements, develop their own local environmental laws (LLGs), and enforce them through village-level courts using customary law (Govan, 2009). Since LMMAs began to be implemented in 2004 with support and guidance from NGOs (e.g. TNC), communities have been informing and establishing LLGs under their LMMA designations. Figure 22 summarizes other community-created LLG laws, and Booth (2021, p. 17) outlines the first ones in Kimbe Bay:

“Kimbe Bay is flanked by three LLGs: Talasea Rural, Biialla Rural and Hoskins Rural LLG jurisdictions. With the assistance of TNC, separate Marine Environment Management LLG laws were drafted for the three LLGs to enforce the MPA network”.

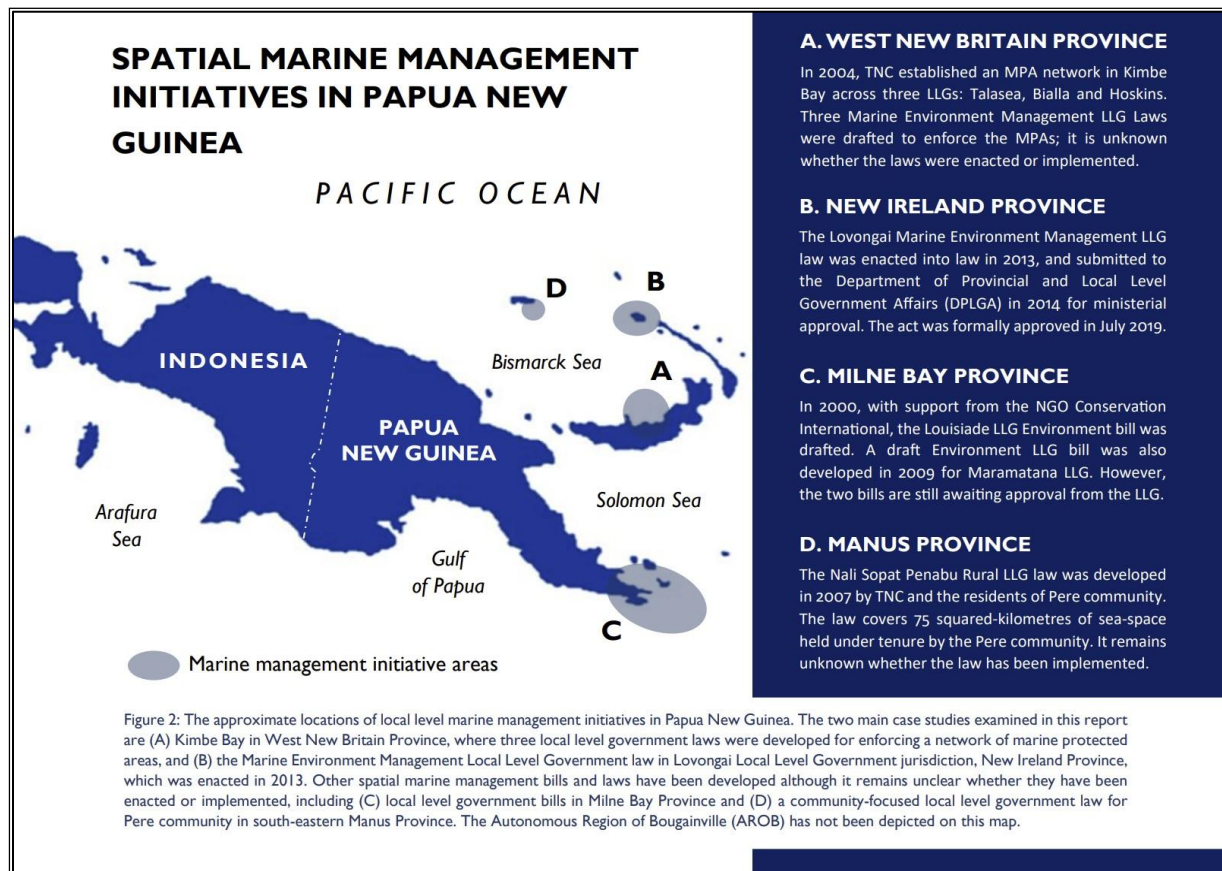


Figure 22: Established LLGs across PNG (Booth, 2021, p. 18)

(4) Strengthening Legitimacy of New Commons Arrangement

Govan (2009) is clear that real ownership of the implementation of LMMA projects is vital to the secured sustainability of their processes and the resulting natural resources. He states that involving stakeholders inadequately, and adopting external (often long and wordy) decision or planning mechanisms, can create a lack of respect, and feelings of antagonism against these plans (Govan,

2009). Sometimes this lack of involvement or process ownership is mis-identified and reported as problems with enforcement or a lack of awareness from the community (Govan, 2009). He states:

“The complexities of tenureship and community power structures as well as the interests of individual fishermen are sometimes not taken into account... In the absence of in-depth understanding of stakeholder structures, attempting to involve the entire community has shown to be a worthwhile approach (Govan, 2009, p. 43).

More recently, community consultation has ensured greater community buy-in and support for established LLGs (Booth, 2021), which have in turn increased their legitimacy and uptake from communities. New LMMAs have been established in Lovongai and Murat through extensive community consultation and LLG development (Booth, 2021). Lovongai and Murat held consultations with 73 and 26 communities, respectively, who identified threats to marine resources, which were then assessed in a risk matrix. This extensive process enabled communities to prioritize threats, recommend rules and reach consensus with provincial authorities on management strategies. As a result, Lovongai’s LMMA boundary now extends 18 km from the coastline, encompassing 5814 km² of marine space. Murat has set 20 km from the coast (11,071 km²) aside as an LMMA. In both cases, the boundaries are explicitly defined under CMT rights, and all coastal communities in each region are represented within the protected area, as stated by Booth (2021, p. 26):

“The extent of each coastal community’s customary marine tenure was recorded during the community consultations. The outer boundary of the MPA [LMMA] will be determined according to the furthest customary marine tenure rights from the coast (thus ensuring the customary marine tenure rights of all coastal communities within the LLG are included)”.

Both LMMAs were expected to be formalized and enforced through newly developed or amended LLG Marine Environment Management laws the following year:

“It is anticipated that the Lovongai LLG MPA will be declared and enforced with an amended version of the Lovongai LLG Marine Environment Management LLG law in 2022. The same process also took place in Murat LLG, which lies 165 kilometres north-west of mainland New Ireland, where a second MPA is being established; the Murat MPA will be formalised with the Murat Marine Environment Management LLG law in 2022, which is in the process of being developed” (Booth, 2021, p. 26).

In some areas, localized networks have been created to help manage marine resources, such as the Mwanus Endras Asi Resource Development Network (MEARDN), who have handled much of the LMMA development for their region. MEARDN includes 15 coastal communities who separated from one collective tribe about 500 years ago, yet continue to share the same language, culture, and all depend entirely on marine resources for food and income:

“The initiative commenced in 2013 where the tribal leaders came together for the first time to seriously discuss ways to deal with three main threats that were impacting negatively on livelihoods of the tribal members and how they will improve resilience to these threats. The threats are 1) depletion of marine resources; 2) high population growth; and 3) increasing sea level rise. The initiative is basically a response to restoring rapidly declining marine resources and deteriorating health of the marine ecosystems across the entire tribal network areas over a 4.2 million hectares of seascape. The organisation uses their community and tribal leaders to enforce rules [in

their own regions] to manage the coastal marine resources and reef ecosystems” (Mwanus Endras Asi Resource Development Network [MEARDN], 2020, n.p.)

Instead of NGOs leading the process, some communities and networks in the literature now engage NGOs and scientists to support the establishment of LMMA areas. In 2013, MEARDN came together to discuss the possibility of establishing a business arm within their network to enhance financial security for the communities, through the sustainable harvesting, processes and exporting of sandfish, which is a highly profitable species of *bêche-de-mer* (sea cucumber) directly to Hong Kong, to capture a greater share of the profits. In order to ensure sustainability of these fisheries, MEARDN discussed the possibility of establishing LMMAs across all member communities to protect local spawning stocks, and requested support for research on their ecological behaviour:

“Since nothing was known about the larval dispersal patterns of *H. scabra* [sandfish], TNC staff who were present at the 2013 tribal meeting were asked if they would conduct research on their larval dispersal patterns within MEARDN. This request formed the premise for the research that is reported on here” (Waldie et al., 2024, p. 3).

Waldie et al. (2024, p. 6)’s study discusses the disbursement of sandfish larva and recommends a network of LMMAs as the best solution:

“This implies that the spatial scale of MEARDN, which extends across 65 km of the Manus coastline, is likely adequate for sustainably managing the stock. Establishing a network of nearshore LMMAs that protect adult spawning stock of *H. scabra* [sandfish] would be a culturally appropriate strategy for MEARDN that has merit from both an ecological and fisheries standpoint. Although demographically closed populations can be managed at restricted spatial scales that match the size of tribal networks such as MEARDN, they are more vulnerable to recruitment overfishing”.

LMMA management is intended to be highly context-specific and dependent on the community’s goals. The LMMA Network approach highlights three ways in which they are typically established by communities to: (1) protect or revive their own historical self-governance practices, (2) use alternative practices, such as connecting with a scientific body or NGO, or (3) use a combination of both (LMMA Network, 2025). In all cases, customary landowners retain authority over access and use (subtractability and excludability), and may solicit the support of an NGO, or other external advocate at any point should they choose (LMMA Network, 2025). Green et al. (2009) discuss the first LMMAs developed in Kimbe Bay in 2004 as a combination of both; focusing on science-backed monitoring from NGO support, within the approval and goals of local leadership. However, Booth (2021) highlighted that the order of events was more inclusive of communities later on in the scientific process.

In recent years, LMMAs in PNG are increasingly initiated and led by communities, who set priorities and request support from NGOs or scientists as needed. This approach is evident in MEARDN and in the large consultations held in Lovongai and Murat. As communities take control of planning and decision-making, legitimacy of the LMMAs have improved with greater community leadership, buy-in and collaboration, shaped by local knowledge, goals, and priorities.

B. Enabling Conditions

As a result of customary rights being embedded in the constitution, legally, communities maintain a significant amount of rights to protect their commons and SES, and MPAs cannot succeed unless

communities are a part of the plan (van Helden, 2005). Though they have tried, as evident in Bougainville Island, van Helden (2005, p. 13) states:

“The PNG government simply cannot force a community into conserving its resources in the interest of society as a whole. The result is that conservation agencies cannot hope to conserve nature unless they can demonstrate that conservation is directly attractive to local resource owners. It is all carrot, there is no stick”.

Van Helden (2005) notes that having customary tenure rights recognized in the Constitution has helped greatly with the legitimacy of resource management with local communities in PNG. He highlights that CMT rights cover land and terrestrial flora and fauna, as well as beaches, reefs, and fishing grounds in freshwater and marine areas. A total of 3% of the country’s land is State-held, and their rights are limited to open seas, mineral resources, Government land, and protected fauna (van Helden, 2005). Despite their ability to access these resources, van Helden (2005, p. 12) notes:

“Although the Land Act formally allows for the alienation of land and resources, in practice its politically sensitive and technically complicated nature prohibits the Government of PNG to access, manage or exploit land and natural resources without the consent, co-operation, and compensation of local resource owners”.

