ENVIRONMENTAL GOVERNANCE – 1

Rethinking Environmental Governance

Broadening the Scope, Deepening the Perspectives

Edited by
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& MELISSA MARSCHKE

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Rethinking Environmental Governance

Environmental Governance

Environmental Governance explores past and present-day global struggles over natural resources. Linking grassroots initiatives and practices with inter-scalar power dynamics, the series draws on empirical cases from across the globe to assemble the most recent thinking on environmental governance, building on rich scholarly traditions in human geography, environmental studies, anthropology, development studies, and political science.

Building on Martinez-Allier's ground-breaking conceptualization of the "environmentalism of the poor", we center grassroots' views and voices within environmental governance, seeing such perspectives as integral in (re)shaping global environmental discourses.

We welcome all work that brings to light power dynamics and how these translated in various forms of political spaces of engagement, including social movement, and their role in maintaining planetary health. Placing environmental governance within the broader context of socio-economic development, where costs and benefits are unequally distributed, the series brings to light the role and importance of unpacking other ways of knowing in furthering socio-environmental justice.

RETHINKING ENVIRONMENTAL GOVERNANCE

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CHAPTER 1

Environmental Governance and Livelihood (Re)making: Two Sides of the Same Coin?

Diana Suhardiman, Jonathan Rigg, and Melissa Marschke

Introduction

Massive and rapid environmental degradation has become a global phenomenon. It already affects fragile and fragmented socio-ecological systems and communities living along river embankments (Li et al., 2022) and in coastal areas (Faseyi et al., 2023), remote uplands (Lestrelin and Giordano, 2007), forest areas (Banerjee et al., 2024), and urban settlements (Liu and Browne, 2023). Scholarship on environmental governance is wide ranging but often compartmentalised within certain traditions in environmental studies, such that when scholars write, for example, of opening the 'black box' of environmental governance (Du and Li, 2023), they do so in quite particular ways. This book connects these traditions with issues of poverty, equity, and social justice and puts people's livelihoods options and strategies, including those of the poorest and most marginalised, at the centre of questions of environmental governance. Rather than seeing matters of environmental governance as in large part merely technical, it highlights and discusses the deeper causes of environmental injustice rooted in structural factors that continue to produce and reproduce conditions of exclusion, inequity and injustice (Smith, 2008; Brown et al., 2021).

Viewing humans and nature as two distinct but mutually interdependent entities, environmental governance scholars focus on the 'structures, processes and actions' that constitute and therefore 'govern' human-nature relations. This approach, however, tends to view environmental degradation as a technical challenge that can be addressed through carefully constructed and managed policies. Political ecologists and critical agrarian scholars, amongst others, have brought to light the weaknesses and shortcomings of such an approach and perspective when it is applied in the context of environmental violence with structural roots – such as communities facing eviction from their land following the establishment of national parks for nature conservation (Kenney-Lazar, 2023; Corson, 2010; Bridge and Perreault, 2009). In such contexts, the human-nature divide in environmental governance creates the conditions for green grabbing, when protected forest areas

are established at the cost of communities' long-established access to agricultural and forest land, and indigenous people's ancestral domains (Wolford et al., 2024; Shattuck et al., 2023; Borras and Franco, 2013).

This introduction, and the chapters that follow, build on these critical approaches to environmental governance, looking beyond mainstream, often apolitical, conceptualisation of environmental governance (Morales-Giner et al., 2023; Bridge and Perreault, 2009; Castree, 2008). We argue that environmental governance policies are often both the cause and the potential solution to environmental degradation. These policies emerge from power struggles over access to resources and how this access (or the lack thereof) shapes people's livelihood options and strategies (Agrawal, 2005). Drawing on critical and broadly 'political ecology' approaches that span human geography, agrarian and development studies, and anthropology, this book highlights the need to look closely at context, avoiding the inclination to generalise across geographies and scales (Sultana, 2021; Bebbington, 2015).

Defining environmental governance

Environmental governance has not faced the same definitional debates that have plagued terms such as resilience, sustainability and development. Bridge and Perreault (2009: 486) define environmental governance as: "institutional (re) alignments of state, capital and civil society actors in relation to the management of environment and resources, and the implications of these configurations for social and environmental outcomes." Kenney-Lazar et al. (2023) introduce the concept of relational environmental governance, urging the need to focus on the dynamic and unequal interactions among different stakeholders both human and non-human, including how these interactions in turn structure, control, and transform socio-ecological arrangements. Their work reflects a relational turn in socio-ecological systems thinking, placing (unequal) power relations at the centre of understandings of environmental governance (Pierce et al., 2010; Nicholls, 2009). This book aligns itself with this approach and focuses on the central role of power in (re)shaping environmental governance across spatio-temporal scales. It illustrates how various actors and institutions claim, produce, reproduce, or contest existing decision-making structure and processes through their oftentimes conflicting efforts to (re)shape institutional arrangements and (alternative) political spaces of engagement. This approach highlights the point that while environmental governance has traditionally been seen in the literature as a means to improve the sustainability of human-nature relations (Plummer et al., 2013; Painter, 2000; Lemos and Agrawal, 2006), this is a contested process. The UN's Intergovernmental Panel on Climate Change (IPCC) defines governance as:

> The structures, processes and actions through which private and public actors interact to address societal goals. This includes formal and informal institutions and the associated norms, rules, laws and procedures for deciding, managing, implementing and monitoring policies and measures at any geographic or political scale, from global to local. (https://apps.ipcc.ch/glossary/)

A central theme in this book is the exploration of the nexus between environmental governance and livelihoods (Natarajan et al., 2022). We illustrate and discuss how environmental governance is rooted and embedded within wider socio-economic and political contexts (Barney, 2012; Rassmussen and Lund, 2018). Environmental governance cannot be discussed separately from broader processes of social and economic change in the Global South, manifested in large-scale infrastructure development such as hydropower dams, canal irrigation systems, and transnational railways (Suhardiman and Rigg, 2021; Suhardiman et al., 2021a). Such developments are often presented through the lens of countries' national development agendas, such that the governance of their environmental effects becomes the inevitable outcome of decisions taken at other scales and arenas. There is a decision-making disconnect. Local communities impacted by such developments become collateral damage in the interests of national and regional development imperatives, forced to make and remake their livelihoods in the process (Katus et al., 2016; Li, 2014). We view this tension between economic development and impacts on local communities' livelihood options and strategies, in relation to their access to natural resources, and the environmental governance decisions that drive such changes. Hence, environmental governance is entangled with matters of distribution and use of revenues, compensation and resettlement action plans, and more widely with poverty (Suhardiman et al., 2021a; Baraibar-Diez et al., 2019).

Environmental governance is an umbrella term that embraces land, water, energy and climate governance (Dressler and Roth, 2011). The chapters in this book are at pains to address the multi-scalar and cross-sectoral nature of environmental governance. Through case studies across Asia, Africa, and Latin America, the contributions illustrate how environmental governance is intertwined with livelihood transformations from below and processes of globalisation from above, including how large-scale infrastructure developments have affected the ability of local communities to cope with environmental change in one field, caused by governance interventions in another, and undergirded by development decisions often taken separately from both. Environmental governance is not a discrete managerial intervention, but something that demands interrogation of its close links with processes of agrarian and livelihood change, state-citizen relations, and state-state relations. The local is bound up with a nexus of unequal power relations that stretches across scales, and can be transboundary in reach. While in this way

any analysis must be taken to other scales and fields, critical approaches always return to three foundational questions: environmental governance for whom, by whom, and for what (Hoogsteger et al., 2023; Boelens et al., 2023). This book draws attention to the key drivers (e.g., globalisation, neoliberalism of nature, environmental justice movements) (Harris, 2009) in environmental governance, examines how these are linked with particular schools of thought, framings, and approaches (e.g., feminist perspectives, environmental history), how they are manifested in the emergence of new trends in environmental governance (e.g., indigenous and social justice movements) (Paul et al., 2021; Muller et al., 2019; Halvorsen, 2017; Osborne, 2017; Harvey, 1996), how they evolve over time, and their implications for navigating the Anthropocene and Capitalocene.

In concrete terms, the book brings to light the importance of looking at multiple contexts, plural perspectives, diverse forces, and the inter-scalar power dynamics that shape formal and informal decision-making structures and processes in natural resource governance and how these affect people's livelihoods, and vice versa. Placing knowledge co-creation and processes of institutional emergence centre stage in its analysis, the chapters of the book link environmental governance with scalar politics, to reveal the political spaces for engagement afforded to different local actors and institutions as they struggle to make a living amidst environmental change and given the governance conditions that exist. This, inevitably, raises questions of power, both local and embedded in wider power geometries and political constellations (Boelens, 2015; Cohen and Bakker, 2014; Swyngedouw, 2009).

Linking socio-economic drivers with the evolution of cultural norms and perspectives, the (re)shaping of institutional arrangements, and wider political context and power relations, the book contextualises environmental governance in various socio-ecological systems ranging from wetlands to upland swidden agriculture, from forest conservation to marine protection, and from industrial fishing to coal mining. It shows how environmental governance is entangled with customary land tenure and rights systems (Diepart et al., 2025), social justice movements (Forigua-Sandoval et al., 2025), and gender dimension and inter-generational decision making (Osei-Amponsah and Okkem, 2025). Suhardiman et al. (2025) illustrate the important role of indigenous people's knowledge systems, culture, and agency, bringing to light the intersections between culture and environmental governance. Farakih and Purwanto (2025) likewise place cultural norms and perspectives as a key building block in environmental governance, seeing this in the context of colonial inheritances and postcolonial politics in Indonesia. Perkasa et al. (2025) view such a long durée historical approach as a key requirement to better understand socio-ecological change over time. Both these chapters present historical research as a necessary component if environmental governance across spatio-temporal scales is to be understood. What also becomes clear in these

chapters is the necessity to place environmental governance not only in historical context but also against contemporary and ongoing debates on climate adaptation, regional economic integration, and overall processes of globalisation.

Another theme that emerges across the book chapters is that of livelihoods being severely impacted by environmental governance initiatives. In spite of 'good' intentions, the real-world impacts of environmental governance decisions are messy and unexpected, illustrating how policy makers often sit far from local realities (Escobar, 2021). Hanh & Kadfak (2025) illustrate how European fisheries policy meant to better manage national fisheries globally can have profound impacts on local Vietnamese fishers, disrupting fishing practices and further impoverishing livelihoods. Blue-green environmental transitions can have profound livelihood impacts, particularly in the Global South. In India, coal mines are now closing, as part of a green energy transition. Yet, coal miners that transitioned from farming to coal over the past decades no longer have land assets to fall back on nor the skills to access the new jobs that are emerging with the green transition (Oskarsson et al., 2025). They are caught between a past that they can no longer access and a future for which they are unprepared and ill-equipped. Environmental governance policies fail to consider informal workers in ways that ensure productive and sustainable livelihood outcomes.

Throughout the book, environmental governance is seen as an integral part of natural resource governance embedded in ongoing processes of agrarian transition, livelihood change, regional economic integration, and wider processes of globalisation. People and their interactions with the state are central to environmental governance. We examine what the state really entails, what citizenship really means, and the ensuing power struggles and power asymmetries that emerge. We see this tension play out across multiple cases, impacting industrial fishers, artisanal fish processors, local communities facing dam development along rivers, and miners being squeezed out of coal production. Environmental governance initiatives are meant to help alleviate environmental pressures but often result in real human dilemmas. These are presented as 'trade-offs'; the trouble, as our various cases illustrate, is that these trade-offs are distributed such that marginal groups in marginal places invariably bear the cost.

While there are concerns and interests that cross-cut this volume – a concern for how globalisation is implicated in environmental governance at the local level, an abiding interest across all chapters in livelihoods, and the intersections between state-society relations and environmental governance – the four sections of the book are discrete. Part I is more theoretical and conceptual, looking at the history of environmental governance, how it has emerged as a field of study, its evolution over time, and its continuing relevance. Indonesia is used as a country case to provide some detail regarding these issues. Part II focuses on the role of culture

and society in shaping environmental governance. These chapters illustrate the point that environmental governance cannot be seen as a question of management, amenable to discussion and analysis in isolation from cultural and social context. Part III focuses more explicitly on environmental governance and livelihoods. The final Part IV examines new and emerging forms of environmental governance that tackle issues of historical path dependency, transboundary water governance, and nation building/state formation manifested in political self-determination.

From state territorialisation to grassroots alliances formation

Recent research on environmental governance builds on a range of schools of thought, including new and critical institutionalism (Ostrom, 1990, 2000; Young, 1999; Cleaver, 2002, 2012), critical hydropolitics (Swyngedouw, 2009; Boelens et al., 2016), and critical agrarian studies (Borras and Franco, 2013; Shattuck et al., 2023; Wolford et al., 2024; Vandergeest, 2003; Vandergeest and Peluso, 1990). Despite their different theoretical lenses and methodological approaches, all address the issue of power struggles, conflicts, and contestations between state and society across different scales and geographies. These range from land governance and gender inequity to transboundary water governance and indigenous people's movements. In this book, we investigate the different characteristics of the state, state-citizen relations, and their implications for grassroots alliances.

Rasmussen and Lund (2018) highlight the importance of a bi-focal perspective on territorialisation and frontier dynamics as these reveal the powers at work in the formation of space and its social order of property rights, political subjectivities, and institutional arrangements (Rasmussen and Lund, 2018). Rural society in remote upland areas has become increasingly transformed not only due to territorial strategies but also through market integration and the consequent contact between mainly subsistence-based peasant economies and a growing internationalised market economy (Barney, 2009; Diepart and Sem, 2018; Dressler et al., 2018; Hall et al., 2011; Tsing, 2005; Tappe, 2010). Frontier spaces have mushroomed, and they construct a contact zone – epistemological and political – between civilisation and the wild (Rasmussen and Lund, 2018). Anna Tsing famously described this phenomenon in the Indonesian context of Kalimantan: "A frontier is an edge of space and time: a zone of not yet– not yet mapped, not yet regulated. It is a zone of unmapping: even in its planning, a frontier is imagined as unplanned. Frontiers aren't just discovered at the edge; they are projects in making geographical and temporal experience" (Tsing, 2005: 32).