Communities have also helped the government to shift its thinking around conservation as a whole, and LMMAs have become much more deeply embedded in PNG policy development (Booth, 2021; CEPA, 2014). As the first MPAs and LMMAs began to be conceptualized, van Helden (2005) noted a shift from solely terrestrial conservation activities to projects involving coral reefs and marine life. More recently, Morse (2023) also noted that the establishment of the MPAs in Lovongai and Murat have encouraged the government to consider which will benefit communities more, deep-sea mining, or marine-related activities and projects, as so many communities depend on their sustainability and protection. Regardless, it is unclear whether the MPA designation in Lovongai will provide protection from deep-sea mining plans forming approximately 160 km away from the region, as plumes of sediment can drift (Morse, 2023).

Another factor that may have contributed to the success of LMMAs in PNG is that historically, their legal recognition has been made possible through multiple legislative pathways, rather than a single overarching initiative, as each fishing community’s geographic area, and social-ecological needs were different (Booth, 2021; Govan, 2009; Wangunu, 2004). This flexibility, as stated by Wangunu (2004), allowed communities to choose the policy framework that best suited their ecological and governance needs and goals for gazettal (legal recognition), which were typically the Fauna Protection and Control Act (1976), and the Fisheries Management Act (1994). Additionally, conservation agreements could be held within the provincial or local levels of government, not only federal, as noted below:

“Provincial and local levels of governments thus have the power to establish and manage protected areas, and to arrange for community-based management of lands and waters held under customary tenure. Communities may therefore have the opportunity to conserve their traditional sites under local conservation agreements. Locally Managed Marine Areas (LMMA), which are community initiatives, have already been given legal recognition in this way. Under this system, local level governments have the power to enact local environmental laws, including laws related to resource management and protected areas, imposition of fines for breach of its laws, and protection of flora and fauna. Local level conservation agreements between

communities and local level governments may thus be constituted under the authority granted by mainly the Organic Law” (Govan, 2009, p. A3-6).

This flexibility has helped communities to navigate and find support for their individual, contextualized, situations rather than having to conform to one, overarching system. Given the diverse governance and ecological contexts across PNG, legal flexibility has likely been a key asset for LMMA development.

Finally, many of these processes to seek and justify legal recognition have been supported by NGOs and scientists who have taken a human-ecological approach to LMMA development and have adjusted their own behaviour to respect community leadership (Wangunu, 2004; Booth, 2021). Though there were some instances of donor-dependency at the start (discussed in Variable 2), this maturity by NGOs has helped to ensure LMMAs maintain community leadership (Booth, 2021).

6.2b Variable 2: Transformation: New Responsibilities and Community Outcomes

Jeong (2018), and Nayak and Berkes (2022) establish re-commonisation as the revival of a commons that was lost or degraded, often returning to a previous state, or form of governance, and new-commonisation as the creation of a new governance arrangement. Though not all countries have backed their LMMAs in law (LMMA Network, 2025), this is the approach that PNG has taken, which has also helped to secure their new commons arrangements (Govan, 2009; Green et al., 2009; Booth, 2021; Wangunu, 2004).

Though PNG did not experience decommissioning in the same way that Chilika Lagoon has, with fishers holding customary rights being pushed out of their commons spaces, fishing communities face major decommissioning threats to their governance systems evident in bleached coral, species collapse, unsafe water quality, and weakened protection from industrial activities and unregulated or encroaching fishing vessels. While customary marine tenure was not fully dismantled like in Chilika, although it could be argued it was in some areas such as Bougainville Island, I would not categorize the emergence of LMMAs as re-commonisation. LMMAs are not a return to a former system with revised rules, but rather the introduction of a new governance model that communities use to maintain water sovereignty and fishing rights with collective efforts. Their legal status also recognizes localized rules which are specifically and individually formalized, rather than general and ambiguous as is the case with constitutional customary rights. The following two sections discuss what followed LMMA implementation, including what new rules were created in new-commonisation, and what were some of the outcomes and impacts to communities.

C. The State of the New Commons (Roles & Responsibilities)

After formal recognition, communities in PNG took on new roles and responsibilities for governing their LMMAs. This section outlines the rules, enforcement systems, and management approaches that define the new commons in practice.

The below figure 23, outlines what is considered permitted use of LMMAs by the government of PNG. Notice that a few of the categories of uses are fully up to the decision of the customary landowners, labelled ‘C’. These include commercial fishing by landowners, recreational fishing, and research. Also of note, fishing by external groups is explicitly stated as not permitted, as well as extraction-based initiatives such as logging, mining and oil.

Table 4: Permitted uses in PNG protected areas

Activity	NP	SMA	NHA	CCA	LMMA	NMS
Non-extractive traditional use	Y	Y	Y	Y	Y	Y
Traditional sustenance hunting and gathering	Z	Z	Y	Y	Y	Y
Traditional sustenance fishing and resource collection	Y	Y	Y	Y	Y	Y
Commercial fishing and marine resource collection by external groups	N	N	N	N	N	Y
Commercial fishing and marine resource collection by customary landowners	N	N	N	C	C	Y
Recreational fishing	Z	N	Z	C	C	Y
Research	Y	Z	Y	C	C	Y
Commercial agriculture and plantations	N	N	N	N*		
Community agriculture - gardens	Z	Z	Z	Y		
Renewable energy generation eg solar, micro-hydro	Y	Y	Y	Y	Y	Y
Commercial logging	N	N	N	N	N	N
Commercial mining and oil extraction	N	N	N	N	N	N
Mining and oil exploration	N	N	N	N	N	N

key

NP	Meaning	Notes
Y	Yes, unless zoning or specific regulation does not allow	Some activities will be subject to management plans and agreements, and may require permits or licences
N	Not allowed in this category	*May be allowed in special circumstances as non-conforming use if for community benefit and a smaller proportion of area
C	According to wishes of customary landowners	Will be allowed subject to management plan or other agreement with customary landowners
Z	Only where zoning or specific regulation or agreement allows	Will only be allowed where specified in management plan, regulation or special zone

Figure 23: LMMA Acceptable Use in PNG (CEPA, 2014, p. 36)

Rules governing LMMAs in PNG are developed after the election of an MPA committee, which leads the drafting of management rules and penalties in collaboration with local residents, often using participatory mapping and GPS to define boundaries (Wanguu, 2004). Once drafted, these rules are submitted for endorsement by Local Level Governments (LLGs), enabling enforcement through customary and village court systems. Below is a snapshot of typical rules LMMAs establish, provided by Govan et al. (2008) as seen in Figure 24:

- Permanent or rotational no-take zones to allow fish populations to recover;
- Gear-specific bans, such as prohibiting blast fishing or the use of small-mesh nets;
- Temporal closures during spawning seasons;
- Size and catch limits for vulnerable species;
- Rules to protect rare or ecologically important species, like sea turtles or groupers;
- Waste bans, such as prohibiting plastic dumping near reefs;
- Restrictions on destructive practices, including anchoring on coral or walking on reefs.

Box 11 below lists possible management strategies that may or may not be appropriate for communities, depending on the site. The biology and ecology behind each method, as well as the human and financial resources needed to carry them out, should be understood and discussed prior to including it in your action plan. Be careful of just presenting a list of options to communities as many may seem attractive but may not be appropriate.

Box 11: Management Options

1. Permanent no-take zones (marine reserves, marine protected areas, etc. – see Box 1 on page 3)
2. Rotational or temporal no-take zone (giving the reef a resting period)
3. Zoning the management area – delineating different areas for different uses (for example, banning commercial fishing where it competes with subsistence fishing or tourism, etc.)
4. Ban the use of poisons for fishing (both traditional and modern)
5. Ban fishing that destroys habitat (dynamite fishing, smashing corals to chase fish into nets, etc.)
6. Regulate or ban night fishing with underwater lights
7. Regulate or ban spear fishing using SCUBA
8. Control the use of pressurized gas or SCUBA for harvesting beche-de-mer (sea cucumbers), etc.
9. Ban the harvest of egg-bearing female lobsters or crabs
10. Establish size limits for clams, lobsters, crabs, octopus, and certain fish
11. Control the use (and sale) of small-mesh fish nets (require a minimum mesh size of 3 inches for most types of net fishing)
12. Ban gill netting, or replace gill nets with fish traps that don't kill the fish, so that rare species can be released. Use fish traps and fish fences to replace some types of net fishing (perhaps using more durable modern materials).
13. Protection of spawning aggregations from fishing
14. Seasonal closure of a fishery (during reproductive season)
15. Ban on harvest of very rare species in the larger management area (turtles, humphead parrotfish, humphead wrasses, triton's trumpet or other shells, etc.)
16. Discouraging destructive practices such as walking on corals, anchoring on corals (make permanent moorings, or buy or make sand anchors), and harvesting corals (replace with sustainable coral farming)
17. Ban the disposal of rubbish into the sea, especially plastics, batteries, and cans
18. Removal of crown of thorns starfish if there are > 5 per hectare
19. Removal of tree trunks that wash up or fall onto the reef, as they roll around during storms, smashing corals
20. Replanting corals to dredged or dynamited reefs that are not recovering
21. Planting corals (staghorn types) for fish houses where the corals have died out or where there is a deficiency of fish habitat
22. Restocking or aggregation of surviving rare shellfish within a limited area of a no-take zone, with proper monitoring and a protection program
23. Training and activation of community "Fish Wardens"
24. Limiting the numbers of commercial fishers in a particular area
25. Development of effective enforcement and problem-solving process in the community
26. Re-establishing traditional fishing methods that allow "totem" species (species sacred to a particular clan) to be easily released
27. Reduce nutrient pollution to reefs by improving sewage systems and reducing other sources of nutrients such as run-off from piggeries, fertilizer, etc.
28. Other sorts of sustainable management practices

Figure 24: Examples of Rules Established within LMMAs (Govan et al., 2008)

McClanahan & Cinner (2008) discuss LMMA rules in including gear restrictions, seasonal closures, and enforcing the tambu (taboo) system, which: (1) temporarily or permanently closes off areas of the reef or sea; (2) enforces these restrictions through social norms and customary law, which is often tied to spiritual or cultural beliefs; and, (3) typically is used to allow time for fish stock to recover, to mark sacred areas, and to protect spawning grounds.

Communities often partner with a scientific body or NGO to access additional monitoring tools, such as: GIS spatial mapping visualization to study habitats, fishing zones and protected areas, and delineate boundaries of the LMMA; tagging and tracking fish to monitor migration, spawning locations, and habitat use; underwater visual census (UVC) which can help to monitor ecological recovery, such as of coral reefs; testing the water quality, including for pollution or runoff impacts; socio-economic surveys to track livelihood and food security, to evaluate the social impacts of conservation, among others (Govan et al., 2008). Some LMMAs incorporate conservation and recovery activities, such as replanting coral in areas affected by blast fishing with dynamite, or natural damage, restocking rare shellfish, or creating fish houses with transplanted coral for habitat recovery (Govan et al., 2008; Waldie et al., 2016). In all cases of LMMA development, the purpose is to have the rules and norms developed by community themselves:

“Customary resource management is usually informed by indigenous ecological knowledge and relies on community leaders and resource owners who negotiate access to resources based on local politics, community needs, and knowledge of the environment” (McClanahan & Cinner, 2008, p. 494).

Additional rules, as noted by Morse (2023), include communities banning night fishing (with few exceptions) and setting minimum mesh sizes for nets. Morse (2023) outlines that to support compliance, some communities have designated wardens, often trained by the government or NGOs, who are empowered to monitor activities and issue warnings or fines. Enforcement structures for LMMAs operate largely at the local level (Govan et al., 2008), and in some communities, like those described by Morse (2023) this involves escalating consequences: first-time individual violators must do ‘community work’; second-time offenders are fined 300 kina (about \$80); and repeat violators are referred to the village court. Corporate violators (such as IUU fishing vessels), however, are sent directly to district court upon their first offense (Morse, 2023). The LMMA guide provides a few ideas about how to enforce rules when resources are limited, such as:

“Patrolling and Enforcement. As the no-take area starts filling with fish, some people will be tempted to fish there... An enforcement system and penalties should be clearly established during the management planning process. Some communities have a Fish Warden system in connection with the government, where trained community members have the legal right to inform and arrest violators” (Govan et al., 2008, p. 36).

Management plans note that national laws override local MPA (local no-take zones) regulations, particularly around commercial overfishing and sea cucumber harvesting, limiting communities’ ability to address these concerns independently (Morse, 2023). As Sapul explains, the plans are reviewed every five years, and communities can request revisions at any time by writing to the MPA management committee, which includes landowners, village courts, local-level government, and management specialists. According to the current plan, by 2025 all fishing and waste practices should meet updated environmental requirements (Morse, 2023).

D. Outcomes & Impact

This section examines the outcomes and impacts of LMMA implementation in Papua New Guinea, with a focus on the interplay between community leadership and external NGO support. While LMMAs have produced notable successes, including ecological recovery, local rule-making, and improved fisheries management, much of these gains remain closely tied to the ongoing presence and resources of NGOs. The risk of donor withdrawal or overreach is an ongoing concern, as is the sustainability of management efforts in the absence of external actors. Though, this situation has seemed to improve over the 20 years since LMMAs began to be implemented in PNG, and more self-directed governance decisions are emerging. Community-driven processes and local decision-making are repeatedly highlighted in the literature as central to LMMA success; however, some persistent challenges have appeared, such as fragile enforcement capacity and gendered barriers to participation. The following synthesis draws evidence from a few different communities who have implemented LMMAs, reports from NGOs that have identified their limitations, and academics who have provided recommendations.

(1) NGO Involvement

Much of the instigation of the LMMAs in Papua New Guinea can be attributed to The Nature Conservancy (TNC), who played a major role in their development between 2004-2013 (Booth, 2021). They helped Kimbe Bay develop three LLG Marine Environment Management laws which informed the development and management plans of the first Network of MPAs. At the time, a steering committee was created with NGOs, the government and the private sector who took ownership of the MPA implementation process (Booth, 2021). A major player involved in the private sector in Kimbe Bay includes the Benjamin family who developed the Walindi Plantation Resort in 1983 for surfing in Kimbe Bay, and have created schools, supported the local food market, and are considered a key informant in Booth's (2021) study (Benjamin, 2023). TNC also helped set up an MoU with the Provincial Government, developed and provided training to communities, and connected and showcased tools for communities to learn from one another (Booth, 2021).

This is a significant undertaking by the TNC to establish the LMMAs in the early 2000s, and can be considered akin to CBNRM, or as Johannes (2002) calls it, CBMRM (Community Based Marine Resource Management), which is well outlined in Chapter 2 of this thesis. Some of the pitfalls of CBNRM include donor reliance and dependency, with a major detriment to this governance theory being the exit of NGOs, and the resulting effects afterwards as communities pick up management roles and other responsibilities held by NGOs rather suddenly, and struggle to maintain the same level of success as before. Indeed, a few years after the initial development of LMMAs within Kimbe Bay, TNC had to exit their work with the community and some of the cascading effects are evident:

“However, following the 2008 global financial crisis, TNC reduced work levels in PNG, and in 2013 TNC had left the Kimbe Bay region. During the 2010s, limited information was made available as to whether the three LLG laws were actively enforcing the MPA network. Since 2013, MND [the local NGO: Mahonia Na Dari] continued the education and awareness programme within the priority areas, which had been converted into locally-managed marine areas (LMMAs), and certain reef and fish monitoring studies were conducted by JCU [James Cook University in Australia]” (Booth, 2021, p. 22).

Though TNC provided initial training for LMMA representatives in biological monitoring, and JCU carried out ecological research in Kimbe Bay, Booth (2021) reports little evidence of ongoing socioeconomic or fisheries monitoring, and it remains unclear whether local communities have directly benefited from the MPA network. It appears that MND continues to deliver education and

outreach to residents, management and enforcement of the Kimbe Bay MPAs have seen limited attention since the 2010s (Booth, 2021). Though this does seem dire, appropriate assessment of Kimbe Bay should be undertaken before assuming LMMAs have died out, as additional studies or public information may not be an indicator of success to the communities that are managing these LMMAs within this new commons framework.

Additionally, it seems evident that MND, the community, and the government are still involved, which, although it may appear to be lagging to external actors, might actually be indicative of a move to self-managed, legally-backed, commons arrangements:

“When TNC pulled out from Kimbe Bay in 2013 Mahonia Na Dari (MND) continued the education and awareness programme... implementation of the network is coordinated with local communities and governments through the establishment of Locally Managed Marine Areas (LMMAs); to date, nine LMMAs have been established in seven of the AOIs [areas of interest]. Community members have also been trained on how to monitor for trends and changes to the system, enhancing local participation and management of the system. In 2013, the West New Britain Provincial Government accepted leadership and oversight of the Kimbe Bay Marine Management Area” (Booth, 2021, p. 28).

Additionally, Booth’s (2021) critique of TNC’s work with these initial LMMAs was that community involvement was decided to be incorporated *after* scientific assessments were completed, and then only in the areas of interest and not in the adjacent communities, both to avoid too many requests or language requirements, which TNC would have been under-resourced for, and to avoid giving communities false expectations (Booth, 2021). Since then, NGOs have played a major role throughout the process of LMMA implementation and continue to today, which does alleviate some of the financial and time pressures that are required in developing and mapping LMMAs. Waldie et al.’s (2024, p. 7) study outlines the costs of the ecological study to help delineate the boundaries:

“In particular, the costs of the technical specialists’ time to extract and genotype the samples, the cost of the necessary extraction kits, and the time to process the output from the genotyping. In detail, to extract batches of samples (e.g., 2 x 96 samples) and prepare them for fragment analysis would take 1–3 days, while processing of genotyped samples would take 3–4 days. As a consequence, we were only able to process 36.5% (n = 765) of the adult and 18.9% (n = 827) of the juvenile samples. Advances in genetic technologies may allow genotyping of a very large number of tissue samples in a small number of sequencing runs, saving months of data processing and making large-scale parentage studies on sea cucumbers more feasible”.

It seems, as evident in Waldie et al.’s (2024) study, that this trend may have reversed and NGO involvement and scientific study may be playing more of a supporting role to community leadership, such as through the MEARDN Network. A further assessment of this trend in other community areas would be recommended, to assess their sustainability should NGOs decide to exit.

In Lovongai, the literature demonstrated the success of LMMA implementation in Papua New Guinea depended on initiatives that originate from within the community, rather than being delivered by external actors (Morse, 2023). However, although projects made significant efforts to align with community priorities and support local leadership, NGO involvement has at times led to perceptions of top-down decision-making as reflected in a quote from John Aini, a local leader from Lovongai, who, in reference to the large-scale MPAs developed by WCS:

“...expressed doubt that the MPAs are the best form of management for community fisheries and concern about repeating past experiences when outside groups instituted top-down initiatives that prevented communities from accessing the ecosystems they depend on... ‘I’m with the idea, but it needs to be accepted fully and people need to be clear on what they’ve gone into’” (Morse, 2023).

This also underscores the importance of community-driven processes, in design, implementation, and maintenance of LMMAs, and points to potential power imbalances that might be at play between communities and NGOs. Foale et al. (2011) caution that many LMMAs in the Pacific remain heavily dependent on NGO support, and risk instability if that support is withdrawn. As stated earlier, CBNRM initiatives may create fragile systems by their sudden withdrawal (Dressler et al., 2010).

In their LMMA Guide, Govan et al. (2008) outline a participatory LMMA implementation process where communities initiate a request for support and NGOs may help the community with tasks such as ecological assessments, applications for legal recognition, and training; but their involvement is meant to be temporary and in support of communities’ long-term autonomy:

“The role of the facilitating agency is to help the communities identify the main threats to their marine resources, assist them in developing their management plan, and help them implement, enforce and monitor their actions. The role of the community is to do the actual work – to carry out their management plan and commitments. Working together, it is possible for communities to regain much of their lost resources. The result will be more food on the table, preservation of traditional cultures and the island way of life, and greater community cohesion, prosperity and health” (p. 8).

Govan et al. (2008) include a few sections in their guide that outline how NGO project partners and group facilitators should conduct themselves, emphasizing humility and cultural sensitivity, to observe and adapt, avoid interrupting, refrain from assuming greater expertise, and use local language where possible.

While these partnerships are often categorized in the literature as co-management (i.e. Cinner et al., 2012), they may better reflect principles of self-management where communities retain governance authority and external actors support rather than direct decision-making. However, further research is needed to assess whether additional NGO withdrawal would affect governance capacity or merely halt external research and technical assistance, monitoring, and enforcement; which, as Cohen & Foale (2013) note, would also have an impact. Even if LMMA initiatives in PNG are initiated by communities, their long-term sustainability may hinge on ongoing donor funding and NGO support, especially for monitoring, enforcement, and technical assistance.

Booth (2021) suggests that for LMMAs to be effective and sustainable, management rules and boundaries should be developed with broad community input and clear representation from women and youth, supported by transparent communication of decisions and monitoring results. To avoid NGO dependency, a dedicated governance body that is backed by a solid legal framework rooted in traditional structures, could oversee implementation and detailed management plans. Sharing lessons learned is also critical to support ongoing improvement and future initiatives (Booth, 2021).

(2) Enforcement

Despite major progress in establishing LMMAs, effective enforcement and compliance remain ongoing challenges. In Kimbe Bay, for example, some community members viewed LMMA rules as opportunities to generate revenue, for example, there were attempts to fine one scientist who was completing reef monitoring in the LMMA, and communities wanted to charge people monitoring the

reef annually within their LMMA (Booth, 2021). This may reflect how the purpose of LMMAs might be misunderstood if communication and local consensus are lacking.

More fundamentally, many communities lack the physical infrastructure and equipment required for effective enforcement. Partnerships with tourism operators, provincial governments, and other stakeholders have been recommended to help strengthen enforcement capacity (Green et al., 2009). As Cinner et al. (2012) state: “A number of users noted that by the time they paddled or sailed out to enforce the access rights, infringers with motorized boats had left” (p. 5221). Even with legal recognition, enforcement against outsiders remains difficult as a result of the need to secure long-term financing and logistical support, and there is still external reliance to fill this gap. As John Aini of Lovongai observed, “...the success of the MPAs will depend on securing enough financing for enforcement... The announcement of the MPAs is one thing, but the bigger challenge we will face now [is] enforcing and ensuring that the management plan is complied to” (Morse, 2023, n.p.).

Many local enforcement officers, “wasman” or “Fish Wardens”, remain unpaid or underfunded, a challenge that has been highlighted as a major barrier to enforcement effectiveness (Morse, 2023). Broader issues of enforcement capacity have also been raised in studies of LMMAs in PNG (Maison & Graham, 2015; Waldie et al., 2016). Even legal frameworks like the Fauna (Protection and Control) Act (1976) (which enables community-led governance through Wildlife Management Areas), face practical limitations due to minimal government support and resource constraints (Wangun, 2004).

While LMMAs tend to have stronger enforcement within their own or neighbouring communities, there are significant gaps when it comes to deterring outsiders. For example, Govan (2009) suggests that to counteract external poachers from neighbouring villages, there could be an LMMA created in the poachers’ own area. He also proposes including additional stakeholders to support community enforcement efforts or mobilizing formal legal mechanisms.

In Kimbe Bay, Green et al. (2009) observed that, “Although legally binding locally managed marine areas [LMMAs] are the best strategy for nearshore areas... other strategies will be required for offshore areas and to ensure the ecological integrity of nearshore areas” (p. 496).