Connecting the concept of frontier and frontier space with the shaping of state spaces (Brenner et al., 2003), we discuss conceptual developments in the field

of environmental governance research as potential entry points to move from processes of state territorialisation to grassroots alliance formation. Scholars have examined the shaping of state spaces (Brenner et al., 2003) and the politics of scale (Brenner, 1999) in natural resource governance, including how power operates across spatio-temporal scales (Suhardiman et al., 2021b; Hong, 2017; Elden, 2009; Lefebvre, 2009; Massey, 2005). Here, decision-making authority to manage natural resources is not taken for granted but rather viewed as a continuous process of contestation that transcends formal territorial boundaries, responsibilities, and mandates in the light of actors' interests, strategies, and "bundles of powers" (Suhardiman et al., 2019; Ribot and Peluso, 2009). Hoogesteger et al. (2016: 91) describe this process of contestation as "territorial pluralism centered on the interplay of divergent interests in defining, constructing and representing hydrosocial territories."[1] They highlight how territories are disputed from 'within and from the outside' (Boelens et al., 2016) as various actors and institutions engage in territory creation to gain and sustain their formal bureaucratic power, advance their interests, and exercise control over resources. Or, as Boelens et al. (2016: 1) write: "Territorial politics find expression in encounters of diverse actors with divergent spatial and political-geographical interests."

Moving from territorial pluralism (Hoogsteger et al., 2016) to territorialisation from the ground up (Kramp et al., 2022), we argue that grassroots alliances in environmental governance can take shape while relying on existing networks that resist and challenge state territorialisation. Here we link environmental governance with environmental and social justice movements (De Souza et al., 2024; Boelens et al., 2023). Kramp et al. (2022) use the term territorialisation from the ground up to show how different groups of farm households responded to a land use planning initiative in Laos which aimed to demarcate farmers' fields and forest areas. It presents the concept of territorialisation from the ground up as a theoretical framework revealing how grassroots actors harness frontier dynamics while exploiting the incoherence of overlapping state territorialisation attempts. It also brings to light the prevalence of customary land rights and tenure systems, as the latter forms the centrepiece of local communities' strategies to defend their access to and control over land. As Fitzpatrick (1983: 50) writes: "Power is not simply based on prohibition but also on the positive formation of norms and shaping of individuals to these norms." For example, farm households mimic private sector actors' strategy of gaining access to land through rubber planting, allowing them to oppose the state's territorialisation project (Kenney-Lazar et al., 2018). In this book, power struggles shaped by powerful and less powerful actors are illustrated in various ways, in the context of conservation

[1] For more elaborate discussion on hydrosocial territory, see Swyngedouw (2009) and Boelens et al. (2016).

assemblages (Diepart et al., 2025) and expression of 'riverhood' and understanding of river rhythms as a counter narrative to river grabbing (Forigua-Sandoval et al,. 2025). We also see a similar strategy being used in the formation of the Salween Peace Park, which acts as a means to claim indigenous Karen communities' ancestral land and territory (Suhardiman et al., 2025). Hensengerth's (2025) chapter illustrates this strategy within the context of transboundary water governance imprinted in the idea of multi-track diplomacy and rights-based approaches.

Multiple conceptualisations of scales and spaces

The chapters in this volume make clear that matters of scale are important in both the conceptualisation and realisation of environmental governance. Scale matters, for example, when it comes to questions of territory shaping (Massey, 1998; Bourdieu, 1989) and institutional emergence (Cleaver, 2002). Scale is, as Delaney and Leitner (1997: 93) write, "socially constructed rather than ontologically pre-given, and … the geographic scales constructed are themselves implicated in the constitution of social, economic, and political processes." In other words, scale is produced, not least by political processes. And political processes involve the subject positions of political actors, who 'permeate' and 'support' (Lefebvre, 2009: 186) the spatial constructs that designate social interactions.

Building on Swyngedouw's conceptualisation of scale as highly fluid and dynamic (Swyngedouw, 1997), we argue that the scalar politics of environmental governance needs to be sensitive to local communities' and civil society organisations' ability to push back at state territorialisation initiatives. Even in countries like Myanmar, where widespread land grabs, forced displacement and landlessness caused by agribusiness, mining and other large-scale infrastructure developments (Woods, 2018; Boutry et al., 2017) with the connivance of state agencies and under the pretext of national economic development are prevalent (Jones, 2014; Woods, 2011), the formation of the Salween Peace Park demonstrates how local communities and civil society organisations can form strategic alliances and contribute to grassroots state formation (Suhardiman et al., 2025). Such alliances have, moreover, historical antecedents. Bringing to light the importance of temporality in shaping socio-political processes and their complex dynamics, Pierson (2004) highlights the need to place politics – and therefore environmental governance – in temporal context, which means looking at the circumstances under which certain processes emerge and understanding why and how they unfold over time. It highlights the importance of temporality and path dependence, and their roles in the overall shaping of social and political outcomes: "[Path dependence suggests] that what

happened at an earlier point in time will affect the possible outcomes of a sequence of events occurring at a later point" (Sewell, 1996: 262–63).

Building on Lefebvre's theory of the production of space (Lefebvre, 1991; Chung, 2012) and Pierson's conceptualisation of placing politics in time (Pierson, 2004), we argue that space plays an important role not only in shaping local community views on a state's planned development interventions surrounding large-scale infrastructure development, and thus in shaping environmental governance processes and outcomes, but also in determining their bargaining power. The importance of understanding the place of space in shaping decision-making processes in natural resource management has also been brought up by commons scholars looking at the role of local communities in common pool resources management (Agrawal, 2014; Agrawal & Gibson, 1999; Ostrom, 2011). Ostrom (2011) illustrates how unequal access to water and the power asymmetries between upstream and downstream water users in an irrigation system influence the process of rule shaping and proximity for collective action. Similarly, Varughese and Ostrom (2001) show how locational differences of communities within forest areas shape power relations and the rules of the game in forest conservation. Within the context of the Salween Peace Park, close linkages between local knowledge, customary rights systems, and social relations form the foundation for the creation of what have been termed 'hydrosocial territories' (Swyngedouw, 1997; Peluso, 2009). These hydrosocial territories reveal the contours of power relationships surrounding who controls and has access to certain areas in the vicinities of the Salween River, how state spaces are contested, and how these factors then materialise in grassroots state formation. Here, space is being produced socially, culturally, and politically, to convey grassroots views and voices on environmental governance, part of a broader effort to achieve Karen communities' aspirations for political self-determination (Suhardiman et al., 2025).

From path of dependency to decolonising environmental governance research

The politics of knowledge production and the relations between power and knowledge have been discussed and analysed by a variety of scholars (Flyvbjerg, 2001; Foucault, 1994; Haugaard, 2003; Jasanoff, 1990; Latour, 1987). Foucault (1994) and Haugaard (2006) argue that power derives from tacit knowledge and the social order of structures. In line with the general critique of rational choice theory (Wildavsky, 1987), they highlight the issue of value conflicts and power struggles in knowledge production. Or as stated by Bliesemann and Kostic (2017: 6): "ways of knowing and resulting bodies of knowledge are…deeply political." The chapters in this book illustrate some of these power struggles.

In the context of environmental governance, the politics of knowledge production is evidenced from the way swidden agriculture (Diepart et al., 2025) is presented as something negative and undesirable in much mainstream, and especially policy-inflected literatures, leading to a dominant narrative that sees upland farmers as the main culprits of deforestation, land degradation and forest fires. This then identifies upland populations as the root cause of a range of socio-economic and health-related problems, nationally and regionally (World Bank, 2016; Forsyth, 2014; Forsyth and Walker, 2008). In a different context, women engaged in dried fish processing are rendered invisible, outside environmental governance processes, with fish no longer sustaining local communities for livelihood and food but rather being used as direct feed for farmed fish (Cranmer, 2025). More generally, artisanal or small-scale fishers struggle to find a voice in a system that creates environmental policies to support and manage industrial level fishing (Fabinyi et al., 2022).

In the context of forest governance, Forsyth (2019) analyses dominant narratives in forest governance in Thailand, referring to the concept of civic epistemologies. "Civic epistemologies," he writes, "are the preexisting dimensions of political order that the state and other actors seek to maintain as unchallengeable" (Forsyth, 2019: 593). More concretely, Jasanoff (2005: 255) defines civic epistemologies as "the institutionalized practices by which members of a given society test and deploy knowledge claims used as a basis for making collective choices." Dominant narratives are products of civic epistemologies. Hence, dominant narratives are problematic because they often misrepresent the holistic and plural character of nature-society relations (Jasanoff, 2004; Leach and Mearns, 1996; Roe, 1991). This misrepresentation occurs when actors and institutions try to contain these relations within certain predefined storylines rooted in powerful actors' political interests, often neglecting plural views and perspectives that shape multiple realities on the ground. In many countries in Southeast Asia and the Global South more generally, the dominant narrative in environmental governance centres on the need to protect the environment from indigenous farming practices, and in particular rotational farming or swidden agriculture (Peluso and Vandergeest, 2011; Leach, 2008; Laungaramsri, 2005; Leisz, 2017). Here, indigenous peoples are often presented as the problem, a problem rooted in their inherently destructive practices and whose behaviour, actions and outlook need to be corrected as part of a civilising mission. This, despite the intimate relations between fire, land, and forest conservation evident in many indigenous communities' cultural practices and livelihood pathways.

In this book, the shaping of dominant narratives in environmental governance are evidenced in the way technical and managerial approaches to water governance are presented as the foundation for solving past, present, and future

water governance problems in Indonesia (Perkasa et al., 2025) and in the Mekong (Hensengerth, 2025). Similarly, the way conservation is framed to represent certain groups' interests while excluding others, illustrating how such dominant narratives are preserved and reproduced (Diepart et al., 2025).

Global environmental challenges highlight the need to decolonise the way we look at and study environmental governance. For example, environmental governance assumes that environmental harms should be redistributed equitably within society rather than questioning such exploitation (Álvarez & Coolsaet, 2020). Decolonial scholars argue that resource extraction impacts not only the landscape but also the daily relations of impacted communities (Escobar, 2014). We see examples of such challenges woven throughout the book chapters, particularly in terms of how environmental governance logics, which may work at a regional level, can cause short to medium term harm at a local level. Even as grassroots actors and institutions engage in complex adaptation strategies as they navigate their livelihood options across spatio-temporal scales, these strategies hardly make an appearance in environmental governance research agendas, policy discussions, and decision-making processes. In contrast, expert ontologies rooted in systems approaches and technical engineering regimes continue to be the cornerstones of powerful technocratic global environmental governance institutions such as the Inter-governmental Panel of Experts on Climate Change (IPCC) (Swyngedouw, 2007; Scott, 1998). The positioning of science as a source of authority is key in understanding how dominant narratives are sustained and reproduced (Bené, 2005; Benjaminsen, 2009; Cashmore, 2004; Flyvbjerg, 1996; Mehta et al., 2001; Richardson, 2005). As Dickson and Adams (2009: 110) write: "Science is open to appropriation as a source of authority by different parties."

Environmental governance research agendas are framed in line with experts' knowledge and their epistemological frameworks. This dominant framing excludes grassroots, place-based knowledge systems, and how the latter are embedded in diverse characteristics of socio-ecological systems, local institutional arrangements, cultural performances, and local power dynamics. Global environmental governance regimes position technical engineering approaches as more important if not superior vis-á-vis other types of knowledge (e.g., indigenous knowledge, place-based knowledge, knowledge encoded in cultural ceremonies and rituals), rendering some such knowledge as invisible. This positioning is derived from the former's scientific underpinnings and its assumed neutral and universal values. When environmental governance policy formulation and implementation are linked to massive allocation of funding, however, expert knowledge becomes politicised. Here, technical engineering approaches are not only isolated from complex grassroots realities, but they also become tools to acquire, sustain, and reproduce power relations. As expert ontologies serve as tools and technical means to gain

power and preserve the status quo through access to sectoral development funds, they become a language and a mechanism to include and exclude (Li, 2011; Lebel et al., 2011).

Academics and policy makers need to engage in "active life- and world-making practices on the ground where politics is actively negotiated and lived" (Escobar, 2021:17). Moving beyond expert ontologies, this book brings to light several possible trajectories for future research. Firstly, it highlights the need to link past, present and future trajectories of environmental governance. Secondly, it urges the need to broaden the scope and depth of knowledge systems and various forms of knowing as an integral part of environmental governance. And third, it strives for a holistic approach in environmental governance research, to include and connect environmental governance with institutional arrangements, social justice movements, local land-water based practices, and how these are embedded in plural and co-existing knowledge systems and cultural values.

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CHAPTER 2

History of Environmental Governance and Postcolonial Politics: The Indonesian Case

Farabi Fakih & Bambang Purwanto

Abstract

The chapter focuses on the development of environmental governance during the colonial period up to the present. It looks at the political context which has allowed for institutional developments within environmental governance and its limitations in the Indonesian history of environmental protection. It shows that environmental governance emerged as part of the transnational or trans-imperial governance in the early twentieth century. Its development within colonial society was often anti-indigenous and thus, after independence, was seen with suspicion. In the late twentieth century, the embrace of global environmental governance with indigeneity allowed for the repositioning of environmentalism within the Indonesian political context. Environmentalism became localised. In the post-Suharto period, the environment and indigenous movements became entwined with democratisation, decentralisation and increasing participation in the politics of the country. The environmental movement today represents an important component in the fight against receding democracy in Indonesia as a result of changes in government policies on natural resources and large land grabs against indigenous lands as a result.

Keywords: environmental governance, Indonesian history, transnational governance, indigeneity, environmentalism

Introduction

This chapter traces the emergence and development on ideas of environmental governance within the context of the Indonesian experience. As a postcolonial nation state, the Indonesian environmental movement is rooted in the struggle of the Global South (Najam, 2005) while being nationally contextual (Ortiz-de-Mandojana et.al., 2015; Cohen, 2005). With its long colonial legacy of unequal access to land and natural resources, environmental governance touches on issues related to citizenship. It looks at how environmental management started off within the context of colonial alienation of land and resources and its development towards emergent environmental governance implemented by communities to claim access

to these same resources, to how Global South economists and thinkers redefined environmental management from developmentalist to sustainable goals, to position the rights of the citizens of the Global South. We want to place Indonesian actors, ideas, and their effects as a form of appropriating this global discourse from the so-called Northropocene alienation of the Global South (Samuelson, 2020). We look at the use of terminology from within the Indonesian experience, for instance *adat*, as a strategic dialogue to claim authority over environmental knowledge.

The history of environmental thought is often told within a linear, western-centred narrative commencing with Rachel Carson's *Silent Spring* on the dangers of DDT, pollution and consumerism, to the book *Limits to Growth* with its alarming global environmental message up to Paul Crutzen's ideas on the Anthropocene, all of which posit the continuation of western-centred narratives. Yet, these environmental works also bring with them opportunities for voices in the Global South to assert their position. This South-North dialogue is essential in understanding the evolution of the ideas of global environmental governance. The dialogue is also essential in understanding the particularities through which environmental governance were contextualised within national settings. Environmental ideas and environmental modalities are thus intertwined with other issues related to the historical experiences of colonised nations.