Monitoring international waters is primarily the responsibility of the Papua New Guinea government, and it does seem that they are beginning to find new techniques to be more effective (Global Fishing Watch, 2024). By increasing transparency through data-sharing with international partners such as Global Fishing Watch, and by adopting improved technology, the government has seen greater success in detecting illegal fishing activities. This is illustrated in the following report of an illegal vessel by PNG authorities, as posted on the Global Fishing Watch website:

“A voyage conducted in March 2024 [by the Indonesian-flagged vessel FV MITRA JAYA MANDIRI 6]... engaged in suspicious fishing activities, appearing inside Papua New Guinea’s EEZ. The vessel was subsequently detected, apprehended and escorted into Papua New Guinea’s Port of Madang by a Pacific Islands Forum Fisheries Agency (FFA) patrol for further investigations... into the vessel’s activity [where they] questioned its crew. In addition, authorities leveraged Global Fishing Watch’s unique fishing algorithms to interpret [its] fishing activities... and better understand the vessel’s behavior [including] 22 potential AIS [Automatic Identification System] disabling events... the longest gap lasted 42 hours and accounted for 63 kilometers. Ultimately, Papua New Guinean authorities were successful in determining—with help from Global Fishing Watch’s data and intelligence —that the FV MITRA JAYA

MANDIRI 6 had indeed violated the country's Fisheries Management Act of 1998... and has since been fined by PNG authorities" (Global Fishing Watch, 2024, n.p.).

Overall, these findings reinforce the running theme in PNG and elsewhere that self-enforcement remains a persistent challenge if there are not effective protection measures in place, as communities may lack the technical or financial capacity to respond to external poaching or encroachment. Booth (2021) recommends developing surveillance plans linked to local village courts, providing enforcement training for magistrates and peace officers, and ensuring all MPA offenses are documented to support consistent enforcement and adaptive management. Further research is needed on sustainable, locally appropriate solutions to these enforcement gaps in PNG and across the Pacific.

(3) Systemic Gender Discrimination & Sustainability Issues with CMT

Cinner et al. (2012) also found that confusion over who held access rights (particularly in communities where rights were based on social affiliation like clan membership) could create barriers to equitable participation and some confusion around membership, specifically for women:

"Interviews with resource users revealed plausible explanations for this seemingly counterintuitive result: (i) Several key informants and respondents noted that membership (i.e., who had access rights) became difficult to clearly define because of marriage arrangements between members and non-members. In the context of many of our study sites, access rights were determined by affiliation with specific social groupings (e.g., community or clan), as opposed to a formal licensing arrangement. Interestingly, we did not find that "clearly defined membership" (one of the institutional design principles) had a consistent effect on compliance throughout the 42 sites, but respondents suggest that confusion about membership may play an important role in some local contexts" (Cinner et al., 2012, p. 5221).

As noted earlier in this paper, marriage arrangements within customary marine tenure (CMT) systems often pass rights through male family members (Government of PNG, 1975), creating gender disparities that may exacerbate the membership confusion noted by Cinner et al. (2012). This also does not easily adapt to population growth nor is very adaptable to social change, which further complicates membership and access (van Helden, 2005; Agrawal & Goyal, 2001). Ruddle (1994) observed that when societies undergo significant social and economic changes, such as increased market integration or modernization, customary systems are more likely to erode. Additionally, Brewer et al. (2013) found population pressure and external market forces can jointly undermine traditional management systems. These findings are broadly supported by research in forest commons, where Agrawal and Goyal (2001), demonstrated that the capacity of communities to maintain third-party monitoring, a key mechanism for sustaining common property regimes, declines when group sizes become too large, with medium-sized groups being the most effective.

As a result of the unequal balance of power between men and women, Govan et al. (2008) made recommendations for their inclusion in the planning and rights processes, as seen in Figure 25 below:

Box 5: Women in Fisheries

In many developing countries, women obtain a large proportion of the marine catch for home and market by gleaning for shellfish, catching octopus and/or line fishing. In spite of this, they are often under-represented at participatory activities due to cultural factors. One should make a strong attempt to have women present at such activities by specifically asking for their attendance in equal numbers to the men if at all possible. In addition, it would be helpful to not require them to do the cooking for workshop attendees so that they may participate fully.



Woman in Navakavu, Fiji.
Photo by Elizabeth Holle.

During the management planning process and throughout the project, it is important to consult with women of the community to ensure they are not unfairly disadvantaged by the plan (for example, having to walk a far greater distance to access the reef due to any designated no-take or otherwise restricted areas). Along with other stakeholders, they should get a fair share of the benefits. It is also good to discuss with them what parts of the implementation and monitoring they would be interested to be part of or lead. For some activities, the women's expert knowledge of the inshore area will make them indispensable. In some sites, it has been proven useful to have a workshop on gender issues to raise the awareness of community leaders on this topic.

In the long run, it is good to work within cultural norms but it is also important to raise awareness on gender issues and seek ways to gently push for gender equality.

Figure 25: Inclusion of Women in LMMA Implementation Processes (Govan et al., 2008)

Additionally, Govan et al. (2008) discuss the emergence of elite capture and boundary disputes where customary rights overlap, adding to confusion. They also emphasize that critical success factors include community consensus and strong local leadership. Thus, while customary tenure offers a strong foundation for community-based governance, it may also present challenges in implementation and maintenance over time, particularly where definitions of membership are contested or unclear, or communities are not well aligned internally. Cinner et al. (2012) found that success happened in situations where emphasis was given to institutional design principles such as clearly defined boundaries, conflict resolution mechanisms, and collective choice rules. Although there is no guarantee of equitable outcomes, Cinner et al. (2012) consider these to be crucial to fostering positive perceptions of governance and legitimacy.

(4) Ecological Outcomes

The ecological outcomes of Locally Managed Marine Areas (LMMAs) in Papua New Guinea are increasingly evident through both community observations and formal scientific research. Morse (2023) discovered that some villages reportedly observed early signs of ecological recovery, including the return of larger fish closer to shore, when they implemented enforcement from their management plans. Govan (2009) noted efforts to address the damage caused by munitions and blast fishing, including re-planting some species of coral, as a result of the LMMAs. Waldie et al. (2016) also noted that there was significant spawning population recovery of two species of grouper (*Epinephelus polyphekadion* and *E. fuscoguttatus*) at Dyual Island in the first 5 years of protection. These ecological outcomes were immediately evident as a result of the new management system through the LMMA.

As stated earlier, Waldie et al.'s (2024, p. 7) more recent study was done in deep coordination with community members and through the direction of MEARDN, and as a result, they found they were ultimately more effective: "In this study, the shallow distribution of abundant and sedentary H.

scabra, combined with the assistance of knowledge local fishers, made it possible to sample 6,465 sandfish in a month”.

Leveraging ecological studies to monitor the LMMAs have revealed additional findings that can help to base the LMMA boundaries in science. An example of this is Waldie et al. (2016), who, through acoustic tagging and tracking, found that species of Squaretail Coral grouper (*Plectropomus areolatus*) can be effectively managed at smaller spatial scales than previously assumed, however concluded that expanding the LMMA to 1–2 km² would protect approximately 30–50% more of the spawning population during the non-spawning season. Waldie et al. (2016) suggest that even spatially limited no-take zones can provide substantial year-round protection when aligned with local ecological systems. This indicates that there is not always a need for a large-scale Protected Area to be established by government, which is also reflected by Hausheer (2016, n.p):

“The bigger, sexier western-style protected area doesn’t work in areas where people are highly dependent on marine resources and have customary ownership,” says Hamilton. “Waldie’s results are further support for the concept that small LMMAs can have significant fisheries benefits, even for large species, if they are placed in the right location”.

Finally, larger-scale protection is possible through this system. In 2023, the Wildlife Conservation Society (WCS) led the establishment of MPAs covering 16,000 km², that surround the waters of LMMAs in the regions of Lovongai and Murat, in the island province of New Ireland (Morse, 2023). Murat and Lovongai’s two MPAs protect breeding and nesting sites for endangered turtles, megapode birds, coconut crabs, tuna, as well as forbid harvesting dugongs, whales, dolphins, and critically endangered species like the largetooth sawfish, and all sharks and rays (Morse, 2023). Plastic waste disposal is prohibited on the beaches and near the sea, and in Murat, harvesting turtles is banned by the MPA, having already been considered taboo by the dominant religion (Morse, 2023).

6.3 Conclusions

Variable 1 demonstrated that the gradual development in the causal pathway from a state of decommissioning with generalized legal support, to one that includes mechanisms that decentralize decision-making reflects the distinctive path to new-commonisation in Papua New Guinea (PNG). Though it has been helpful in legitimizing the customary rights of fishers in PNG, constitutional recognition and protection of customary marine tenure (CMT) has not been enough to protect communities from decommissioning, largely due to weak enforcement mechanisms. Neither has the creation of a number of Acts, or spatially-large Marine Protected Areas (MPAs).

Formalizing Locally Managed Marine Areas (LMMAs) under local-level government (LLG) law allows communities to participate in and lead law-making, anchoring LMMA/MPA boundaries in CMT rights. Additionally, as NGOs moved to more of a supportive role, communities have secured a more cohesive and stronger legal basis for self-management and long-term resource stewardship.

Variable 2 reflected on community impact after achieving LMMA recognition, and new-commonisation. Throughout LMMA development in PNG, communities have developed locally-appropriate rules, governance bodies, and adaptive management systems, leading to observable ecological recovery and greater local participation. However, the sustainability of these outcomes remains contingent on continued capacity-building, adequate funding to test changes in the ecosystem, and transparent, inclusive governance strategies that addresses enforcement gaps and gender inequities. Helpfully, some new governing bodies have developed to manage commons, with

leadership coming from within and between communities forming together, such as that of MEARDN (2020). Though they work with scientists, their collective strength decreases reliance on NGOs, and the chance of NGO-dependency inherent to community-based natural resource management (CBNRM). While PNG's case shows that legally-recognized and community-driven arrangements can revitalize commons management and strengthen local stewardship, it also provides a warning regarding persistent dependence on NGOs, laws that are not decentralized, and challenges with enforcement and inclusion.

Chapter 7 Process Tracing Reflections and Hypothesis Generation for Chilika Lagoon

7.1 Introduction

As stated earlier, no two commons are identical as their context and situations vary; this is also true of Chilika Lagoon and all three case studies: Shimshal Valley, India's forests, and along PNG's coasts. For example, despite being in the same country, it would be impractical to assume that a similar situation can be predetermined in Chilika Lagoon based on what occurred among India's Forest Dwellers; or that the legal pathways that PNG's fishers have are replicable for Chilika. However, in reviewing all three case studies and their causal pathways to a state of new-commonisation from decommonisation, a few key parallels and considerations surfaced that could be explored for Chilika Lagoon.

In Shimshal Valley, these include temporal factors, creative leveraging of legal tools and protections, explicit claims to cultural heritage, strategic external alliances and partnerships, the impacts of completely transforming the governance structure, navigating state absence, financial changes, and planning for the future.

In India, the legal and social trajectory of the Forest Rights Act (2006) provides a valuable illustration of how forest-dwelling communities navigated decommonisation and sought to reclaim their customary resource rights. In assessing the causal pathways that led from X_1 to Y through the legal means of the FRA (2006), additional key themes include: legal design and legitimacy in India, barriers to implementation, protest-politics, uneven outcomes of sweeping policy shifts, gender and caste exclusions, issues with ecological co-management, and themes around long-term sustainability.