Yet, historiography within the Global South often lacked this environmental awareness. This is very apparent, especially in relation to this chapter, within Indonesian historiography. Although the historiography has richly touched on imperialism, colonialism and capitalism, these were discussed almost exclusively in relation to the effects on Indonesian society and issues of poverty, inequality and its effect on post-colonial under-development. Yet, environmental aspects are integral to many of the main discussions within the historiography. We can see this for instance in the agrarian exploitation of Deli in East Sumatra that has been discussed by many (Breman, 1989; Pelzer, 1978; Thee Kian Wie, 1969; Stoler, 1995) or the 'cultivation system' (Elson, 1994; Fasseur, 1986; van Neil, 2022; Knight, 1999). In the wider Outer Islands, Thomas Lindblad and his discussion on Borneo and recently Indonesian Umi Barjiah (Barjiah, 2009 & 2023) on the agricultural system in Banda islands. Mining history such as Thomas Lindblad (1989) and Bambang Purwanto (1997) all point to the need to think about the environment not merely as a backdrop to history, but as a core subject of history in its own right.

Since the 1980s, environmental history in Indonesia has been represented in the work of Peter Boomgaard, later professor of environmental history at the University of Amsterdam, and researchers in the 1990s KITLV project on the environment (EDEN project; another book that celebrates Boomgaard's influence is Henley & Schulte-Nordholt, 2015). There are primarily two aspects in the historiography of Indonesian environmental history that are lacking. The first is the presence of a

bias which talks about environmental degradation primarily happening in the post-colonial period, often forgetting about the colonial period altogether. Second, and related to this first point, the focus on conservation and natural disaster when talking about the colonial period, which often neglects the inherent colonial logic of conservation in connection to such things as native erasure, land seizures and capitalist extraction. Addressing this lacuna will show an ontological development of Indonesian environmental history within Indonesian academia – as a critical voice from the South. The development of environmental history in Jember University (Nawiyanto, 2012) and Universitas Gadjah Mada point to this potential development in the future. This awareness of environmental history was absent in the six-volume textbook Sejarah Nasional Indonesia (Indonesian National History) published in 1975 and the later nine volume *Indonesia Dalam Arus Sejarah* (Indonesia Within the Currents of History) published in 2012. This historiographical gap on Indonesian environmental history though differs from the richness of the history of environmental discourse and ideas of its management within Indonesian history itself. Because Indonesia is at the forefront of imperial penetration and capitalist exploitation of her environment, the environment has always been a politically charged subject and a discourse that is entwined with issues of rights and citizenship. This chapter will explore the historical development and conflict surrounding environmental governance and how the environment is a political subject within Indonesian history. It represents an initial effort to develop a critical political approach to Indonesian environmental history within Indonesian academia and beyond.

Colonial roots of environmental governance

The environmental movement has its roots in the romantic formation of nature in western nationalism in the mid-to-late nineteenth century (Wright, 2019). This changing vision of nature was brought about with the increasing environmental degradation as a result of industrialisation, the opening up of the 'wilderness' and 'jungle' as part of western imperialism and changing ideas of biology and the place of humans due to science (Nash, 2014). Within science, the development of the theory of evolution led to questioning the centrality of humans within the biological order. These developments, along with a series of famous extinction cases in the late-nineteenth century (Diamond, 1989), paved the way for the emergence of a conservation movement based on both a new appreciation of the value of the natural world and a romantic notion of nature linked to modern western identity. The emergence of the Boone and Crocket Club in the United States, the Fauna Preservation Society in England and the *Naturdenkmal* movement in Germany

expressed romantic ideas and values of nature. The *Naturdenkmal* or natural monument movement inspired by the German naturalist Hugo Conwendtz proposed the preservation of natural landscapes as a place for human contemplation, but also as an expression of nationalism, in the same manner as that of the American national park movement (Jepson & Whittaker, 2002).

These conservation movements attracted elite society, which had a long tradition of a hunting culture, alongside government officials and natural scientists. The development of national parks and wildlife reserves was thus merited on both romantic and scientific grounds. By the early twentieth century, there emerged an international consortium of nature conservation organisations that spanned both sides of the Atlantic, but also expanded into the colonial territories. Hugo Conwendtz's lecture in Amsterdam in 1904 gave impetus to the development of the Netherlands Nature Conservation Society in the same year. In 1912, the Netherlands Indies created its own conservation society, the Netherlands Indies Association for the Protection of Nature, under the leadership of the naturalist and government official, FH Koorders (Jepson & Whittaker, 2002). The organisation was small, never exceeding a thousand members. It was also overwhelmingly European, with only a small representation of aristocratic Indonesians as members. Boomgaard regards it as a "branch of the colonial civil service in disguise" as most of its leaders and members hailed from the department of agriculture and the forestry service (Boomgaard, 1999). As such, the Dutch Indies colonial state became the main supporter for the development of natural monuments and nature reserves throughout the colony. Unlike the conservation movement in Europe, which was supported by a wider array of elite society and was successfully popularised within romantic and national notions, the conservation movement in the Netherlands Indies was spearheaded by government or colonial scientists.

Naturalists and scientists had an unusually strong position in the colonial state. The absence of a politically organised civil society and the role of scientists in the development of strategies of imperial/capitalist extraction of the colony meant that ideas regarding nature were ensconced within a scientific/technological logic. The scientists themselves were also part of a larger extractive colonial state which sought to manage the resources of the colony, both societal and natural, to extract profit. Since the take-over of the colony by the Dutch state in the early nineteenth century, various scientific institutions were created. The most famous one, the Buitenzorg Botanical Gardens was created in 1817, a year after the transfer of colonial authority from the British to the Dutch, as a research and development centre to develop bioprospecting strategies and resource management for new colonial industries. Naturalists and scientists working in the government became the main supporter for the conservation movement. Aside from Koorders, luminaries such as J.C. Koningsberger and Melchior Treub, were active in the conservation movement while having managed the botanical garden, which also developed strategies

for colonial biological extraction. People like Koningsberger saw the main threat to Indonesian nature as coming from the Indonesian people (Cribb, 2007).

Historians have regarded conservation as a colonial movement which was either orientalist (Boomgaard, 1999) or was supported by settler colonial ideology (Cribb, 2007). Here, conservation is part of the colonial logic of erasure or the elimination of native presence in the landscape (Lennox & Probyn-Rapsey, 2021). This was reflected within the definition of nature in conservation discourse in the United States and in French and German colonies as an empty place without people (Zaitchik, 2018). Minarchek has noted the relationship between conservation and colonial military occupation through a study on the development of the Leuser nature reserve in Aceh in the 1920s. He argued that conservation here was a form of counter-insurgency in order to control the movement of Acehnese and eliminate potential insurgency by closing off areas that are difficult for state control by using the language and logic of conservancy (Minarchek, 2019). The discourse of conservation was thus, according to many writers, deeply ingrained within the colonial logic of native elimination and was thus part and parcel of the colonial institutionalisation of the land grab.

This relationship between conservation and colonial land tenure and territorialisation is critical, because the environmental damage wrought by capitalist expansion into new territories post 1870 was part of what prompted the rise of the movement in the colony in the first place (Peluso, 2003). Significant capitalist expansion into new, virgin lands occurred after the promulgation of the 1870 Agrarian Law in Java which claimed native land as belonging to the state or domain land. Outside of Java, a series of contracts were held that effectively transferred land ownership to the colonial state. A series of colonial wars occurred starting from the 1860s up to the early twentieth century expanding the colonial control to regions outside of the island of Java, inflicting death and destruction on many native societies and integrating their land within the colonial/capitalist development project. Land was parcelled out to companies and businesses which are determined through the scientific/technological logic of extraction: minerals, biological and so forth. The landscape of the archipelago was thus recreated within an environmental governance that was predicated on colonial extraction.

Colonial nature conservancy never went against colonial environmental governance. Natural conservation was part of the technocratic and technological logic that parceled nature into various forms of land use; with lands deigned as biological or mineral extraction concessions, nature reserves, indigenous customary or *adat* lands and agriculture, and so forth. This technocratic developmentalist logic was perhaps more apparent in the colony, where the conservation movement did not have to attain public support. The privileged position of scientists within the colonial state and corporations allowed them to pursue an environmentalist

movement that, at best, disregarded the perspectives of the native Indonesians, and at worst, were implemented with the notion of their elimination from these spaces.

The colonial state was able to introduce legal and institutional forms of environmental protection through these nature reserves. In 1910, an ordinance to protect certain mammals and birds was introduced, which expanded to protection of the orangutan in 1925 (Cribb, 2007: 151, 259–60). In 1928, a commission for natural reserves was created and by 1932, an ordinance for animal protection and nature reserves was created. By 1940, 17 wildlife sanctuaries had been established and combining that with the already established nature reserves, it totalled some 2.5 million hectares (Jepson & Whittaker, 2002). Yet, these nature reserves and sanctuaries were only a very small part the total land and sea area of the country. More importantly, because the Netherlands Indies Association for the Protection of Nature never gained public appeal, there was limited support within the Indonesian nationalist movement for environmental protection (Boomgaard, 1999, 272–273). The smattering of Indonesian members all hailed from native aristocracy with positions in the colonial civil service. As such colonial conservation gained little traction within the nationalist movement and limited the emergence of an environmental citizenry because it was considered to be a white, colonial project.

Environmentalism after independence

Colonial conservation efforts ended with independence. This was partially the result of the economic downturn and tumultuous political conditions of the 1950s and 1960s, but it was also very much a result of the feelings that conservation was a colonial, and thus anti-indigenous, project. Within such formerly colonial institutions such as the botanical gardens in Bogor, the agricultural departments of Universitas Indonesia in Bogor and the departments, later ministries, of forestry and agriculture, the conservation effort continued out of sheer inertia. This included the formation of an Environmental Protection Institute at the Bogor Botanical Garden and the Environmental Protection Body under the Forestry Service of the Ministry of Agriculture and Agrarian Concerns. Some of the first post-independence articles on environmental protection again came within these small bureaucracies, such as Setjowidiwirjo's issues concerning environmental protection in Indonesia published in 1957 and Partosatmoko's forestry service's work on natural/animal protection published by the service's journal *Rimba Indonesia* (Indonesia's Forests) in 1955 (Nawiyanto, 2015). Yet, these works had a limited effect and little political traction. During the Sukarno period, the conservation effort had failed to spark national interest. It was only later during Suharto's New Order period that the conservation efforts started anew.

On the other hand, natural resource management was to undergo a significant change stemming from the efforts to decolonise the colonial land tenure system. The legal basis for this reconstruction was the Indonesian 1945 Constitution, Article 33, which states that the natural resource wealth contained in the land and seas of the Republic belonged to the Indonesian people. This basis for natural resource ownership had been voiced during the debates on natural resource exploitation in the late nineteenth and early twentieth century, especially in relation to mining and oil concession. The concession system provided the legal guarantee of resource ownership to concession-holders which after independence was considered unconstitutional. Indonesia was to develop a series of legal innovations that would move away from the concession system. These systems theoretically placed ownership of natural resources in the hands of the people with the Indonesian state acting as custodian.

By the early 1960s, a series of new laws on investments and resources was promulgated (Basic Agrarian Law no. 5/1960, Basic Mining Law no. 3/1960 and the Oil Law no. 44/1960), which constituted a new system for the cultivation of land and development of mineral resources. The Forest Law no. 6/1967 proclaimed state ownership of all the forested lands especially outside of Java, a land grab of a staggering 74% of the total land area of the country (Gordon, 1998). State lands (*domein*) which was the primary instrument for dispossession of land during the colonial period was to be given to the people through redistribution. While redistribution efforts failed, as we will see, the Basic Agrarian Law of 1960 would be used by the environmental justice movement in the 1980s and 1990s in their fight for environmental rights of indigenous people.

In 1965, General Suharto took over President Sukarno's revolutionary government. Within historiography, this was considered a turning point for Indonesian natural resource governance because the Suharto regime, with support from the United States of America, reinstituted colonial relations with regard to natural resource extraction. The so-called New Order regime claimed legitimacy from its rational, technocratic approach to development, which was very different from Sukarno's brash revolutionary approach. In the same year as the emergence of the environmental movement in 1968, the New Order began to develop its system of governance based on inviting western investment to develop the nation's natural resources. In the same year, Indonesian technocrats held a conference in Geneva through which the legal framework for investments was discussed with representatives of major western multinational corporations.[1] Also in the same year, the Inter-Governmental Group on Indonesia or IGGI was formed which functioned as

[1] *To aid in rebuilding a nation.* (1967). Proceedings of the Indonesian Investment Conference. Time Inc.

a coordinating body for aiding the development efforts (Posthumus, 1972). World Bank and IMF economists worked alongside Indonesian technocrats in crafting development policies.

By the 1970s, Indonesia had become a prime target for investment in the mining sector, particularly in oil and gas, timber and plantation agriculture such as palm oil. Investment in oil and gas in Indonesia became one of the world's largest and most dynamic, the country became the biggest timber exporter in the world and by the early twenty-first century, Indonesia would become the largest exporter of palm oil and coal. This second period of capitalist extraction dwarfed the environmental destruction of the colonial period (Boomgaard, 2006). Clashes with people in areas of extraction became more significant. State apparatus, especially the military, were often used to enable extraction to the detriment of people living around the area (Barber & Talbot, 2020; Schulze, 2007).

Just as the first capitalist expansion post 1870s became the impetus for the rise of the conservation movement of the late nineteenth and early twentieth century, so this post-colonial second wave of capitalist extraction also resulted in the rise of a new environmental movement. As the rise of the conservation movement was embedded within a larger history of European states' empires, the rise of the new environmental movement was rooted in the emergence of a global governance in the 1970s. Yet, in the West, this history was often described in relation to the environmental tolls of industrialisation and infrastructure development, such as the work of David Brower and the Sierra Club against the Eisenhower Administration's infrastructure development in the 1950s and the criticism against the use of industrial scale chemicals such as DDT in the groundbreaking 1962 book written by Rachel Carson, *Silent Spring*. The politicisation of the environmental movement by the 1970s was partially rooted in the decline of the New Left movement and the emergence of anti-war radical activism in the 1960s. By the early 1970s, the environmental movement had taken on a more radical political approach. This shift was mirrored from the old focus on conservationism towards a more radical ecological approach – which saw the environment as a fragile 'spaceship' and placed human intervention as wholistically crucial (Deese, 2008: 70–75).

This reading places the emergence of an environmental consciousness as rooted in the western experience. Like that of the conservation initiatives, the new environmental movement of the 1970s was composed of middle to upper class Americans and Europeans within the government, business and scientific community. Carson was a biologist and the writers of *Limits to Growth* were scientists and management/business academics working in the West. As Guha pointed out, the spaceship earth ecological movement used Eastern philosophies and imageries but were often at odds with either the developmentalist goals of the Third World or the interests of Third World people (Guha, 2017).

Sovereign claims to natural resources were one of the primary means in creating a post-colonial and decolonised world. Efforts by the South to have a voice in the environmental debate was conducted through the United Nations forums and its associated organisations such as the Club of Rome. In 1967, the Charter of Algiers created a specific Global South caucus in the United Nations, the so-called G77, as a counter to western voices. A year later, the Resolution on the Problems of the Human Environments by the UN General Assembly was held. In 1970, a preparatory committee for the UN Conference on the Human Environment was created in New York. In the same year, the General Assembly put out the Resolution on the International Development Strategy for the Second UN Development Decade.[2] This was a follow up to the 1960 Development Decade which had ended bleakly for the Global South.

Opposition from the Developing Countries to the Stockholm Conference had prompted talks of a boycott of the conference (Najam, 2005). As overtures to the Global South, the UN held four regional seminars in 1971 in Southeast Asia, Africa, Latin America and the Middle East in order to gauge the response of the Global South toward the new environmental regime. This was part of the overtures conducted by the UN prior to the 1972 Conference on the Human Environment held in Stockholm as the first global environmental conference. The Southeast Asian meeting was held by the ECAFE (Economic Commission for Asia and the Far East) in Bangkok in August 1971. The seminar voiced the concerns of Southeast Asian governments that environmental protection regulations were a form of neo-protectionism which would close off Southeast Asian economies from their primary western markets. The seminar supported the study of the effect of environmental regulations on commodity flows and its restrictions.[3] Environmental issues were thus continued to be seen with suspicion especially within the governments of the Global South. In fact, the tenor of the Stockholm Conference would mirror this divide between the Global North and South. The technocrat Emil Salim noted that "developing countries, including Indonesia, thought that the Stockholm conference was only a scheme by the North to impose a new condition, related to aid, on the South. So, we did nothing." (Emil Salim, 2005: xxi–xxii).

Despite hostility from the technocratic class towards environmental issues, the Stockholm Conference did result in legal efforts for environmental protection. In September 1972, the Indonesian Science Council (LIPI) and the National Academy of Sciences (NAS) of the United States of America held one of its first workshops on natural resources with Indonesia in Jakarta. This workshop was headed by

[2] Nicholls, Y. Source book: emergence of proposals for recompensing developing countries for maintaining environmental quality.

[3] Nicholls, Y. Source book.

the geologist J.H. Katili, who himself published a book titled *Natural Resources for National Development* a decade prior. In the introduction to the report, it said that:

> The protection and improvement of the natural environment of land, forest, water, seas, air and wildlife have become necessary and will become more so as population and economic development proceed… Denuded land and forest areas make little contribution to the economy or to the livelihood of the people. Polluted streams and ocean areas are a hazard to the health of the people, to aquatic life, and also constitute an ugly nuisance. Air pollution can already be observed in the large cities where, in addition, lack of adequate planning of land uses for housing, transportation, industries, commercial buildings, and water, sewer, electric power, and communications lines hinders efficient urban development. Numerous environmental quality standards will have to be promulgated and enforced covering water and air pollution, forest cutting practices, ocean dumping, location of urban facilities, handling of solid wastes, etc.[4]

The LIPI-NAS workshop formulation may have affected the Parliament's stipulation in 1973, the year that a national environmental policy was announced in Indonesia (Neilson, 2016). The policy stated that "in the implementation of development, Indonesia's natural resources must be used in a rational manner. Exploitation of natural resources must be such that the human environment must not be damaged" (ref). In 1972, the President decreed the establishment of an interdepartmental committee to draft a working program for environmental development. The Oil and Gas Institute (Lemigas) established an ecological research program. In Jakarta, anti-pollution regulations were issued even in 1971 and an Urban and Environmental Research Center was established by the regional government (Aden, 1974). The creation of a separate Ministry of Forestry in 1974 slowly gathered strength for conservation. In 1980, the state decided to create a series of national parks and a directorate general for nature conservation in the Ministry, and within a decade 19 new conservation parks covering an area of 11.9 million hectares were established – four to five times larger than the ones established during the colonial period (Cribb & Desai, 1998; Neilson, 2016). By the end of the New Order, the state had expanded the conservation area to 10% of the total surface area.

The creation of the Ministry of State for Development Supervision and the Environment in 1978 was the high point of this technocratic approach toward environmental protection and management. The ministry was headed by the technocrat Emil Salim. He was among the few technocrats who actively participated in the emergence of this new global environmental governance. He attended the Stockholm Conference in 1972 heading the Indonesian delegation but was also

[4] National Research Council. *Report on the LIPI-NAS workshop on natural resource.*

present in the Founex seminars in 1971 in which the voices of the Global South were heard as part of the preparation for the conference. He also became part of the Brundtland Commission between 1984 and 1987 and was instrumental in the emergence of sustainable development through which his ideas of the integration of environmental concerns with that of development was shared by many others in the Global South. Fukuda-Parr and Muchala describe him as a 'norm entrepreneur' (Fukuda-Parr & Muchala, 2020: 3). Salim was noted by western conservationists as "the single ray of hope in an otherwise environmentally unenlightened government" (Gordon, 1998).

As an economist, Salim's approach toward environmental issues has always been to calculate the cost-benefit analysis in relation to economic growth and poverty reduction. In the early 1970s, Indonesia was still one of the poorest countries in the world – poverty reduction remained the most important goal for the technocratic establishment. His position as Minister of State for Development Supervision and the Environment has provided him with a platform to stress the need to incorporate environmental concerns with development and poverty reduction. In his 1982 address to the Second World Conservation Lecture held by the World Wildlife Fund in London, he said: "We are convinced that in the end development and conservation share the same objectives, namely the wisest possible management of natural resources in order to achieve the highest possible quality of life for man" (Emil Salim, 1982: 111). Just like the aid for economic development, Salim envisioned western aid as central to the conservation process (Emil Salim, 1983).

This developmentalist and legalistic approach to environmental policies would eventually be carried out by Salim in his context as the Minister of the Environment between 1978 until 1983. Despite holding no formal portfolio and granted a limited number of staff for policy making and no authority to enforce their policies, the ministry became a leader among developing countries in introducing environmental regulations. In 1982, it promulgated the Environmental Management Act (EMA) – which had been drafted in 1976 and became the basis for the Indonesian Environmental Impact Assessment (AMDAL). This was perhaps one of the biggest breakthroughs by Salim in connection with the institutionalisation of environmental protection in Indonesia. Throughout the 1980s and 1990s, the ministry published regulations on environmental impact assessment (1986), environmental quality standards (1988), regulations on water pollution prevention (1990) and on hazardous waste (1994) (Bedner, 2008: 171).

This institutionalised legal framework, while criticised as having limited effectiveness in its enforcement, was crucial in another respect. The presence of this legal framework allowed for civil society organisations, especially those within the environmental movement, to challenge companies and the state legally in court. This avenue of redress, while primarily focused on environmental issues, had the

potential and, in fact, was used, to redress various issues concerning human rights, social justice and the other aspects that were violated during Suharto's New Order dictatorship.

Indonesian environmental justice movement

The emergence of the modern environmental movement in Indonesia developed into a social justice movement. It had little connection to the earlier colonially rooted conservationist movement. Instead, it emerged through the legal structure that was part of the overtures of the technocracy toward the environmentally friendly development process. As the first Minister of Development Supervision and the Environment in 1978, Salim headed a ministry that was underfunded and lacked enforcement capabilities. Enforcement would be conducted through what Peluso, Affif and Rachman called a 'discourse coalition', involving civil society elements (Peluso, Affif & Rachman, 2008). Thus, the environmental movement provided a space from which a stronger, more politically oriented civil society emerged in Indonesia.

The ministry, from 1978, held meetings involving various civil society organisations that were deemed apolitical by the regime. These community engagements were partly the result of the lack of enforcement capabilities given to the ministry. In 1980, the first national environmental meeting was held involving 130 people from 78 organisations. This meeting was monumental for the modern environmental movement in Indonesia because it resulted in the formation of the first and largest consortium of environmental organisations, named the Wahana Lingkungan Hidup (Walhi), which could be translated directly as Environmental Vehicle, emphasising its non-political nature. The meeting was attended by various people from professional bodies, hobby groups, nature enthusiasts, religious groups, students, journalists and others. Ten NGOs were selected to head a new environmental consortium that was explicitly non-political and created to help the government in dealing with environmental issues. The head of the Walhi was a person with personal ties to the New Order's Golkar Party, again emphasising its support for the developmental goals of the regime. The ten organisations included the association of Indonesian landscape architects, the Indonesian Bird Association, the Biology Science Club, the Association for Environmental Sustainability, the Plant Lovers Association and so forth (walhi.or.id).

In the United States, while the emergence of the environmental movement from the 1960s was radical, it focused on what might be considered as white, middle-class concerns such as species protection and the pollution issue. The linkages between the environmental movement and the civil rights movement in the 1960s onwards

became the basis for the environmental justice movement as it emerged in the late 1970s and 1980s. The initial rejection of American black activists in support of what they considered to be a white, middle-class movement changed in the 1970s and 1980s because of a series of environmental scandals that affected black communities. The rise of the Not in My Backyard (NIMBY) movement and discussion on environmental racism began to take centre stage by the 1980s (McGurty, 1997). Following on from the American historical experience, the environmental justice movement inevitably developed as environmental racism (Bullard, 1993). This revolutionary aspect of the environmental movement became visible when minorities or people from the peripheries took on and transformed the movement.

As with the criticism levelled by Global South technocrats during the formation of a global, but western-oriented environmental management in the 1970s, the Global South also criticised the emergent radical green ideology developed in the West, such as the Deep Ecology movement. Despite their distrust of capitalism, according to critics like Ranajit Guha, they failed to address the issues of development and poverty. Guha's criticism of western environmentalism's biocentric versus anthropocentric focus and the continuation of conservationist ideas of pristine nature, absent of human beings, was part of the broader response and general ambivalence from the Third World. Instead, within the Global South, there emerged different kinds of modalities that intersect the environment and the anthropocentric positionalities within global capitalism. The environmental movement became entwined with larger issues of human rights, state accountability and criticisms of capitalist or state extraction. In the Global South, publicised cases of environmental destruction related to development projects, such as the building of Sardar Sarovar dam or major industrial catastrophes like the Union Carbide's Bhopal disaster, both in India and resulting in the deaths of thousands, spurred a more militant, politically and socially conscious environmental movement that came from below (Sutradhar, 2017; Shah, 2010).

Politicisation of the environmental issues in Indonesia became apparent by the late 1980s with the advocacy and local organising attempts by Walhi of two major landmark cases. The first was the Kedung Ombo dam project in Central Java, which involved the relocation of 15,000 peasant families. Walhi working together with international environmental and non-environmental NGOs were able to push the World Bank, the main financier of the project, to re-evaluate the project. The second was the pollution case of PT Indorayon Inti Utama, a pulp and rayon factory operating in North Sumatra province and backed by President Suharto's eldest son. The case was brought to a Sumatran court and while it was dismissed by the court, it was important for two reasons. The first was that the organisation of the local Toba Batak community of Porsea showed that environmental issues allowed communities to become political subjects. The second was that environmental protection can

be legally fought by organisations or people that aren't direct victims. This expands the legal capacity of NGOs in both environmental, but also social issues as well. The courts not only became a space of resistance, but also avenues to articulate new visions in the relationship between society and the environment (Wardhana, 2023).

Social justice in Indonesia is entwined with issues regarding resource extraction. The Walhi consortium birthed several important organisations that focused on social justice in relation to resource extraction; the Skephi (*Sekretariat Kerjasama Pelestarian Hutan Indonesia*/Indonesian Forest Preservation Coalition Secretariate) which investigates the timber industry and deforestation, Krapp (*Kelompok Relawan Anti-Penyalahgunaan* Pestisida/Anti-misuse of Pesticides Volunteer Group) on pesticide and Jatam (*Jaringan Advokasi Tambang*/Mining Advocacy Network) on mining issues. In the 1970s and 1980s, the extraction of oil and gas and, more importantly, lumber for palm oil concessions had resulted in both environmental degradation and social frictions. These operations significantly affected the livelihoods of millions of people. They were primarily, though not exclusively, on the islands outside of Java. By the late 1980s, Indonesia had become the largest exporter of lumber providing 70% of total global plywood supply. Forestry concessions were thus tied to issues of agrarian or land rights issues (Gordon, 1998). Thus, the environmental justice movement breathed new life into the agrarian issue, which had been silenced since the 1965 destruction of Indonesia's communist and leftist movement.

Walhi worked with Indonesia's legal NGO network to institutionalise environmental protection. This legal basis for environmental protection did not come from the efforts of environmental activists, rather was the result of the developmentalist approach undertaken by the New Order state, through the efforts of the Ministry of the Environment. This prescient legal structure for environmental protection lacked an enforcement capacity but provided a legal basis for court actions by environmental NGOs. Through a series of important court cases in the early 1990s, legal precedents concerning the rights of NGOs or the community to take the government or companies to court on behalf of the environment were established (Wardhana, 2023). This establishment of communities as environmental actors allowed for political actions to be taken to protect the environment. It also allowed transnational political actions to be made on behalf of the communities and environment involved, for instance through international NGO networks that cooperated to change the minds of the World Bank in the case of the Kedung Ombo dam. As such, the legal basis for environmental action was opened up within a military dictatorship that forbade politicisation of society. Environmental management became entwined with the question of being a citizen.

Indigeneity and the limits of environmental governance in the twenty-first century

Engagement between the environmental movement and the indigenous movement allowed for a shift in the environmental debates towards broader issues. In Indonesia, Walhi in their litigation against PT Indorayon Inti Utama, organised the Porsea Toba Batak community and brought it as an *adat* case in court. The litigation was brought forth by ten women who argued that the company secretly transferred ancestral lands through forged signatures.[5] This traditional, community claim based on ethnic identity was politically safer in comparison to identities associated with peasant, labour, or the 'people' (*rakyat*) on universal land rights claims with their leftist connotations. A global indigenous movement emerged during the same tumultuous decade of the 1970s, with the creation in the UN of the World Council on Indigenous Peoples in 1975. This was followed by the UN Group on Indigenous Population in 1982. In 1993, following the 1992 Rio de Janeiro Earth Summit which linked human rights to environmental rights (Grant, 2018), the International Year of the Indigenous People was announced. In 1995, the UN proclaimed the International Decade of the Indigenous People, which was extended in 2005 (Henley & Davidson, 2008). The merger of indigeneity and the environmental movement had become institutionalised throughout the 1990s.