Finally, PNG's experience with Locally Managed Marine Areas (LMMAs) offers several lessons and cautions that could inform potential legal pathways for Chilika's fishing communities. They both share the difficult legal dichotomy between land and sea, for example. LMMA may also give a name to the structure of fishery commons that translates well to external policy makers, and it has support through the global LMMA network.

These core themes are discussed below in an exploratory manor regarding Chilika Lagoon. These considerations are not intended to act as prescriptions or to prove hypotheses, but rather to point towards further exploration in greater detail, which is what makes this study *hypothesis generating* rather than *hypothesis testing* (Gerring, 2007). The following are action-oriented considerations that Chilika Lagoon might consider exploring.

7.2 Process Tracing Reflections of Shimshal Valley's Pasture Commons

Temporal Factors

Chilika's process of decommonisation was slow at first yet accelerated rapidly from the 1990s to the early 2000s with the introduction of shrimp aquaculture and the dredging of the new sea mouth. This occurred more than 20 years ago.

Similarly, communities in Pakistan's mountain commons experienced decommonisation beginning in 1975. It wasn't until 23 years later that the SNT was formed in Shimshal Valley through the waqf. In fact, 50 years have passed since the Park's boundaries were established, and the community is still fighting expensive legal battles against encroachment. For Shimshal, new-commonisation was also not an immediate transformation; in fact, it was the next generation who leveraged the right tools to re-establish the commons. As shrimp aquaculture ponds remain in Chilika Lagoon to this day, this too might become a much longer fight.

Additionally, the transformation in Shimshal was timely, in that the government's forestry department was facing heavy criticism for not consulting with the community, which gave them the right attention to gain rights. Has Chilika received similar attention, and what would it take for the narrative to shift in their favour?

Leveraging Legal Tools and Protections

The waqf was not a regularly employed tool, it was a creative and unique method to gain formalized rights to the commons in a way that would be difficult for the government to reverse or challenge. What opportunities could Chilika leverage from its own cultural or religious context, such as its closeness to Puri, which receives millions of visitors annually due to its status as one of India's four *Dharmas* (Patnaik, 2014). Aside from this, what other creative legal or formalization tools could be leveraged and are there any that could put the communities at risk of losing their rights to access fisheries?

Another legal tool, the Protected Areas (PAs) of Shimshal, harmed rather than helped communities, who were not considered in the planning and development process. Similarly, the Ramsar dedication protects the local bird sanctuary, and as outlined in Chapter 2, has also been harmful for fishing communities who were also not considered in their development. Is there a way for this dedication, which pushed communities of fishers who had lived among the birds as they grew in population and importance, to be changed so that people can be re-considered as part of the ecological structure?

There have been discussions (per observation) about pushing for a Coastal Rights Act; if something like this were to form, would the right people be able to elevate Chilika's commons, and include their rights? Would the community get a say in what is written about them, or could they write it themselves?

Explicit Claims to Cultural Heritage

Shimshal was explicit about the commons being inseparable from their cultural heritage and refused to sign their rights away or be compensated to leave. This strength in their conviction helped to justify their claim for control over resources. Is this clearly laid out for Chilika? Over time, this has been further legitimized for Shimshal with academics, photographers, authors, partnerships with global universities, the SNT's website, and more, who have released beautiful books, articles and history on the region and its people. One reason I included the photos of Shimshal Valley in this paper was to demonstrate how ecologically stunning this region is, elevated by those who recorded its history. Chilika has a lot of global attention through the V2V partnership and field school with connections with universities from everywhere, especially Canada. This includes an exchange with students from all over the world who come to share their knowledge with each other and learn from Chilika's fishing communities. Already books are being released, such as the upcoming V2V Commons in Fall of 2025. What other art and storytelling can be leveraged?

Strategic External Alliances and Partnerships

Other external actors and partners were strategically incorporated into the planning and transformation of Shimshal. As outlined above, external NGOs that helped with conservation measures included the IUCN and WWF-Pakistan. The Agha Khan Foundation helped to finance parts of the new road built. Other donors helped fund other projects such as an irrigation system. Since then, community members that gain salaries externally are helping to maintain the commons, by helping to finance pastoral salaries managed through the Shimshal Trust Fund. Additionally, there is a strong presence of academics in Shimshal, as there are in Chilika, and there are social and education programs provided through the SNT for people considering working with them, which ensures they are aligned with their community values. If Chilika were to consider rebuilding, what

external alliances and partnerships could they make? Is there an opportunity for microfinancing to support business development and diversify livelihoods? Is there a desire present, perhaps by some of the youth who out-migrated in Nayak’s (2014) report? Would any of those youth, who have gained skills outside of Chilika in the past 10-15 years, be willing to come back and lend their knowledge, skills, and finances to the community?

Navigating Relationships with Government

When the government left Shimshal with an unfinished road, they managed to build the road themselves with financial and expertise support from the Agha Khan Foundation. The government of Odisha took some ecological actions that were deleterious to the commons about 25 years ago. Is there anything the community can do to solve these issues on their own, or adapt to them (i.e. the new sea mouth)? How can they leverage their present relationship with the government?

Transforming the Governance Structure & Systems

Shimshal’s community took on new roles and responsibilities, and completely restructured its governance style, while maintaining its core identity. Might something similar be feasible for Chilika Lagoon? Shimshali communities collectively gave their rights to one central institution, which is made up of members from different volunteer and advisory groups. Chilika has a few commons-based fishing villages. Could there be a similar strategy that they might be interested in exploring? Would coming together under one umbrella work in their context? Shimshal took on multiple new roles and expanded their governance greatly to include enforcement, conservation, tourism, financial management, strategic partnerships, and even changed some of the rules in managing the herding structure through the new ‘sur’ system. Could Chilika imagine a similar future, with diversified roles and responsibilities, adapting to decommissionisation while still maintaining their identity?

In 2023, 26 years after establishing the SNT, the community is experiencing financial challenges that far differ those of their past. Would Chilika’s fishers be comfortable with a similar shift? The SNT is working on elevating pastoral herders as a respectable and well-paid career and are working on intergenerational planning for the future. What changes might occur 25 years into a post-new-commonisation future for Chilika?

Table 3: Summary of Reflections for Case Study 1

Themes	Shimshal Valley Case Study Reflection	Hypotheses & Questions for Chilika
Temporal Factors	Decommissionisation in Chilika accelerated rapidly in the 1990s–2000s with shrimp aquaculture and the new sea mouth, processes now over 20 years old. Pakistan’s mountain commons experienced a similar long arc: decommissionisation began in 1975, but the SNT emerged only 23 years later, and legal battles continue even 50 years after park boundaries were drawn. Transformations can take decades, it is not necessarily too late for Chilika to experience a new commonisation.	Given the long timeline of decommissionisation and ongoing shrimp ponds, might Chilika’s struggle also require sustained, multi-generational effort? Has Chilika received the kind of political attention that enabled change in Shimshal, and what conditions would be needed for the narrative to shift in the fishers’ favour?
Leveraging Legal Tools and Protections	The waqf was not a regularly employed tool, it was a creative and unique method to gain formalized rights to the commons in a way that would be difficult for the government to reverse or challenge. Another legal tool, the Protected Areas (PAs) of Shimshal, harmed	What opportunities could Chilika leverage from its own cultural or religious context, such as its closeness to Puri, which receives millions of visitors annually due to its status as one of India’s four Dharmas. What other creative legal tools could be leveraged and are there any that could

	rather than helped communities, who were not considered in the planning and development process. Similarly, the Ramsar dedication protects the local bird sanctuary, and as outlined in Chapter 2, has also been harmful for fishing communities who were also not considered in their development.	put the communities at risk of losing their rights to access fisheries? Is there a way for the Ramsar dedication to be changed? There have been discussions about pushing for a Coastal Rights Act; if something like this were to form, would the right people be able to elevate Chilika's commons, and include their rights? Would the community get a say in what is written about them, or could they write it themselves?
Explicit Claims to Cultural Heritage	Shimshal was explicit about the commons being inseparable from their cultural heritage and refused to sign their rights away or be compensated to leave. This strength in their conviction helped to justify their claim for control over resources. Over time, this has been further legitimized for Shimshal with authors academics, photographers, partnerships with global universities, the SNT's website, and more, who have released beautiful books, articles and history on the region.	Is this clearly laid out for Chilika? Chilika has a lot of global attention through the V2V partnership and field school with connections with universities from everywhere, especially Canada. This includes an exchange with students from all over the world who come to share their knowledge with each other and learn from Chilika's fishing communities. Already books are being released, such as the upcoming V2V Commons Book. What other art and storytelling can be leveraged?
Strategic External Alliances and Partnerships	Other external actors were strategically incorporated into the transformation of Shimshal. NGOs that helped with conservation measures included the IUCN and WWF-Pakistan, and the Agha Khan Foundation helped to finance parts of the new road built. Another donor funded an irrigation system. Since then, community members that gain external salaries help maintain the commons by financing pastoral salaries managed through the SNT. There is a strong presence of academics in Shimshal, and social and education programs provided through the SNT for external academics, which ensures they are aligned with their community values.	If Chilika were to consider rebuilding, what external alliances and partnerships could they make? Is there an opportunity for microfinancing to support business development and diversify livelihoods? Is there a desire present, perhaps by some of the youth who out-migrated in Nayak's (2014) report? Would any of those youth, who have gained skills outside of Chilika in the past 10-15 years, be willing to come back and lend their knowledge, skills, and finances to the community?
Navigating Relationships with Government	When the government left Shimshal with an unfinished road, they managed to build the road themselves with financial and expertise support from the Agha Khan Foundation.	The government of Odisha took some ecological actions that were deleterious to the commons about 25 years ago. Is there anything the community can do to solve these issues on their own, or adapt to them (i.e. the new sea mouth)? How can they leverage their present relationship with the government?
Transforming the Governance Structure & Systems	Shimshal's community took on new roles and responsibilities, and completely restructured its governance style, while maintaining its core identity. Shimshali communities collectively gave their rights to one central institution, which is made up of members from different volunteer and advisory groups. Shimshal took on multiple new roles and expanded their governance greatly to include enforcement, conservation, tourism, financial management, strategic partnerships, and even changed some of the rules in managing the herding structure through the new 'sur' system.	Might something similar be feasible for Chilika Lagoon? Chilika has a few commons-based fishing villages. Could there be a similar strategy that they might be interested in exploring? Would coming together under one umbrella work in their context? Could Chilika imagine a similar future, with diversified roles and responsibilities, adapting to decommissioning while still maintaining their identity? Would Chilika's fishers be comfortable with a similar shift? What changes might occur 25 years into a post-new-commons future for Chilika?

7.3 Process Tracing Reflections of India's Forest Rights Act (2006)

Legal Design and Legitimacy

Political-level discussions regarding forest dwellers experienced a paradigm shift when the FRA was placed under the Ministry of Tribal Affairs, rather than the Ministry of Environment, as the issue of forest governance became a justice initiative rather than solely a conservation or industry related one. Might there be a similar opportunity to frame Chilika Lagoon's fishers in the same light? It is evident that there have been human rights atrocities of displacement and caste discrimination over time. Should there be consideration of a future rights-based legislation specific to them, such as a Coastal Rights Act, it might benefit from rooting itself in a justice narrative, acknowledging historical exclusion and uplifting a similar customary use argument for fishers. Are there NGOs with legal experience who might be able to provide an assessment and some guidance to Chilika's fishers about various options in framing their own history in this way for political conversation?