The indigenous movement were seen as a potential mode of activism. The environmental cases of the late 1980s illustrated that linking environmental protection and community organisation allowed people to argue for their right to traditional lands. In 1993 Walhi organised a conference of indigenous leaders in Tana Toraja, South Sulawesi, which resulted in the creation of Indonesia's indigenous movement and the formation of an indigenous people's advocacy network (Japhama) and the adoption of the term *adat* or communal communities (*masyarakat adat*) in describing indigenous Indonesian communities. Adat communities adhered to the definition of tribal as ascribed in the ILO 169 Convention, which defined indigenous and tribal communities globally (Henley & Davidson, 2008).

Adat was a legal category that had its roots in the colonial legal classification developed in the early twentieth century. The adat legal category was upheld in the Indonesian postcolonial state and was the basis for the New Order's corporatist ideology (Warren & McCarthy, 2012). In the Indonesian constitution, the term *volksgemeenschappen* or adat/traditional communities was used as well (Moniaga, 2007). While this was suppressed during the New Order through a series of legal impositions, for instance on the village, it still had constitutional validity. The linkage between the indigenous and adat community was thus a strategic choice. The

[5] Country Report prepared by Walhi (The Indonesian Environmental Forum) 49–52.

Indonesian state had refused to acknowledge a separate category for indigenous groups because it considered all Indonesians to be indigenous to the land. The Department of Social Affairs used the term isolated communities (*masyarakat terasing*) to denote indigenous communities. This continued the developmentalist frame of reference by reducing their sovereignty merely as recipients of the government's civilising assistance.

With these civil society developments in the 1990s, the collapse of the New Order in 1998 and the subsequent democratisation of Indonesian society saw the biggest shift in environmental governance. One major reason is the delegitimation of the developmentalist ideology. In its place, a neoliberal, good governance ideology that emphasised decentralisation, continued deregulation and democratisation. Within this new landscape, NGOs played an important role. In 1999, the first congress of the indigenous peoples of the archipelago was held which formed the Indigenous People's Alliance of the Archipelago (Aliansi Masyarakat Adat Nusantara or AMAN). AMAN would play a major role in what has been termed Adat revivalism in Indonesia (Henley & Davidson, 2008). One of its most successful lobbying efforts, alongside other environmental NGOs, was through the Parliamentary Decree no. 9 published in 2001 which stipulated the relationship between environmental degradation and agrarian/natural resource conflict, the overlapping and contradictory conditions of existing laws and regulations concerning agrarian/natural resource management and the need to develop environmentally and adat friendly management of resources (Moniaga, 2007).

By 1998, Paul Crutzen's idea of the Anthropocene had been introduced (Crutzen, 2002). By the 2000s, the looming climate change crisis had pushed forth a neoliberal approach to global environmental management, which included ideas of the carbon tax market (Andrew, Kaidonis & Andres, 2010). Indonesia has one of the worst carbon footprints and is the third largest emitter of greenhouse gases (Atkinson, 2014). With the carbon market, there was an economic incentive for the implementation of environmental governance reforms. Indonesia's extractive industries, such as timber, palm oil and its mining sectors were the major culprits. The transboundary haze issues in 1997/1998, 2005 and the latest one in 2018 led to neighbouring countries to pressure the Indonesian government to implement measures to protect the environment (Atkinson, 2014). This was particularly apparent in the marine, forest and peatland and mining sectors. One of the major issues in the post-New Order period has been a lack of enforcement on protection. During and after the fall of Suharto, people started exploiting resources in nature reserves. Individuals and companies illegally exploited natural resources often with tacit or direct cooperation from local governments and the security apparatus. Efforts by the government were thus aimed primarily at reducing illegal extraction and expanding *adat* participation in environmental management.

In the marine sector, efforts were made to create an inclusive environment that would support Adat or indigenous marine management. In 2004, an amendment to the fishery law confirmed rights of small-scale fishers to fish in Indonesian EEZ, as part of democratising natural resource extraction. This was followed with the creation of no-take zones for marine protection and granting authority to local government to manage onshore fisheries (Tomsa & Bax, 2023). In the forest and peatland sector, the government instituted a timber legal certification (legal wood) in 2003 in order to reduce illegal logging. Protected forests were also expanded. In 2007, Kalimantan Forest and Climate Partnership was supported with Australian aid to protect forests and peatlands in South Kalimantan. The Indonesian Sustainable Palm Oil certification was created in 2011 in cooperation with the European Union. The timber legal verification system, which was made mandatory for the sale of timber in 2010, was enhanced with the EU Forest Law Enforcement Governance and Trade agreement in 2013 (Berenschot et.al., 2023).

Perhaps one of the biggest efforts for environmental governance was the REDD+ (Reducing Emission from Deforestation and Forest Degradation) program. The REDD was a pact in which the Norwegian government offered a one-billion-dollar payment to Indonesia to protect its forests. The program started under the Yudhoyono presidency (2004–2014) in 2011 with a moratorium on new land conversion permits. In 2012, the REDD+ National Strategy was initiated under the economist and former New Order technocrat Kuntoro Mangkusubroto. Under this strategy was an Action Plan, a National Business Plan, a Provincial Action Plan and a Regional Action Plan. The plan included the development of spatial planning, restructuring of land-use and property rights, improvement of permit issuance system, resolution of conflicts and other field technical issues and law enforcement. It supported certainty of land tenure, including those for indigenous communities and the harmonisation and revision of natural resource management regulations and policies. The goal was to turn Indonesian forests from carbon emitters to carbon sinks and create an economy based on sustainable natural resource management with the consent and participation of local and indigenous communities (Indonesian, R. E. D. D., & Task Force, 2012).

These major institutional developments in natural resource management were crafted by technocrats under the good governance ideology and involving a variety of stakeholders including NGOs and adat communities. They were also supported by donors and foreign governments like the European Union. Yet, the results have been paltry for several reasons. On the one hand, government commitment towards environmental protection has waned during the Joko Widodo Presidency (2014–2024), who has implemented developmentalist goals through infrastructure investments and resource nationalism. This is particularly apparent in the mining sector as Widodo implemented export restrictions to push forth industrialisation of

mineral products in the country (Warburton, 2018). A series of regulations during Widodo's presidency has also weakened the legal framework for environmental protection. This included the Jobs Creation or Omnibus Law, which basically rescinded the need to conduct environmental due diligence in connection to adat communities, and the Information Technology Law which limits free speech (Tomsa & Bax, 2023), Jokowi's populist and nationalist narrative has widespread support from voters, which means that these developments will continue.

Adat revivalism and the democratisation of environmental management through community participation was seen as a good strategy both for the strengthening of civil society and environmental protection during the late New Order period. Yet, its limitation was apparent even then. Tania Li has criticised how arguments for indigenous revivalism were used for othering and perpetrating violence against other communities during the violent years of the fall of the New Order (Li, 2001). Many communities had no problem participating in the extraction of resources, as was apparent in many nature reserves in the years following the fall of the New Order (Jepson & Whittaker, 2002). The role of technocrats like Emil Salim and Kuntoro Mangkusubroto point to the value of centralised government and while the New Order developmentalism led to large-scale environmental destruction, democratisation has, in some ways, made it worse and not better. Indonesia's patron-client political system may make forest preservation programs such as the REDD less amenable due to corruption at the national and local levels.

Ward Berenschot and colleagues point out that the main culprit for the weakness of environmental governance should be seen in the informalities of Indonesia's political economy, i.e., in the way in which Indonesia's natural resource extraction was made possible since the colonial period through corruption and collusion (Berenschot et.al., 2023). The weakening of the anti-corruption agency (KPK) during the Widodo presidency points to instrumentality of this political economy. The Reformation era's promise of good governance through participation and adat community as a reimagining of an environmental citizenry has almost reached its failed conclusion. Whether the current environmental movement can reimagine a new approach to environmental citizenry is uncertain. Globally, the democratic deficit trajectory points to the potential difficulty in achieving successful environmental management. Other non-democratic alternatives, for instance the technological approach offered by China or Singapore, may be winning (Tomsa & Bax, 2023).

A non-democratic alternative would be a major change in the history of the Indonesian environmental movement. The idea of environmental citizenry and the position of Indonesians as environmental subjects is something that has been hard-won. From an environmentalism that promoted colonial ideas that was anti-indigenous towards an environmental governance that was based on the

consent and cooperation of Adat communities, the movement has come a long way. The role a democratic environmental subject can play in the reduction and elimination of corruption becomes pertinent. The movement's ability to offer solutions, as had been the case during the New Order period, will determine the extent to which it maintains its relevance in the coming climate crisis.

Conclusion

Environmental governance is a complex issue that moves beyond the question of institutions and law enforcement. The push for environmental governance and protection in the Indonesian case occurred in periods where there was significant expansion of capitalist extraction, whether during the early twentieth century, the 1970s or the present period. It occurred through the organisation of people within movements and oftentimes with patronage protection in government institutions. Yet, it was also decidedly determined by strategies relating to identity. Environmental governance is related to the idea of environmental citizenship. In the Indonesian case, the gradual expansion of environmental citizens from European during the colonial period towards the indigenous and Adat communities in the late 20th and early 21st centuries point to the intimate relationship between democratic participation and environmental protection. Recently, democratic regression and the failure of institutionalised protection for the environment highlights the importance of investigating patron-client forms of Indonesian political-economy and corruption and collusion. Considering the perceived success of authoritarian environmentalism such as the case in China and the appeal to look back at the role technocrats played in the movement, in both the colonial and post-colonial period, there is a fear that the movement may be separated from its democratic aspirations. Yet, through reading the history of the Indonesian environmental movement, participation remains an important component.

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CHAPTER 3

Where Does the Boundary Fall? Conservation Assemblages and Their Discontents in a Protected Area, Northern Cambodia

Jean-Christophe Diepart, Tim Frewer and Natalia Scurrah

Abstract

The chapter examines the ins and outs of a protected area zonation undertaken by the Ministry of Environment and a large conservation organisation in Northern Cambodia. On paper, the approach was innovative as it aimed to promote an inclusive form of forest management where customary land and resource tenure are recognised and formalised. We used an analytic of assemblage to look critically at the initiative and ask who benefits and loses out in these processes. We examine two distinct assemblages existing within the same forest landscape but which are constituted by radically different components. The first is comprised of state agencies and a conservation organisation that undertook the protected area zonation, which are the central pillars of a larger conservation assemblage. The other is forged by largely autonomous Kuy communities that assembled to protect their forests from outside interests and which have a very different perspective of what constitutes the forest, its uses and values, its more-than-human dimensions, and approaches to conservation. We examine how and why the conservation assemblage goals to conduct a more inclusive zonation process were not realised in practice, despite the good intentions of individuals involved and significant resources deployed. In particular, we draw attention to the question of people's participation and the narrow scope of what was up for discussion; processes of simplification at play that failed to grasp the complexity of people's livelihoods and use of forests; and the subsuming of political claims over forests into technical problems to be fixed, which served to reinforce the knowledge and authority of the Ministry of Environment. It resulted in a process of exclusion of the people it was supposed to benefit, caused by the combined exercise of distinct forms of power that speak to different sets of actors, agendas, and socio-political contingencies.

Keywords: customary tenure, assemblage theory, Cambodia, protected area management, Indigenous Peoples

Introduction

In July 2023, running up to the national elections, the government of Cambodia issued a series of sub-decrees formally incorporating 0.7 million hectares of land previously classified as Biodiversity Conservation Corridors into the Protected Area (PA) system (Khuon, 2023a). These biodiversity corridors were already controversial as they overlapped with the homes, farmlands and forests of Indigenous people and Khmer smallholders. The sub-decrees were also released without any consultation with local communities living, foraging, and farming in these corridors and who felt at risk of losing access rights and tenure to farmlands and ancestral territories.

This episode illustrates how conservation projects can exclude or drastically limit access and management rights of Indigenous people to their forested territories. In Cambodia, the protected area system itself is an assemblage of ideas and practices that have been fought over and contested; some of which could be categorised as fortress conservation and others which are more livelihood and community orientated.

The Cambodian government, and specifically the Ministry of Environment, have explained the latest re-writing of the country's PA boundaries as a necessary legal action taken to contain deforestation driven by large-scale and small-scale agricultural expansion (Ehrensperger et al., 2024; Pauly et al., 2022) and selective logging (Langner et al., 2020). But two tensions lie at its core. First, the government is also the main facilitator of Cambodia's forest enclosures through its promotion of land-based investments, large- and small-scale agricultural development, and its vested interests in and support for elite-driven logging and resource exploitation (Milne et al., 2023; Work et al., 2022). Second, recent legislation and policies have opened some space for seemingly more inclusive forms of forest management where customary land and resource tenure are recognised and formalised through mechanisms such as forest co-management, Indigenous collective land titling, and the zonation of protected areas that set aside areas for community use. While these mechanisms are mainly imposed on communities (Diepart et al., 2023), they have gained traction amongst international conservation organisations working on protected area reform. Many smaller nongovernmental organisations (NGOs) also support communities to engage with these mechanisms because they see them as the main channels that can potentially offer some level of state recognition and thus security over their farmlands and forest resources (Diepart et al., 2023).

With these tensions in mind, we raise two questions. The first concerns the practical and policy dimensions. To what extent can state-led processes to designate communities' rights over forest areas be more inclusive and people-centred? In other words, can state-led interventions and programs be assembled so that the full range of land and resources communities use, access, and manage under

customary arrangements be codified in new protected area reform? The second question pertains to politics; who benefits and loses out in these processes; whose claims to forest management and access are sidelined and whose are legitimised; and what processes, power relations and tensions shape these outcomes? These two questions are not necessarily in harmony; they speak to different agendas, audiences, perspectives, and even ontologies. Yet both are important to illuminate how and why state-led efforts to improve the governance of PAs – even seemingly progressive interventions that try to include communities – often fail to deliver on their promises and give rise to critiques and challenges.

We use an analytic of assemblages to look into these difficult questions. We trace the actors, relations and material resources that were assembled around an initiative that uses participatory resource mapping to inform the zonation of the Chhaeb-Preah Roka Wildlife Sanctuary in Northern Cambodia. By working with local communities to document their customary use of resources and livelihood practices, the proponents of the intervention – Wildlife Conservation Society (WCS) staff and Ministry of Environment (MoE) officials – sought to improve PA management through greater inclusivity (Diepart & Oeur, 2023). We argue that the protected area zonation process opened up some formal space for participation that did not exist before. This resulted in the production of a map where zoning boundaries take into account people's customary use of resources for their livelihoods. However, this attempt at spatial reorganisation of the protected area ultimately failed to deliver on its promises as it never materialised beyond the production of a map. Moreover, the process undermined the conservation and livelihood work of a pre-existing community-based network. This is due to various exclusion mechanisms before, during, and after the zonation process that limited the space for legitimate debate needed to challenge the status quo. Instead of moving towards greater inclusivity, the zonation process has brought land and resources under the state's sovereign control in ways that limit people's autonomy and agency in managing the forest.

Framing the argument

Our assemblage approach places emphasis on the complex relations that are formed between heterogenous entities trying to retain control and autonomy over this forest area, and examines why and how spatial orderings often result in disappointing or contradictory outcomes as they come into contact with the messiness of the world. As noted by Müller (2015: 27), assemblages are useful to understand "why orders emerge in particular ways, how they hold together, how they reach across or mould space, and how they fall apart." Inevitably, then, an assemblage approach draws attention to the interlinkages between power, politics and space.

There are several aspects to assemblages which we summarise here (DeLanda, 2016; Deleuze & Guattari, 1987; Müller, 2015). First, assemblages are relational as they are arrangements of different entities linked together to form a new whole. In DeLanda's terms, assemblages are greater than the sum of their parts. Assemblages are hence also productive; they shape discourses, policy, behaviour, and produce new territorial and institutional arrangements in ways that go beyond the stated intentions of any one single actor within the assemblage.

Second, assemblages establish territories as they emerge and hold together but they also constantly transform and break up. Deleuze and Guattari (1987) refer to this dynamic as territorialisation and de-territorialisation. A highly territorialised assemblage is one in which the relations between component parts are determined within certain bounds and reproduced according to a certain model or "code." A de-territorialising assemblage is one in which the component parts are in relations that are being stretched, broken and morphed to such a degree that the assemblage is being transformed or even destroyed. Finally, re-territorialisation occurs when a new assemblage is reconstituted by bringing together components from one assemblage into new codified relations that form a new assemblage. The protected area zonation process can be an example of re-territorialisation as it builds on pre-existing forest tenure arrangements and past experiences or failed efforts to territorialise the forest landscape. It tries to segment forests and the people that use them into highly codified abstract categories managed strictly by the state.

Third, assemblages are anything but smooth or linear processes. They are subject to exclusion mechanisms, particularly those Hall et al. (2011) call ambient exclusions as they relate to the expansion and intensification of nature conservation efforts. To elicit how power dynamics shape assemblages, we draw on the framework developed by Tania M. Li (2007a, 2007b). We look at how alignments are forged between a polymorphic body of actors who have distinct interests in protected area zonation and management. We also examine the technical design of the process and the simplifications that are introduced to manage the complexities of documenting customary uses of land and forest resources with the purpose of integrating conservation and livelihood objectives. We discuss how particular forms of knowledge are authorised and integrated into the process (or not) to manage contestations.

This overall framing leads us to envisage two very different assemblages that operate within the same Chhaeb-Preah Roka forest landscape. One is comprised of state agencies and conservation organisations which are the central pillars of a much larger conservation assemblage. Also included are forest-dependent people and community forest management groups who are the main targets of conservation-driven interventions, as well as the maps and mapping technologies, plans, documents, environmental discourses and rationalities that give order and

conviction to their projects. They are brought together in a specific conjuncture, namely the inventory and mapping of customary uses of resources to inform the delineation of management zones within the protected area. The other assemblage is the Prey Preah Roka Community Forestry Network (PPRCFN). It is comprised of various active members of the network and their families and friends who make use of forestlands; forest spirits who are central to conservation initiatives for local villagers; and the forest itself. The two assemblages are constituted by radically different components – one governmental in nature, the other forged by the largely autonomous Kuy communities. Each has different perspective of what constitutes the forest, its uses and values, its more-than-human dimensions, and approaches to conservation.

Method and research process

The conservation assemblage discussed in this chapter is part of a larger study conducted by the first author for the Mekong Region Land Governance project (MRLG) (Diepart & Oeur, 2023). In Cambodia, MRLG supports an alliance of organisations that have explored how the documentation of customary tenure can contribute to the recognition of land rights of forest-dependent smallholders and PA management. This chapter draws on material relevant to an intervention supported by MRLG to document customary tenure to inform PA zonation in Chhaeb-Preah Roka Wildlife Sanctuary, Preah Vihear province, Northern Cambodia. Fieldwork was conducted in June 2022 and consisted of short site visits, focus group discussions, and in-depth interviews with key stakeholders in three villages (Dong Phlet, Narong and Kham Keut, see Figure 3.1). This was complemented by a review of legal and project documents and a spatial data analysis to compare the results of the resources mapping with the draft zonation. A total of 11 interviews were conducted involving 35 respondents: project proponents (n=3), resource user groups (n=20), MoE officials (n=3), territorial authorities (n=7) and local NGOs (n=2).

This study was then discussed with the second author who has a long-term engagement with communities located in the area southwest of the Chhaeb-Preah Roka Wildlife Sanctuary, and particularly with members of the Prey Preah Roka Community Forest Network. This shed light on deeper stories that shape the lives of people in the Preah Roka-Chhaeb forest, and importantly, revealed that PPRCFN members had been purposefully marginalised from the MoE/WCS-led protected area zonation process. Subsequently, we conducted a follow-up visit to the area and exchanged with WCS staff to get updates on the status of the PA zonation process. The chapter is an outcome of these intertwined fieldwork experiences and dialogues.

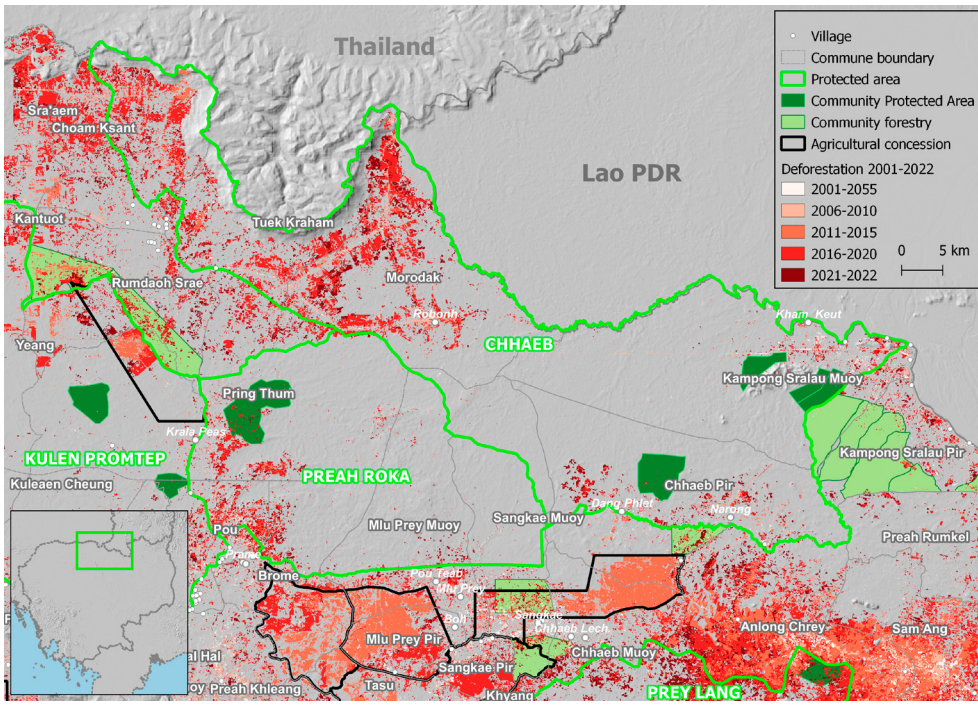

Figure 3.1: The Chhaeb-Preah Roka Wildlife Sanctuary in Northern Cambodia. Note: The conservation assemblage covers both Chhaeb and Preah Roka wildlife sanctuaries, while the second assemblage includes forest resources that are part of the Preah Roka wildlife sanctuary

The Chhaeb-Preah Roka Wildlife Sanctuary was previously two distinct wildlife sanctuaries (Chhaeb and Preah Roka) but were merged into a single wildlife sanctuary in 2023. It is located at the border with Laos and Thailand and is home to Indigenous Kuy, Khmer smallholder farmers and migrants from other parts of the country (all living inside, near, or outside the protected area), as well as important wildlife species (elephants, deer, gaur, sarus crane, vultures, and the giant ibis). The forest provides non-timber forest products that are significant to local livelihoods (particularly resin trees) and also offers opportunities for ecotourism development. Deforestation occurs within and outside the protected area (see Figure 3.1). The Northwestern part was designated as a Social Land Concession area for families of demobilised soldiers. The western part is notorious for illegal logging as reported by community patrols and Global Forest Watch deforestation alerts (Flynn et al., 2023). In the south, Economic Land Concessions were granted in 2011 to Chinese companies for the production of sugarcane covering a total area of 42,422 hectares.

An institutional background to the zonation of protected areas in Cambodia

Since its creation in 1993, the protected area system of Cambodia has territorially expanded and with it the jurisdictional power of the MoE. Originally, responsibility for managing forests with a protection status was shared between MoE and the Forestry Administration. But in 2016, a sub-decree abolished this dual responsibility and more forestland was placed into PAs under an MoE mandate (RGC, 2016). In 2017, in an attempt to enhance connectivity between protected areas, so-called biodiversity conservation corridors covering a total of 1.4 million ha were established (RGC, 2017). As noted at the start of the chapter, the government went one step further in 2023 and reclassified many of these corridors, formally incorporating them into protected areas (Khuon, 2023b). As a result, the terrestrial PA system now includes 6.9 million ha equivalent to 38% of the national landmass. This expansion is best understood in the context of the country's commitment to carbon neutrality by 2050 (RGC, 2021), which supposes the expansion of forest cover to 60% of national territory (RGC, 2023). This pledge is highly ambitious considering the country's rate of deforestation, which has been steadily high for the last two decades despite the rapid expansion of the PA system in the country (Ehrensperger et al., 2024; Pauly et al., 2022).

To regulate the multifunctionality of protected areas, the Law on Protected Areas (RGC, 2008) stipulates that each PA be structured into four spatial zones, each with specific regulations attached.

The core zone is an area containing biodiversity, natural resources, ecosystems, and genetic resources of high value for scientific research and for sustaining the environment. Access to the core zone is prohibited except for officials and researchers with prior permission from MoE. The conservation zone is adjacent to the core zone to which limited access is allowed for local communities to use resources following the appropriate circular issued by MoE. The sustainable use zone is an area where some livelihood activities are permitted and it is possible to build infrastructure, under restrictions and authorisations from MoE. The law stipulates the possibility of an agreement to be signed between MoE and local communities to give them rights to manage so-called Community Protected Areas for 15 years (renewable) for non-timber forest product collection and non-commercial timber exploitation. The community zone is the area for the socio-economic development of local communities. It may contain residential land, rice fields, and other crop fields (*chamcar*). The issuing of land titles is possible for these areas but requires authorisation from MoE following the Land Law. While the Protected Area Law specifically mentions that Indigenous Peoples' rights should be protected, reference to Indigenous People was subsequently removed from the Environment and Natural Resources Code adopted in 2023.

Technical guidelines on how the zonation should be conducted in PAs in Cambodia were only released in 2017 (GDANCP, 2017). The main criteria specified

in the document are ecological as they concern issues of size, ecotone, connectivity, or habitat suitability. It also includes consideration for local communities legally settled within PAs whose traditional rights to use resources "shall be taken into account during the zonation process." There is no prescription, however, as to how consultation should take place nor is any mechanism provided to ensure local livelihoods and customary claims to land and resources are "taken into account." Local communities are merely considered as a social group to be managed rather than allies for nature conservation.

The prominence of the state in PA management is also reflected in the tenure arrangements being recognised and promoted. Under support from large conservation organisations, the MoE has tended to block communal titling within PAs preferring the much more limited Community Protected Areas (CPA) which the ministry retains jurisdiction over. Collective tenure of forest resources is currently limited to CPA agreements covering 0.3 million ha (MoE, 2021). More recent legislation has earmarked nearly a million hectares for community zones (RGC, 2022) where individual land rights for houses and agriculture are in theory eligible for titling. Altogether, we see a polarisation of tenure arrangements promoted for PA management: strict state control on the one hand and individual private land ownership on the other. The space given for collective arrangements is small and disputed; collective tenure security is weak as a result.

Governing the Chhaeb-Preah Roka Forest: a tale of two assemblages

This section examines the genealogy of the two assemblages introduced earlier. We start with the PPRCFN because it emerged well before MoE and WCS partnered to zone the protected area. As such, it helps contextualise the history of forest management in the area and the conservation assemblage alike, and highlights the overarching power dynamics at play in this forest landscape. We examine the relations forged to comprise the PPRCFN assemblage, how territorialisation is mediated by sacred geographies, and how the network has faced mounting pressures due to their exclusion from the forest area on the part of MoE.

The Prey Preah Roka Community Forest Network: the significance of resin trees and spirits

The PPRCFN is a network of predominantly resin collectors who have resin trees located within the Prey Preah Roka forest (referred to hereafter as PPR). It is centred around the commune of Brome but also includes long-term active participants from the more remote villages of Krala Peas (Pring Thum commune, on the western

edge of PPR) and Robonh (on the northern edge of PPR). Several other Kuy villages extending into Chhaep within Mlu Prey Muoy commune are also long-term participants of the network (See Figure 3.1).

Locally, the name Preah Roka forest refers to a specific area of dense evergreen forest surrounded by dry dipterocarp forest interspersed with small patches of grasslands. Historic Kuy villages such as Mlu Prey, Bou Teap, Sangae, Chhaep and Brome (which all pre-date the French colonial period) were founded on the well-irrigated flatter lands ideal for paddy rice cultivation just south of the evergreen forest. Elders in Brome, Boh Thom and Krala Peas speak of PPR being an important area for wild pigs, elephants, mushrooms, rattan and a wide range of forest fruits and vegetables. The dense forests of PPR are also home to a variety of spirits and sacred areas. These range from malevolent spirits such as Breay, to the ancestral guardian spirits Niak Ta (venerated across Cambodia). In distinction to most lowland Khmer communities, Kuy have largely maintained practices and relations to both the village guardian Niak Ta as well as the forest guardian Niak Ta who mediate hunting and NTFP collection practices. There are also sacred sites associated with unique natural sites (such as a limestone outcrop) and less location-specific entities such as mystics (*sajanh*) and ogres (*yeak*).

Historically, the dense forest has been an important site of refuge: to avoid raids from Thai and Khmer bandits in the late nineteenth and twentieth century, to escape the bubonic plague that ripped through northern Cambodia around the 1930s, and to flee from US bombs dropped in close proximity during the 1960s. The period of French colonial rule saw migration, village relocation and new forms of sickness and death. These de-territorialisations which took Kuy from ancestral sites were followed by re-territorialisations: new settlements, infrastructure such as roads and new forms of taxation. So too the second Indochina war and the Khmer Rouge regime violently destroyed relations to land through resettlement, prohibition on spirit veneration, and restriction on movement and livelihood activities.