Forest Rights Act Amendments

Should there be an amendment to the FRA (2006), considering its numerous implementation and equity issues as outlined above, might there be a possible inclusion of coasts within it, to be the Forest and Fishing Rights Act? Or, if there are those working towards an amendment, might there be an opportunity to connect about explicitly including 'mangrove forests' as 'forests' in the Act? The interpretation of 'forest' is broad in the Act itself; however, the purpose is to give customary users rights to govern ecologically important spaces; mangroves fall neatly under this category, and Chilika's fishers have already been governing this ecological space.

Protest-politics

While a wide-spread mobilization of protest-politics may not be feasible for Chilika's fishing communities, given their smaller scale compared to India's forest dwellers, there may be value in exploring whether coastal communities across the country could benefit from forming broader alliances, similar to the national coalitions that drove forest rights activism. Bose (2010, p. 26) highlights the important history of India's protest or campaign politics below:

“The enactment of the FRA suggests that group demands articulated over the years and often finding expression in agitational politics cannot be ignored by the central and state governments in India. The case of the FRA highlights the importance of 'protest' or 'campaign' politics in India, and the simultaneous importance of activists to form effective 'coalitions' involving individuals and groups in order to influence the course of legislation”.

What would it take to mobilise such a nation-wide conversation and effort, and are the experiences of other coastal or fishery communities similar? What do India's 'protest-politics' look like today; have they changed at all since the early 2000s?

Barriers to Implementation

Experiences of forest dwelling communities regarding implementation of the FRA (2006) have been uneven across India, with multiple reports highlighting resistance from forest officers, administrative and procedural delays, and inadequate capacity. For Chilika, any similar legal process would require vigilance to ensure rights are not only granted on paper but respected in practice, and that there are plans and financial support in place ahead of implementation to ensure greater equity. Delays, weak enforcement, or lack of follow-up can reinforce decommonisation rather than reverse it, especially if such an Act were to include other coastal communities as well, without an opportunity for them to contribute to it. In Chilika's case, where multiple government agencies already claim jurisdiction

over the lagoon, any future rights process would need strong inter-departmental coordination and safeguards against elite capture or power-heavy decision-makers.

Gender and Caste Exclusions

Despite having provisions for women in the FRA, it is evident that many villages treated women's involvement as formal rather than substantive during decision-making meetings and in accessing the rights themselves. Similarly, there were clear discriminations against people of the Scheduled Caste communities in accessing rights. It does not help anyone to have these two groups of people separated from accessing legal rights, especially as Chilika's fishing community is composed of people from intersecting caste, class, gender, and age identities from various villages. Proactively designing a rights process that ensures equitable participation and benefit sharing echoes the desires of communities as a whole participating in building their own rights and governing their own commons. This raises several questions: Does the current governance structure in Chilika allow for women or people from other castes to speak for themselves? Are there already built-in opportunities to elevate women's voices, such as the women's group in Chilika Lagoon? What role could they play in defining and disseminating rights, in leadership and in decision-making? Equally, what role will men play in decision-making? Is it of value to disseminate rights based on caste, or does it perpetuate old colonially-defining systems that no longer serve this community?

Ecological Management and Diversifying Livelihoods

Communities that received rights were able to manage forests, while backed in legal legitimacy, in ways that improved ecological outcomes. There were reductions in the persistence of the timber mafia, instances of improved biodiversity, and new innovative methods created to improve the financial output of sustainably harvesting NTFPs. Similarly, Chilika fishers have a long history of regulating fishing seasons and gear. If granted rights, could they formalize and scale these practices? Many FRA communities expanded into ecotourism, local marketing, or conservation-based incomes. Chilika fishers might explore similar livelihood diversification. Would such a transition create new pressures or opportunities for younger generations, especially those who out-migrated more than a decade ago into cities? How are those community members doing now, what new skills and experiences might they have, and could there be interest in returning to the Lagoon?

Visibility

The FRA gained wide-spread attention in the media and in activism groups as a response to the atrocities that communities faced. Groups mentioned in this thesis included the International Women's Media Foundation, New Indian Express, OdishaTV, and the large coalition of activists that made up the Campaign for Survival and Dignity (CSD), among others. Without this attention, there may not have been as much political pressure to take a stand on this issue across the country. Increased documentation, storytelling, and public scholarship have also played a role in legitimizing the forest rights movement. What media and actors might be willing to write Chilika's story? Could there be interest in documentary-making or professional photography? What other activists might be leveraged to support this community in India? Are there members of the CSD who might be interested in speaking with Chilika's fishers about their experiences leveraging this Bill in Parliament? Are there politicians who still participate in the making of the Act who might want to know about Chilika's situation, or be able to support them? Would communities in Chilika want this level of media attention; what implications might there be to increased attention?

Partnerships

Some Forest Dwelling communities across the country had NGOs that supported them in their paperwork, in mapping out land and filing claims. Chilika already benefits from global academic networks like the V2V partnership and student exchanges, as well as connections with local NGOs.

Could these alliances be leveraged further to elevate the story of Chilika in national and international conversations? If rights were to be granted to this community in the future, could these partners support them, and how so? What other partnerships might Chilika consider making within India? What technology or other resources might be needed, such as from NGOs with technical access, such as to GIS mapping technology.

Mishra (2018) suggested solutions to the current implementation of the FRA (2006) which included hiring an agency to help with the state-community relationships:

“There should be an independent agency, other than the SLMC, who can regularly monitor progress of the Act and also regulate the activities of Gram Sabha/FRC members and government officials involved in land verification. They can have a regular visit to some areas to reexamine validity/rejection of the claims and distribution of titles, identify any anomalies in the titles distributed and solve any dispute between the forest dwellers and government officials. Otherwise the agency can hire services of local NGOs/SHGs to monitor the land verification. This agency can also provide trainings to these stakeholders so that they can be clearer about various procedures of the Act” (Mishra, 2018, p. 141-142).

Perhaps a similar agency could be employed before any similar Acts or policy changes are considered for Chilika Lagoon, or other fishers in India, to ensure a smooth transition, considering the tumultuous relationships of involved state actors in the past.

Long-Term Governance and Sustainability

Some communities that received FRA (2006) rights created new institutions, rules, and responsibilities, including internal enforcement and benefit-sharing mechanisms. For Chilika, the transition to new-commonisation would likely require similar internal restructuring. Are there existing community institutions that could take on this role, or would new ones be needed? Importantly, the FRA experience shows that legal rights are not a final destination but part of a longer, iterative process. Rights must be maintained, adapted, and defended over time, and as stated earlier, these are not inalienable, they cannot be sold or mortgaged like private property rights. What would ensure their long-term sustainability? A weakness in the FRA is its provisions to give forest dwellers financial support should they need to be relocated; however, it does not indicate many restrictions around relocation, leaving it open to future legislative interpretation. Are there greater assurances that could be given to Chilika’s communities for the long term?

Relocation Planning

One of the most difficult questions for Chilika is what to do about the shrimp aquaculture communities who have lived in and around the lagoon for 30–35 years after their encroachment into the Lagoon the 1990s. The practice is no longer legal, however there has not been adequate enforcement to remove the ponds, and it has impacted ecological sustainability. An entire generation has now grown up in this context; simply evicting these communities is not a viable or ethical solution. The two choices that this community could feasibly have are to stay or to leave. If they stay, will the community work with them (upon gaining rights) in an alternative way? Are there diversified livelihoods that could be employed with their skills, such as mangrove reforestation, or other ecological supports? If this community were to leave, there must be serious planning for how these families are included in, or transitioned into, new forms of livelihood and governance over new spaces. Is there other space available? This community largely came from neighbouring forests that had degraded over time and are not covered under the FRA. Is there a way to support them greatly in regenerating their original forest land? Could there be livelihood support, training, and capacity

building to help them relocate and start over? Is there any room for conversations between these communities towards reconciliation and joint-support? Could fishing communities themselves take the lead in teaching aquaculture families the practices and responsibilities of commons stewardship?

Regarding the FRA (2006), Bose (2010, p. 27) notes,

“The need for relocation may inevitably arise in certain situations - whether for purposes of accommodating critical wildlife habitats or needs of conservation, or for engineering physical infrastructural development like laying railway tracks or reaching electricity to remote areas. There seems to be an emerging idea that any issue of relocation must begin by addressing two anterior questions: whether relocation is at all required; and, whether there has been due consultation with those meant to be relocated”.

The FRA serves as a reminder that relocation cannot be treated as a blunt administrative act, but must emerge from careful consultation, dialogue, and public participation. For Chilika, this means any future rights legislation must ask whether relocation is truly necessary, and if so, how to design it in a way that provides viable alternatives, respects human dignity, and ensures those displaced are not abandoned to precarity.

Community Participation

Ultimately, the challenge for Chilika is not only how to safeguard the lagoon’s ecosystem, but how to centre the people who live within it as equal stewards of its future. The FRA experience demonstrates that rights imposed from above, even when well-intentioned, risk being diminished in process or implementation. For Chilika, any new rights framework will only carry legitimacy if communities themselves are not merely consulted but actively shape the process. There is a history of poor bureaucratic choices when communities are not consulted with in Chilika. How can any new rights development be led by those most directly dependent on the lagoon? Could communities claim authorship over any parts of policy development involving them? A Coastal Rights Act or similar policy could be written *with* communities rather than *for* them, embedding their voices, histories, and customary practices into the legal record. There is potential for a policy that meets the deeper needs of communities and the environment, that is co-created and defended by those whose lives, livelihoods and identities are inseparable from Chilika Lagoon.

Table 4: Summary of Reflections for Case Study 2

Themes	Forest Rights Case Study Reflection	Hypotheses & Questions for Chilika
Legal Design & Legitimacy	Placing FRA (2006) responsibility in Ministry of Tribal Affairs rather than Ministry of Environment reframes forest governance as a justice initiative, rather than a conservation or industry issue. Rights-based legislation is grounded in justice narratives and allows for honesty and acknowledgement about the past. This includes historical exclusion and atrocities of displacement and caste discrimination and recognizes customary use in the forest context.	Might there be a similar political opportunity to frame small-scale fisheries in a justice-oriented light? Should future legislation, (such as a potential Coastal Rights Act), be rooted in justice narratives for fishers? If so, what forms might this take? Are there NGOs, academics, or knowledgeable community members with legal experience who could help Chilika’s fishers assess their options and strategically frame their history for political dialogue?
Amendments to Forest Rights Act	The FRA (2006) faces numerous implementation and equity issues, raising questions about whether amendments are needed. Its purpose is to give customary users rights to govern natural resources, however its	Could there be amendments to the FRA? Might they include coastal and fishing communities, potentially reframing it as a “Forest and Fishing Rights Act”? Is there an opportunity to explicitly recognize <i>mangrove forests</i> as ‘forests’ within the