From the 1980s onwards, there was a renaissance of spirit practices across Kuy villages of the northeast that not only reflected the end of the repressive Khmer Rouge regime which prohibited spirit veneration, but also a Kuy cultural renaissance that sought to re-assert the distinctiveness of Kuy villages that had been forcibly assimilated to Khmer cultural norms. The re-introduction of forest-spirit practices was also associated with the resin forest trade in the 1980s, due to rising demand for liquid resin in Thailand and Laos for boat making and as a sealant in various applications. The proximity to the trading village of Kampong Sralau on the Cambodia-Lao border (part of an ancient trading route that connected Kuy forest products to markets along the Mekong), meant that even this isolated region was well connected to the regional forest commodity trade. The resurrection of the resin market had two very important impacts on the PPRCFN. Firstly, it connected

surrounding villagers to PPR in new ways. As agriculture was largely subsistence-oriented right up until the mid-2000s, and other sources of income (cattle and timber) were limited until the early 2000s, resin collection became an important income source. Most households adjacent to PPR started resin collection as there were essentially no barriers to entry (high forest-to-labour ratios and no start-up costs). The second important impact of the resin market is that it led to the re-emergence of forest spirit veneration by bringing resin collectors in close relation to the forest. Spirit veneration revolves around the dynamic relations between people and specific places. People must actively be within sacred sites to know they are sacred sites and form relations with particular spirits. It was due to the practices of resin collectors, who would travel far and wide across the forests of PPR on a repeated basis starting from the 1980s, that many new spirits were discovered and new customs forged.

Early emergence of the network

Right up until the end of the twentieth century, the large tract of evergreen forest known locally as PPR existed as a local forest rather than a space governed by the state. The protected area system was formally re-established in Cambodia in 1993, but few were actually managed consistently and systematically. Most remained "paper parks" until donors and international NGOs provided budgets for management programs.

In the 1990s the Forestry Administration took over public state forested areas (all the forested areas that were not formally zoned as national parks). The most notable change people in the PPRCFN recall from this era is the creation of forestry concessions. Malaysian company Cherndar Plywood was given a 103,000-ha logging concession granted by the Ministry of Agriculture in 1996 that covered a significant portion of Prey Vihear province. One of the major logging sites was within PPR and by 1999 the company had established checkpoints along access roads that prohibited local resin collectors from accessing forested areas. As resin trees were felled by the company across PPR, outraged villagers forged alliances and directly confronted the company trying to prevent logging equipment from entering the forest.

Elders from Brome explained that very quickly, resin collectors from across PPR were meeting together at access roads to try to stop resin tree felling. This was successful for several weeks but had to be abandoned once armed soldiers began accompanying logging personnel. By 2001 Global Witness reported that 340 resin trees had been felled (Global Witness, 2001). At this point, tactics changed as villagers began to focus on administrators rather than the logging company and conducted several protests at district and provincial halls. This saw much wider participation from local villagers (extending beyond just resin collectors) with

logging becoming a central concern for people within Brome and nearby villages. A Brome elder explained that at that time "we had no understanding of forestry laws; we had just been using the forests for resin collection without having to worry about laws." Brome resin collectors and activists (including several older female activists) emerged as central to the emerging resistance activities. Using their limited prior experience as low level state administrators, they helped write statements, document resin tree loss and conduct interviews with the media. Eventually, they led a contingent of resin collectors who ended up meeting directly with King Sihanouk, who then requested Prime Minister Hun Sen cancel the concession (which subsequently happened in 2002). This period was integral to the formation of the PPRCFN: it brought people together from several disparate villages, raised awareness of the vulnerability of their resin trees (and the forest more generally), and gave them crucial experience in advocating for their continual autonomy over the area.

Over the 2000s new threats to the forest emerged as roads connecting Prey Vihear to the rest of Cambodia improved. Migrants increasingly came to the forested and remote Kuy villages in search of valuable timber. As the price for quality hardwoods skyrocketed in the 2000s, following the expansion of the Chinese furniture market, logging outfits that were becoming established in other parts of Prey Vihear began roving PPR for hardwoods. The first major challenge of the early 2000s was a local boat-building enterprise based on the Stung Sen River just a few kilometres west of Brome. In response, the same activists and resin collectors who had been involved in the Cherndar Plywood case began actively patrolling the forests around Brome. When loggers began moving northwards, resin collectors from further north were consulted and patrolling groups were started up in these villages as well. The network at this time also had to contend with the Forestry Administration that had formal control of the area. Elders from Brome explain that the Forestry Administration oscillated between actively encouraging resin collectors to protect PPR through forestry patrols, and actively facilitating logging in the area by ignoring or discouraging the patrolling activities of the emerging network members. For the most part, however, villagers had the freedom to conduct patrols, although they were not legally allowed to apprehend loggers. People active in patrolling during this time explained that "we would chase loggers out of the forest" and "destroy their logs and equipment."

Increasing pressures

From 2011 onwards new pressures on the forest emerged. Firstly, a series of skirmishes occurred between Thailand and Cambodia between 2009 and 2011 that saw major mobilisations of soldiers along the border area. This resulted in new

military battalions and social land concessions being established along the borders of PPR as lands were cleared for farming and given to the families of soldiers. This quickly resulted in a rise in logging across the entire forested northern border area. Simultaneously, a 40,000 Economic Land Concession (ELC) granted to the Chinese sugar company Heng Fu substantially overlapped with farming land of Kuy villages along the Prey Vihear-Chhaep highway, which also brought new threats to the forest. For the villages along the Chhaep highway, including Brome, the ELC was the largest threat to livelihoods ever experienced, with 70% of villagers' active rice fields or swidden fields claimed by the company.

Once again, a network of villagers across three districts emerged to organise against the ELC. Much like the PPRCFN, this network was centred on Brome and many of the same resin collectors who had been active in PPRCFN also became active in resisting the company. Out of the struggles against Heng Fu came a renewed urgency to protect PPR which reactivated Kuy farmers across surrounding villages. Heng Fu contracted out the right to collect logs felled within the concession boundaries to a local Prey Vihear company (composed of individuals with experience in illicit logging). It wasn't long before this company began offering piece rates to local loggers for hardwoods collected outside ELC boundaries which resulted in increasing logging within PPR.

Simultaneously, the upgrading of Prey Vihear-Chhaep dirt road to a sealed highway attracted settlers, migrant workers, speculators and loggers who rapidly purchased land and settled along this road starting from 2011. As adjacent areas such as Bung Per Wildlife Sanctuary had already been largely logged of all valuable hardwoods, loggers now turned to the dense evergreen forests of PPR.

This resulted in renewed re-territorialising efforts by the PPRCFN to protect the area, especially since the Forestry Administration, which was in the same ministry that granted the Heng Fu concession, had demonstrated it was entirely ineffective and unwilling to stop logging in the area. People in Brome refer to the period between 2012–2018 as "the double front" where they were forced to go between protecting their farms from the company clearing their land and protecting the forests from loggers. During this time PPRCFN organised several large "camp outs" at PPR that sometimes went on for weeks to directly stop loggers.

By 2016, the efforts of PPRCFN were becoming increasingly recognised outside of Prey Vihear and several NGOs were providing support to both PPRCFN and the network of villagers protecting their lands against the company. The local NGO Ponlok Khmer (which directed funds from other donors such as DanMission), the Cambodia Youth Network, and several Phnom Penh-based activists began providing support to PPRCFN to conduct basic activities such as patrols and media outreach. During this period, the PPRCFN began organised elections for the positions of coordinator, secretary and accountant, and began aiming for monthly

patrols and regular planning meetings. The network also began organising yearly tree ordination ceremonies that would attract several hundred patrons.

The creation of the Preah Roka Wildlife Sanctuary and new headaches

As outlined in the previous section, 2016 saw the expansion of the protected area system under the jurisdiction of the Ministry of Environment. This resulted in the creation of the Preah Roka Wildlife Sanctuary and the adjacent Chhaep Wildlife Sanctuary (which were amalgamated in 2023). Although the formal designation of PPR as a wildlife sanctuary was not done in consultation with the PPRCFN and nor were the boundaries drawn up based on local level consultation or study, people in the network were optimistic that authorities would start taking logging seriously.

During 2016 and 2017, MoE rangers began actively patrolling forests alongside PPRCFN members. By 2018, however, relations between PPRCFN and MoE had largely broken down. Local officials stopped participating in patrols by the end of 2017 and became largely inactive on cases of logging that were brought to them. PPRCFN members began collecting evidence (photos, names, locations) of logging and began working with partners to systematically document cases. This included using a phone app to record evidence of logging that could then be displayed with an online map. As logging intensified, PPRCFN members feared that MoE officials based in Phnom Penh were unaware that local MoE officials were embedding themselves in logging networks. Therefore, PPRCFN members travelled to Phnom Penh in 2018 to directly meet with MoE officials and present evidence of mass logging in PPR since the MoE took over. These higher-level MoE officials obstinately accepted the documents. Rather than acting on the information, the response was to try to prevent the PPRCFN from gathering and disseminating logging information. The work and knowledge of the network became unauthorised and inaudible. Within a month, local MoE officials had de facto excluded all PPRCFN members from entering the forest, stating that PPRCFN was not formally registered as an NGO and therefore had no rights under forestry law to enter into the protected area's core zone, even though no zonation had been conducted at this stage.

Key PPRCFN members all agree that logging intensified between 2018 and 2022. By this time, it had also become indisputable that local MoE rangers were facilitating logging – taking money from loggers and tightly controlling access to PPR. Simultaneously, MoE officials began to monitor key PPRCFN members to ensure they ceased all patrolling activities. Between 2018 and 2024, MoE apprehended and prevented PPRCFN members (accompanied by students, researchers, or journalists) from entering the forest on five occasions. Even the annual PPR ceremony to commemorate the forest was disallowed by MoE by 2020. This annual ceremony involving the ordination of trees by monks, and an offering ceremony to Niak Ta

forest spirits, was started in 2017 and became an important event to strengthen ties between both local PPRCFN members and the broader public. In response to these pressures, PPRCFN was forced to conduct its activities clandestinely. Following the more well-known Prey Lang Community Forest Network, which PPRCFN was becoming increasingly close to, patrols and research were conducted secretly (Flynn et al., 2023).

Starting in 2022, key members of PPRCFN were called to meet with local MoE officials and offered a Community Protected Area (CPA). Despite pressure to accept, PPRCFN members collectively decided that they would refuse, understanding that it would dramatically limit the scope of PPRCFN activities and confine them to a small 1000ha patch of forest rather than the larger PPR forest. It also became clear to PPRCFN members that CPAs were an attempt to delegitimise the network. In nearby Boh village, where several logging outfits have been based, the former village chief became the head of a new CPA. The new CPA head is closely tied to the commune chief and local MoE officials – none of whom have previously been supportive of PPRCFN. Over in Mlu Prey commune, a former PPRCFN member who had a falling out with the network due to his opaque spending of network funds, later became the head of the CPA.

The participatory process implemented by MoE and WCS for zoning of the Chhaeb-Preah Roka Wildlife Sanctuary, examined in the next section, was organised through these emerging CPA networks and through local village heads. The PPRCFN felt they were deliberately excluded from the process and described meetings where selected villagers were asked to participate, yet known PPRCFN members were carefully avoided.

The conservation assemblage: the significance of state rules and hierarchical relations

In this section, we examine the making and unmaking of a conservation assemblage that brought together a diverse set of actors to work together to improve the governance of the Chhaeb-Preah Roka Wildlife Sanctuary. The intervention, led by the MoE and WCS, centred on zoning and spatial planning of the PA. The purported aim was to reconcile the protection of forests with the livelihood needs of the local population by implementing a novel participatory approach to documenting the land claims and resource use of local communities so as to inform the boundaries of the PA zones.

'There is space for everyone': building an alliance of actors to manage trade-offs

The different actors of the assemblage have different understandings of what forest conservation means and what protected area management or even 'communities' with legitimate claims to the forest should look like. Notwithstanding these ever-present tensions, the zonation of the Chhaeb-Preah Roka Wildlife Sanctuary represents a moment when interests converge to create the condition of 'working together'. For the different parties involved, the point of convergence is the idea that the PA can offer a space for everyone with the corollary that well-defined and delineated zones with specific uses and rules attached should be the vehicle to address trade-offs between development and conservation that has been the source of various conflicts.

For MoE line agencies, motivation to join the assemblage is driven by past lessons and failures to enforce their claim to jurisdiction over forests in the face of contestation by Indigenous groups and farmers who reject the label of 'encroachers' and insist on their entitlement to the forest as a source of land, livelihoods and cultural identity. Since control purely by coercive means is not possible, a switch to governing is needed that instils an ethos of improvement that brings parties in line with conservation goals through compromise, backed by coercive conditionalities (Li, 2007b). Following this rationale, giving access and recognition of rights to land and forest resources to communities in specific places – particularly valuable non-timber forest products and resin trees – will incentivise smallholder farmers to comply with forest rules and limit deforestation elsewhere. Supporting an inclusive zonation process can help MoE absorb the critique that state forest management is failing and reinstate their commitment to redress key issues that have broken the trust of local communities. This, in turn, strengthens MoE's claim to govern. It legitimises their authority over the entire protected area allowing them to move ahead with the design of a specific management plan for each zone in a way they hope will contain challenges. Key to holding this narrative together was an official from the provincial Department of Environment who coordinated the initiative. He positioned himself (and was seen by others in the assemblage) as a reformer within the forest bureaucracy, willing to engage in dialogue with communities. His involvement was critical to WCS's willingness to fund the pilot with a view to potentially scaling up the approach.

As a prominent international conservation organisation, WCS has been at the centre of fierce debates over the rights of nature versus the rights of local communities, both in public discourse and internally within the organisation. While some individuals show little sympathy with the idea of spatial coexistence between people and nature, many within the organisation challenge the basis for excluding people from PAs on both conservation and social grounds. Overall, WCS

positions itself as working towards both conservation and livelihood goals, and this is reflected in the diverse portfolio of activities taking place in the Northern Plains where Chhaeb-Preah Rokha Wildlife Sanctuary is located: biodiversity monitoring, support for CPAs and the Preah Vihear CPA network, law enforcement, ecotourism development, and a wildlife-friendly organic rice business. For WCS, the PA zonation initiative aims to strengthen these different activities and give them spatial coherence. WCS is also well positioned in the carbon credit landscape of Cambodia and the intervention is strategic as it helps generate information necessary to design an upcoming REDD+ project. In the Northern Plains WCS works very closely with the Provincial Department of Environment, acting both as an advisor and also hosting some staff of the department. WCS sees itself as a bridge between government and communities. While recognising the interest and competence of local groups in forest management, it steps in to help them navigate the complex state-backed conservation apparatus. At the same time, WCS is well aware of the political economic-context in which it operates and the risks of working with government to implement programs that may not end up working out in the best interest of local communities.