	interpretation of ‘forest’ is broad. Mangrove ‘forests’ in Chilika are evidently ecologically important spaces, though mangroves are not included explicitly in the Act.	Act? As the definition is already so broad, could communities already leverage this as precedent to claim formalized rights under an expanded or clarified legislative framework?
Protest Politics	National coalitions and protest politics were central to the passage of the FRA, showing how coordinated demands can influence legislation. Bose (2010) notes the decisive role that agitational politics and broad activist coalitions played. Fisheries, compared to forest dwellers, are less widespread across India. Though they may not be able to similarly mobilize, the forest rights movement illustrated the power of cross-regional alliances.	Could coastal and small-scale fishing communities form broader national alliances across states, similar to those in the forest rights movement? What would it take to mobilize a nationwide conversation on coastal and fishery rights? Do other coastal communities share comparable experiences that could support coalition-building? How have the dynamics of India’s protest-politics changed since the early 2000s?
Barriers to Implementation	Implementation of the FRA (2006) has been uneven across India, with limited capacity, administrative delays and some resistance from forest officers. These gaps show that rights granted on paper can fail in practice without strong planning, resources, and oversight. Poor enforcement or follow-up can in fact reinforce decommissioning rather than reverse it. Any rights granted in Chilika would need to anticipate implementation barriers.	What safeguards would be needed to ensure rights in Chilika are meaningful rather than symbolic? Can administrative and financial support be secured prior to implementation? Given overlapping jurisdiction in the lagoon, what mechanisms could improve inter-departmental coordination and prevent elite capture? If similar legislation included other coastal communities, how can their participation be guaranteed to avoid exclusion?
Gender & Caste Exclusions	Although the FRA includes provisions for women, many villages involved women only formally rather than substantively in decision-making or rights access. Similar discrimination affected Scheduled Caste communities. Such exclusions undermine the purpose of rights-based legislation and reveal the need for proactive, equitable design.	How does Chilika’s current governance structure allow women to participate meaningfully? How might existing groups (such as women’s associations) help shape and disseminate rights, and play leadership roles? What should men and dominant castes do to support equity? Should rights be organized around caste categories, or does that no longer serve the community?
Ecological Management & Diversified Livelihoods	While backed in legal legitimacy, communities that received rights were able to manage forests in ways that improved ecological outcomes. They also diversified their livelihoods into ecotourism, local marketing, and conservation-based incomes. There were also reductions in the persistence of the timber mafia, instances of improved biodiversity, and new innovative methods created to improve the financial output of sustainably harvesting NTFPs.	What would be formalized about the way that Chilika’s fisheries manage gear and fishing seasons? Could Chilika’s communities have the opportunity to diversify their livelihoods upon receiving rights? Would such a transition to rights create new pressures or opportunities for younger generations, especially those who out-migrated more than a decade ago into cities? How are those community members doing now, what new skills and experiences might they have, and could there be interest in returning to the Lagoon?
Visibility	The FRA gained wide-spread attention in the media and in activism groups as a response to the atrocities that communities faced. Groups included the International Women’s Media Foundation, New Indian Express, OdishaTV, and the large coalition of activists that made up the Campaign for Survival and Dignity (CSD), among others. Without this attention, there may not have been as much political pressure to take a stand on this issue across the country. Increased documentation, storytelling, and public scholarship have also played a role in legitimizing the forest rights movement.	What media might be willing to write Chilika’s story? Could there be interest in documentary-making or professional photography? Are there activists who could be leveraged to support this community in India? Are there members of the CSD who could speak with Chilika about their experiences leveraging the Bill in Parliament? Are there politicians who still participate in the making of this Act who might want to know about Chilika’s situation, or be able to support them? Would communities in Chilika want this level of media attention; what implications might there be to increased attention?

Partnerships	<p>Some Forest Dwelling communities across India were supported by NGOs in paperwork, filing claims and mapping out land. Chilika benefits from global academic networks like the V2V partnership and student exchanges, as well as connections with local NGOs.</p> <p>Mishra (2018) suggests an independent agency, including possibly an NGO, other than SLMC to conduct Act-specific trainings, monitor its progress, support government-community communication, regulate Gram Sabha activity, and revisit the validity of past claim rejections.</p>	<p>Could these alliances help elevate Chilika in national and international conversations? How could these partners support them in rights implementation? What other partnerships might Chilika consider making? What technology or other resources are needed (i.e. GIS)?</p> <p>Considering the tumultuous external relationships in Chilika, and the FRA experiences, perhaps an independent agency could be employed before any similar Acts or policy changes are considered for Chilika Lagoon, or other fishers in India, to ensure a smooth transition.</p>
Long-Term Governance and Sustainability	<p>Some FRA (2006) rights holders created new institutions, rules, enforcement responsibilities, and benefit-sharing mechanisms. The type of rights FRA grants must be maintained, adapted, and defended over time, are not inalienable, and cannot be sold or mortgaged like private property. An FRA weakness is its lack of restrictions around relocation autonomy, leaving it open to interpretation.</p>	<p>Are there existing community institutions that could take on a restructuring role, or would new institutions need to be developed? What would ensure the long-term sustainability of the present rights in India’s forests, and likewise, what ensures the longevity of potential similar rights in Chilika? Are there greater assurances that could be given to Chilika’s communities for the long term regarding relocation or other legal wording?</p>
Relocation Planning	<p>A difficult question in Chilika is what to do about the shrimp aquaculture communities who encroached into the Lagoon in the 1990s and lived in and around there for the past 30-35 years? The practice is illegal, yet enforcement has been inadequate, and it has impacted the ecology. Shrimp fishers largely came from neighbouring forests that degraded over time and have no FRA provisions. A generation has now grown up here; evicting communities now is not a viable or ethical solution. Bose (2010) notes that there might be a need for relocation of FRA rights holders in certain contexts. In future rights for Chilika, relocation cannot be treated as a blunt administrative act, but must emerge from careful consultation, dialogue, and public participation. For Chilika, this means any future rights legislation must ask whether relocation is truly necessary, and if so, how to design it in a way that provides viable alternatives, respects human dignity, and ensures those displaced are not abandoned to precarity.</p>	<p>If shrimp fishers were to stay, would Chilika’s fishery communities work with them (upon gaining rights) in an alternative way? Are there diversified livelihoods that could be employed with their skills, such as mangrove reforestation, or other ecological supports? If shrimp fishers were to leave, there must be serious planning for how these families are included in, or transitioned into, new forms of livelihood and governance over new spaces. Is there other space available? Is there a way to support them greatly in regenerating their original forest land? Could there be livelihood support, training, and capacity building to help them relocate and start over? Is there any room for conversations between these communities towards reconciliation and joint-support? Could fishing communities themselves take the lead in teaching aquaculture families the practices and responsibilities of commons stewardship? What needs to be written into any rights for Chilika’s fisheries about relocation planning?</p>
Community Participation	<p>The FRA experience demonstrates that rights imposed from above, even when well-intentioned, risk being diminished in process or implementation. For Chilika, any new rights framework will only carry legitimacy if communities themselves are not merely consulted but actively shape the process. There is a history of poor bureaucratic choices when communities are not consulted with in Chilika.</p>	<p>How can any new rights development be led by those most directly dependent on the lagoon? Could communities claim authorship over any parts of policy development involving them? A Coastal Rights Act or similar policy could be written with communities, embedding their voices, history, and experiences into the legal record. There is potential for policy to meet the needs of the SES, and be co-created and defended by those whose lives, livelihoods and identities are inseparable from the Lagoon.</p>

7.4 Process Tracing Reflections of Papua New Guinea's LMMAs

Legal Recognition & Flexibility

PNG stands out for constitutionally recognizing customary marine tenure upon gaining independence from Australia in 1975. It may be tempting to view constitutional recognition of customary land rights as something Chilika Lagoon's fishers lack, especially as they have faced many decommissioning threats with little to no protections. However, despite having these rights enshrined in their constitution, small-scale fishery communities face gender inequality as rights are passed down through male family members, as well as issues with long-term sustainability as space decreases as populations grow (Ruddle, 1994; Brewer, et al., 2013; Agrawal and Goyal, 2001). In contrast, governance efforts in Chilika Lagoon have deliberately incorporated women's leadership and participation, indicating a need for a more inclusive approach to resource management (Khan, et al., 2018).

Gaining legally-backed commons arrangements in PNG occurred after the implementation of multiple pathways that did not respond to their social or ecological realities. In Chilika, simply codifying rights, without robust enforcement and genuine community leadership, risks replicating PNG's struggles with "paper parks" and unenforced laws. Since then, a helpful characteristic of PNG's legal model is its flexibility to allow fishers to register their LMMAs under multiple legal pathways, depending on their goals. Currently, Chilika's fishing communities face a more rigid legal environment, however, PNG's example may inspire creativity around layering existing policies or considering a multi-pronged approach to legal recognition. For example, should there be movement towards a Coastal Rights Act, might it include a structure akin (or identical) to LMMAs?

Community-Led Governance & NGO Involvement

PNG's evolution from top-down MPAs to genuinely community-driven LMMAs resulted in better outcomes for community members and for their SESs. Early efforts, led primarily by NGOs or the state, faced difficulties with maintaining community buy-in and legitimacy; whereas LMMAs grounded in community leadership, participatory rule-making, and local management structures have proven more resilient. For Chilika, how might something similar be instigated? Is there a need for NGO or academic support to provide a framework for a similar governance idea? Would any involved NGOs or other partners be able to step away from primary leadership once initial steps are in place, and would communities believe in the need for these changes?

Additionally, PNG's early experiences implementing LMMAs did benefit from NGO resources and technical expertise, particularly in scientific monitoring and spatial planning (for example with the use of GIS technology). However, it is important to watch out for persistent dependence on external donors, as, once they depart, management structures could falter. How could Chilika, avoid this? Is there a way to keep some of this scientific or ecological monitoring in-house, or to train some community members to do this themselves, or to bring in scientists (similar to Waldie et al., 2024) as needed?

Avoiding Boxing-In Fishing Communities

Additionally, Foale et al., (2011, p. 365) caution that NGOs that frame these systems as inherently conservationist to forward their ecological goals risk projecting the "*myth of the ecological noble savage*" (the idea that indigenous peoples lived in harmony with nature prior to the colonial period) which has had a strong influence on functionalist arguments, [and] has been well and truly dismantled in recent years...". While present-day communities in PNG, many of which are already embedded in NGO-supported LMMAs, may now demonstrate deeper ecological awareness shaped by their own experience but also in part by NGO involvement and scientific application, Foale et al. (2011) emphasize that any co-management arrangement must be grounded in local, social and

ecological realities, rather than in romanticized notions of traditional conservation. This includes knowledge of how language on conservation subjects have changed and adapted over time as a result of the influence of external actors (Foale et al., 2011). Although Chilika has maintained rules of subtractability and excludability in their commons for many generations, as recorded in history, what would be required to avoid the fate of being boxed in for fishers? Would finding ways to create alternative livelihoods help diversify options for the community? MEARDN wanted to explore additional ways to increase financial stability for their communities by establishing a connection to international trade themselves. Is there a need for Chilika’s fishing communities to find ways to increase profits from their work, and what would that look like? Would external NGOs and academics be willing to support a shift like this, if they chose to change?

Scientific Backing

There have already been a few studies released that review fish stocks, water quality, mangrove health, or underwater topographical changes in Chilika Lagoon. Are there any other science and ecological-based studies that universities might take interest in for this community? Might there be a way to fully map out fishing grounds, and try to historically re-draw what was once there before decommissioning threats occurred, and indicate the levels of fish stocks from before? Scientific-backing helped PNG to legitimize and develop LMMAs. Might a plethora of similar scientific studies also help to legitimize a point for new-commonisation for Chilika Lagoon? How might this be leveraged with authorities?

Enforcement

The PNG government is beginning to shift to be more accountable to enforce against IUU fishing in deeper waters, which have cascading effects on local LMMA fishing communities (such as siltation of the coral reef from trawlers). They have also made a recent effort to amend laws to be more amenable to the processes of LLGs and LMMAs. What kind of changes would local, state, and national-level governments need to make to be more accountable and responsible to support fishers? Is it possible to clearly define their role in enforcement verses the community’s role, and hold them legally accountable for these actions? Shrimp aquaculture is illegal, for example; whose responsibility is it going to be to enforce this law, and is the law itself sufficient or does something need to change?

LMMA Network

There is a global network of LMMAs across a number of countries that exists, and in PNG, they established a local network to better support their own country’s LMMA implementation. Is there interest in the LMMA governance design itself? Might there be a possible exchange with some of the leaders of the global network to learn from? Additionally, in some regions, such as Kimbe Bay, there were multiple LMMAs that overlapped and worked together. Might different communities across Chilika Lagoon also benefit from a system like this, where LMMAs, or a similar system, involve a coordinated effort among communities?

Table 5: Summary of Reflections for Case Study 3

Themes	Papua New Guinea Case Study Reflection	Hypotheses & Questions for Chilika
Legal Recognition & Flexibility	PNG’s constitutional recognition of customary land rights for SSF causes gender inequality, as rights are passed down only through men, and risks long-term instability due to population growth. Gaining rights in PNG occurred only after attempts through multiple pathways that	In contrast to PNG, governance efforts in Chilika Lagoon have deliberately incorporated women’s leadership and participation, which indicates a need for a more inclusive approach to resource management. Should there be an avoidance of specific land holdings as they are

	<p>did not respond to their social or ecological realities. Since then, a helpful characteristic of PNG’s legal model is its flexibility to allow fishers to register their LMMAs under multiple legal pathways, depending on their goals. Currently, Chilika’s fishing communities face a more rigid legal environment, however, PNG’s example may inspire creativity around layering existing policies or considering a multi-pronged approach to legal recognition.</p>	<p>too close to private property rights? Would simply codifying rights in Chilika without robust enforcement and genuine community leadership risk replicating PNG’s struggles with “paper parks” and unenforced laws? Could there be a way to incorporate flexibility into laws? Should there be movement towards a Coastal Rights Act, might it include a structure akin (or identical) to LMMAs?</p>
Community-Led Governance & NGO Involvement	<p>PNG’s evolution from top-down MPAs to genuinely community-driven LMMAs resulted in better outcomes for the SES. Early efforts, led primarily by NGOs or the state, faced difficulties with maintaining community buy-in and legitimacy; LMMAs grounded in community leadership, participatory rule-making, and local management structures proved more resilient. NGO resources and technical expertise benefitted PNG’s fisheries particularly in scientific monitoring and spatial planning (for example with the availability of GIS technology).</p>	<p>How might something similar be instigated in Chilika? Could a community entity, NGO or academic support develop a framework? Would any involved NGOs or other partners be able to step away from primary leadership once initial steps are in place? It is important to watch out for persistent dependence on external donors, as, once they depart, management structures could falter. How could Chilika, avoid this? Could some of this scientific or ecological monitoring remain in-house through training community members themselves, or to bring in scientists (such as Waldie et al., 2024) as needed?</p>
Avoiding Boxing-In Fishing Communities	<p>Foale et al., (2011, p. 365) caution that NGOs that frame SES as inherently conservationist to forward ecological goals risk projecting the “‘myth of the ecological noble savage’ (the idea that indigenous peoples lived in harmony with nature prior to the colonial period)... which has been well and truly dismantled in recent years”. Present-day communities in PNG employing LMMAs, demonstrate ecological awareness shaped by both experience and scientific application. Any co-management arrangement must be grounded in local, social and ecological realities, rather than in romanticized notions of traditional conservation. This includes knowledge of how language on conservation has changed over time with the influence of external actors.</p>	<p>Although Chilika has maintained rules of subtractability and excludability in their commons for many generations, as recorded in history, what would be required to avoid the fate of being boxed in for fishers? Would finding ways to create alternative livelihoods help diversify options for the community? MEARDN wanted to explore additional ways to increase financial stability for their communities by establishing a connection to international trade themselves. Is there a need for Chilika’s fishing communities to find ways to increase profits from their work, and what would that look like? Would external NGOs and academics be willing to support a shift like this, if they chose to change?</p>
Scientific Backing	<p>Scientific research played a crucial role in the development and legitimization of LMMAs in PNG through studies on fish stocks, ecological conditions, and environmental change.</p>	<p>What ecological studies, such as mapping fishing grounds or assessing fish stocks, could strengthen Chilika’s case for re-commonisation, and how might this scientific evidence be used?</p>
Enforcement	<p>The PNG government has begun taking stronger action against IUU fishing in deeper waters, which harm LMMA communities through impacts like reef siltation from trawlers. They have also begun to initiate legal reforms to better support LLG and LMMA processes.</p>	<p>What changes at local, state, and national levels would improve government accountability to fishers in Chilika? Can roles in enforcement versus community responsibility be clearly defined and legally upheld? In cases like illegal shrimp aquaculture, who should enforce the law; are current laws sufficient or in need of reform?</p>
LMMA Network	<p>There is a global network of LMMAs across a number of countries that exists, and in PNG, they established a local network to better support their own country’s LMMA implementation.</p>	<p>Is there an interest in LMMA in Chilika? Could the global network share knowledge? In some regions in PNG LMMAs overlapped and collaborated; could different communities across Chilika also benefit from a coordinated effort?</p>

7.5 Conclusions

This chapter has traced the causal pathways and governance transformations of three diverse commons: Shimshal Valley's mountain pastures and yak herding communities in Pakistan, India's forest dwellers under the Forest Rights Act (2006), and Papua New Guinea's coastal fisheries and LMMAs, in order to draw out practical and conceptual insights regarding possibilities of transforming to new-commonisation with the support of codification of the commons.

Each case study is unique in their social, ecological, and legal settings, and the purpose of process tracing methodology is to deeply understand the causal pathways that led communities from one state (decommonisation) to another (new-commonisation) without conducting a comparative analysis between them. However, a few themes did emerge in the reflections for Chilika Lagoon.

First, as seen in both PNG and India, legal recognition alone is not a panacea. Even with strong legal supports such as constitutional rights, Protected Areas, or Acts and policies enacted, communities may find that persistent barriers to implementation or gaps in enforcement or political marginalization may undermine their goals. As was seen among India's forest dwellers, some communities gained rights while their neighbours did not, and further decommonised. In PNG, constitutional customary tenure did not protect communities from international market pressures and ecological decline. What other systems exist that could ensure authorities stick to their roles and respect the rights granted?

Second, all three case studies highlighted the risks of reproducing internal inequalities, whether through gender, caste, class, or uneven NGO engagement. Successful governance transitions depend on proactively designing mechanisms to ensure broad-based participation, transparency, and benefit-sharing. For Chilika, this means centering women, youth, and historically excluded or undervalued groups in any new commons arrangement and resisting tokenistic forms of "consultation" that do not grant real decision-making power.

Third, the experiences of NGO involvement and donor-driven models in PNG and India demonstrate that while external actors can offer crucial resources, technical expertise, and political leverage, their engagement must be grounded in local priorities. External interventions risk creating dependency or reinforcing exclusion. For Chilika, any future strategic alliances or partnerships with scientific, legal, and advocacy partners must be created on the community's terms, with clear plans for long-term autonomy and capacity building.

Finally, the process of new-commonisation must be continuous and actively defended. Nayak and Berkes (2022) describe commonisation and decommonisation as ongoing processes. New-commonisation is another form of commonisation, and entering a new and more desirable state, with legal reforms in hand does not mark the end of commons maintenance and advocacy. For Chilika, the greatest challenge may not be in drafting the right law or forming new committees alone, but in nurturing a social change among external actors involved in the community, and reinforcing the community's collective agency in sustaining the commons against future waves of threats of decommonisation, such as external drivers of change.

Unintentionally, all three of these case studies lined up rather closely to the three commons governance frameworks mentioned in Chapter 2. Shimshal Valley took an iterative learning approach, which is aligned with Adaptive Governance. The protest politics that landed rights for India's forest dwellers through the FRA (2006) leveraged movement at multiple levels of government; indicative to Polycentric Governance. PNG's fisheries worked closely with NGOs and scientists to map out and monitor their resources to create no-take zones, which is core to the structure of Community-Based Natural Resource Management (CBNRM). Each of these case studies

demonstrated the potential risks within each of these governance approaches of slipping into the enforcement weaknesses; however, the literature showed that embedding legal protections over the commons ultimately supported their sustainability. They each managed to move into a state of new-commonisation using tools from three very different governance approaches. This might mean that there is more to explore within each governance framework should legal protection be embedded.

Commons, as opposed to privatization or government-based protection, is an ancient structure that has been used by communities and recognized in law since at least the era of Roman civilization. It has taken significantly less attention in recent years as it is difficult to legally-define, and many have been converted by powerful external actors into other forms of land or resource management. As stated in Chapter 2, other forms of commons that are less focused on natural resources, such as the sharing of landing strips, the use of outer-space, shared technology such as Linux, intellectual property, and shared online content such as Wikipedia, among others, have received legitimacy and attention regarding their place in law. Now might be a pertinent time to focus more intentionally on legal backing for natural resource management and commons, especially that of water, which flows freely through so many different avenues of use inland out into the sea. As I would consider all commons to be under threat by the decisions of powerful external actors, there is no better time than right now to make considerations for communities who have historically managed common-pool natural shared resources responsibly for many generations.

As Chilika's fishers, advocates, and allies consider the path forward, the lessons from Shimshal, India's forest communities, and PNG's LMMAs point to the need for a multi-pronged, legally-embedded, and community-led approach. An important lesson to take away from this thesis, is that there is no single blueprint for Chilika to follow. Rather, new-commonisation in Chilika will demand creative adaptation to their context, persistent advocacy to implement legal changes, and the strengthening or construction of institutions that can protect and interact with external actors to manage threats while maintaining internal social-ecological systems (SES) in the long term.

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Glossary

Brackish: Brackish water is a type of water that is characterized by salinity levels that are higher than freshwater but lower than seawater, such as in estuaries where rivers mix with the ocean; this creates a unique habitat supporting high levels of biological productivity due to the mixing of nutrients from both fresh and saltwater sources (Fresh Water Systems, 2023).

Commons Governance: Shared management of resources by community, where rules and institutions are self-developed by members to manage the resource sustainably (Ostrom, 1990).

De facto Governance: Community-led systems of governance, practiced for generations but not legally recognized by the state or formal institutions (Nayak & Berkes, 2011).

De jure Governance: Legally recognized systems of governance that are codified by law and enforced by the state or formal institutions (Nayak & Berkes, 2011).

Decentralization: Redistribution of authority from central government to local levels, allowing communities to manage their resources and decision-making processes. In fisheries, decentralization may enable community participatory self-governance (Siripurapu et al., 2016).

Decommonisation: The process by which commons resources are privatized or taken over by external actors, leading to the loss of community control and governance (Nayak & Berkes, 2011; Nayak & Berkes, 2022).

Ecological Degradation: The deterioration of the environment through depletion of resources, such as water, soil, or biodiversity, often as a result of human activities (Nayak, Oliveira & Berkes, 2014).

Neoliberal Economic Policy: A set of economic practices emphasizing privatization, deregulation, market-driven reforms, and minimal state intervention (Harvey, 2005).

New-Commonisation: “A process through which resources are converted into joint-use or new transformative arrangements with refined rules and management systems complementing resource use and protection in synergy with traditional practices and values” (Nayak & Berkes, 2022, p. 11).

Re-Commonisation: “Commoners successfully avoiding an outcome of decommonisation, and engaging in a process of re-commonisation involving new uses, rules, rights, and obligations” (Nayak & Berkes, 2022, p. 11).

Resilience Theory: A framework for understanding how social-ecological systems can absorb disturbances while maintaining their core functions. It focuses on the capacity of systems to adapt to shocks, such as environmental or economic disruptions (Berkes et al., 2003).

Social-Ecological System (SES): Integrated systems that recognize the interdependence between humans and ecosystems (Berkes, 2011; Nayak, 2014).

Vulnerability to Viability (V2V): A framework that supports small-scale fishers transitioning from vulnerability to sustainability by strengthening governance and resource management capacities (V2V Project, 2019). This is the name of the program that brings students from different countries to Chilika to learn and exchange knowledge about small-scale fisheries at Chilika Field School.