For people living in and around the protected forests in question – the main targets of the intervention – there is a large heterogeneity of interest and willingness to engage in a process of PA zonation. Local groups have a long history of navigating through the state regulatory apparatus: land use zonation conducted in 2010 by the Forestry Administration, unsuccessful community forestry or CPA management, and patrol groups to combat illegal logging. These past experiences have left communities with mixed feelings concerning state-backed governance. As illustrated in the case of the PPRCN, many groups are deeply suspicious of efforts to integrate territorialised conservation with smallholder interests (as seen in their rejection of the MoE-facilitated CPA); while others participate in conservation-inspired initiatives for a range of reasons. Another factor explaining diversity of positions is the level of dependency on forest resources which varies widely according to the advance of agricultural development and commercialisation in the area. There is also an ethnic dimension as the Kuy population is culturally and economically more attached to the forest than the in-migrant population. Indeed, the promise that zonation can 'create a space for everyone' may appeal more to recent migrants with no claim to ancestral land, than to people who lived in the park prior to demarcation. Beyond this heterogeneity, there is a general understanding that zoning can potentially help clarify and even secure people's rights to land and forest resources, or at least protect them from further enclosures.

Most local authorities at village and commune levels envisage the intervention from a slightly different perspective. The delineation of the community zone would provide them with a legally binding reference to issue land certificates and for

land conflict resolution. Remaining on good terms with the MoE administration is important but the key is to preserve their authority over their jurisdiction as a whole.

Rendering technical

An intervention of this nature requires framing problems and prescribing solutions in ways that are compatible with specific programming outcomes. This translation requires engaging in simplifications of narratives and real-world complexities, to keep the intervention to a bounded and technical domain that is easier to seize (Li, 2007a). This way, the problem to be resolved (making space for everyone) matches with the solution (PA zonation). In this section, we briefly describe the programmatic aspects of the intervention before turning to these simplifications.

The 'technical' PA zonation process

The WCS team, along with their counterparts from the Provincial Department of Environment (PDoE) in Preah Vihear province, were the main driving force behind the design and implementation of the participatory zoning intervention. The institutional set-up comprised national and provincial working groups on PA zonation established in May 2020. The provincial level working group consists of provincial and district governors, all directors of relevant technical line departments, commune chiefs, and representatives from the CPA network.

While the team used the Zoning Guidelines for Protected Areas in Cambodia (GDANCP, 2017) to design the intervention, the limited scope and guidance concerning local participation in the zonation of PAs became an added motivation for WCS to fill this gap by proposing a meaningful way to put local people centre stage in the zonation process.

The majority of the work consisted of a series of workshops in resource mapping conducted at the village level. A workshop typically gathered 20–30 villagers but the team usually organised several meetings per village to cover the entire resource system. The facilitation team prepared updated land cover maps and used them as background for people to identify a diversity of resources that are relevant and important to them. Data and information concerning four main resource units were collected: (1) settlement, farmland, and grazing areas; (2) non-timber forest products; (3) important cultural and sacred forest areas; and (4) wildlife. After the village-based mapping exercises, the team and local villagers conducted field surveys with GPS to obtain reliable locations and descriptions of any resources that local people could not identify accurately on the map. The resource maps were then presented to all participants for validation.

The time dedicated to the entire consultation was substantial – approximately one week per village, including resource mapping, GPS fieldwork, and resource map verification. This required significant mobilisation of human and financial resources. After going systematically through all villages, the team digitised all data and information into spreadsheets and a geographic information system (GIS), which were used as direct inputs to draft the boundaries of PA zones (community, sustainable use, conservation, and the core zone). On paper, this procedure can be considered innovative as it places consultation with local users at the centre of the zonation process.

Simplifications

Proponents of the intervention had hoped that 80% of the population living inside or at the edge of the PA would be consulted during the process. Broad-based consultation was seen as a necessary condition for large endorsement of the zonation and smooth implementation. In total, 84 meetings were organised in 48 villages, involving 3,064 people (53% men and 47% women). It was important for the team to aim for a gender balance because women play a key role in collecting non-timber forest products (except for resin, which is still mainly collected by men). However, this represents only 25% of households living in the 48 villages, a figure well below the stated objective.

This participation gap not only limits the representativity of data and information collected, but it also raises questions as to why the process did not mobilise the local population as expected. We were told that villagers were busy and prioritised their livelihood activities over PA zonation activities. Important questions have remained unanswered, however. If the low level of participation signals contestation or a lack of interest, why are these manifested? And what are the possible implications of a fragmented and heterogeneous community on future PA management?

Moreover, resource mapping focused exclusively on resources inside the protected area. Yet most of the concerned villages are not located directly inside the PA and land resources that are important to people's livelihoods are not entirely located inside but also outside the protected area. Unlike the situation only a decade ago, the majority of families living in and around the PA area no longer have any resin trees. Most families have embraced boom crops such as cassava and are actively looking for agricultural land. Grazing areas are also in high demand for livestock, which provides an important source of income for families. In short, the degree of livelihood dependency on PA resources and thus the engagement and interest of families in PA management vary considerably. Some families deploy their livelihood portfolio in and out of the PA and are attentive to PA management

rules while others derive few resources from within the PA and do not feel much concerned by PA management. On the other hand, some families directly compete for land and forest resources against conservation. Illegal logging inside the protected area is rampant and the complicity of local MoE rangers – as consistently reported by local informants – affects the accountability relations between PA rangers and the local population. All these contradictions have critical implications for conservation. Yet they are difficult to address in a protected area zonation so they do not figure in the process design.

The Chhaeb-Preah Roka Wildlife Sanctuary is not an island but part of a dynamic landscape. In its Northwestern corner, a social land concession granted to military families has been instrumental in turning the entire area into an agricultural landscape. At the same time, the PA can be seen as a last forest frontier. There is very little forest left outside of the PAs, which limits the territorial expansion of agricultural land for migrant smallholders looking for farmland. The operation of multiple ELCs in the south has displaced people to the upper north at the edge of the protected area. These movements have exacerbated the pressure on smallholders to engage in deforestation within the PAs. These factors definitively complicate the conservation and sustainability issues at stake. Yet, these political-economic questions are glossed over and treated as 'external' to the zonation process, reducing it to a technical exercise.

Authorising knowledge

Knowledge (and the trust people put in it) is necessary to make institutions work; it underpins practices of assemblage. Knowledge is therefore subject to politics of legitimation and exclusion that authorise or invalidate it. Along with rendering technical the process of establishing what 'communities' want and presenting simplified narratives of problems and solutions, PA zonation establishes a hierarchy of knowledge authorised to inform the process.

The agenda of each consultation meeting was prepared by WCS and MoE and it was also very clear from the outset that the discussion would not open room to debate the authority of MoE in managing the protected area nor discuss the rationale for zoning and the distributive effects of these arrangements.

A key element of the knowledge production process here was the identification by villagers of the location of different types of resources they customarily use and manage inside the protected area. This was done through a resource mapping exercise focusing on the spatial dimension of the resources that can be translated into a Geographic Information System. The documentation process did not allow revisiting local management rules and practices within communities in light of past changes and new circumstances, thus omitting information that would be useful

to devise management plans for the different zones. The data produced was also subject to a review by the biodiversity team of WCS active in the same protected area. The team checked whether the zonation drafted after consultation made sense from a biodiversity conservation standpoint. The WCS team was therefore in a position to make final adjustments to the zonation, which suggests that the biodiversity imperative can override the livelihood imperative in the design of the PA zonation.

Moreover, due to restrictions brought by the COVID-19 pandemic, no meetings were organised at the local level (commune and village) to present the map with draft boundaries of the PA zones WCS-MoE had produced based on the participatory resource mapping. The final part of the consultation was conducted at the district and provincial level only with the participation of commune authorities, leaving local groups with unanswered questions as to where the boundaries of each zone fall.

What does the assemblage produce?

The map in Figure 3.2 overlays the results of the resource mapping and the zonation of the Chhaeb-Preah Roka Wildlife Sanctuary approved at the provincial level. The resource map includes community land (agriculture, settlement and other culturally significant places), non-timber forest products, and wildlife. The map shows that there is a reasonably good match between the area with highest and most important use of resources by communities and the area allocated for the community zone, indicating that people's input in the zonation process was taken into account. The map reveals there are only very small areas inside the wildlife sanctuary that are not utilised in some way or another by people. The area dedicated to full protection (core zone with no access allowed) accounts for 4% of the total area of both sanctuaries as a result. This is in sharp contrast to other protected areas in Cambodia where zonation was driven primarily by nature conservation concerns (e.g., Keo Seima and Sre Pok in Mondul Kiri province), resulting in much larger areas classified as core zones (28% and 50%, respectively) and placing many more limitations on access for forest-dependent smallholders (Diepart & Oeur 2023).

The zonation process initially raised hope among some local communities as the map appears to give greater recognition to the diversity of resources local communities use across the protected area. However, the promised benefits of zonation never came to fruition and the exercise did not transpire beyond the production of a map. After endorsement by district and provincial authorities (Feb–Apr 2022), the draft zonation and all supporting documents were sent to the central ministry for review and approval, where it continues to sit.

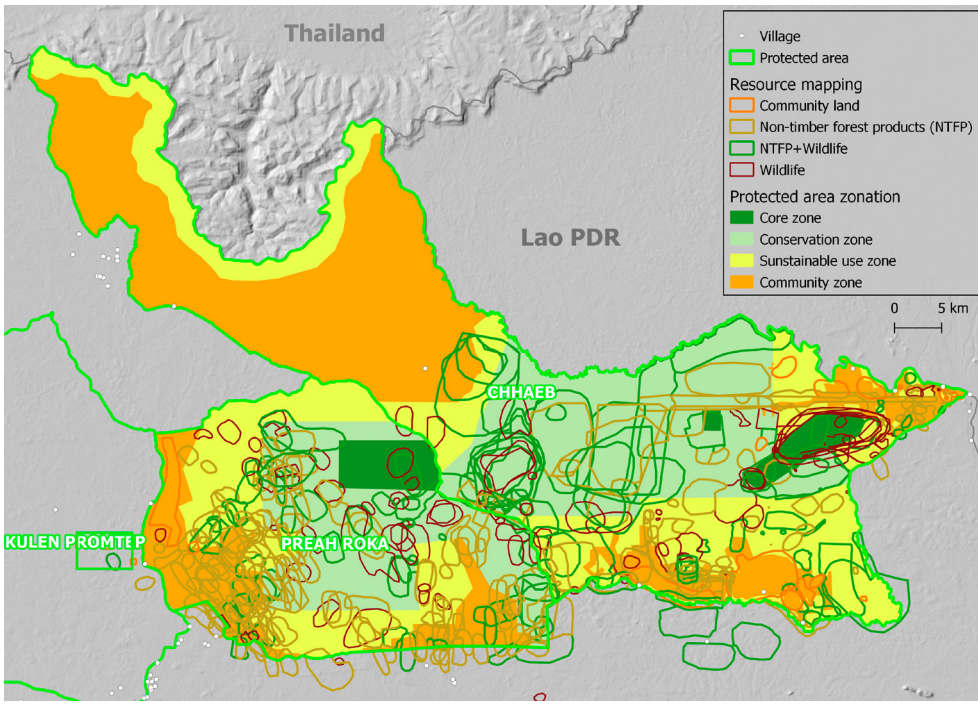

Figure 3.2: Results of the resources mapping and draft zonation

In the meantime, the Provincial Department of Environment who facilitated the entire process allocated land inside the protected area for families of the officials in their own department to establish a stable and pasture to breed cows (Seoung, 2023). In July and August 2023, local community members mobilised to remove wooden beams that PDoE placed in the area to build the stable, arguing that the project overlaps with around 20 hectares of land customarily used by community members. One of our informants later confirmed that the land targeted by PDoE for this project is located within the proposed community zone. The move by PDoE thus completely disregards the zonation process they facilitated and breaks the moral contract agreed with communities to 'make space for everyone'.

Following the betrayal, community members held a curse ceremony, evoking ancestral spirits to hex PDoE officials and other powerful people whom they said are violating their land rights (Seoung, 2023). A few months later, in December 2023, the same people had to gather again to prevent an excavator from razing part of their traditional land, though the identity of those behind the attempted land clearing was never disclosed (Runn & Eung, 2023). Within a few months only, any hope raised by the zonation turned into disillusionment for local Kuy people and Khmer

smallholders whose continued use of and claims over land and forest resources remain uncertain and even threatened. Meanwhile, local communities living in and adjacent to the Chhaeb-Preah Roka Wildlife Sanctuary still do not know where the zone boundaries fall.

Discussion and conclusion

Through the highly stratified conservation assemblage, we explored how the state (Ministry of Environment) and a prominent conservation organisation (WCS) form alliances and coordinate action to try to optimise outcomes and trade-offs between conservation and development in the Chhaeb-Preah Roka Wildlife Sanctuary. Their objective is to make the Protected Area a territory more governable by 'making space for everyone' and creating conditions to incentivise communities to adopt values, practices, and corrective behaviours that conform to PA management and conservation goals. They do so by drawing zones within the protected area, a re-territorialising initiative that seeks to address the question of community land rights through a supposedly more inclusive process. However, the conservation assemblage in practice sets out to carefully manage disruptive social forces embodied by the PPRCFN and reinforce the territorial control of the MoE. Unable to contain its internal contradictions, the zonation process was largely reduced to a technical domain that left underlying power structures and political-economic contexts unchallenged, centred on community stewardship and concerns.

Between 2020 and 2022, project proponents enrolled a relatively large number of people in communities living in or close to the protected area. Meetings and fieldwork activities to identify and map natural resources were organised extensively, following a systematic and detailed methodology. On paper, the proposed protected area zonation map – the zones delineated for different uses and users – seems to account for people's uses of resources.

All the efforts notwithstanding, the re-territorialising effect of the assemblage was short-lived. As of May 2024, the draft zonation is still pending approval by national authorities. Locally, people do not know where the boundary of each zone falls and can't make land use and resource management decisions accordingly. Their tenure and livelihoods remain unprotected and vulnerable as a result. While they were supposed to be central in the intervention, communities are disillusioned and we see critiques and acts of resistance emerge against encroachment into the community zone designed for them.

In the chapter, we show why and how the conservation assemblage goals were not realised in practice, particularly concerning the question of people's participation and the narrow scope of what was up for discussion. What is more, it resulted

in a process of exclusion of the people it was supposed to benefit. This failure is caused by the combined exercise of distinct forms of power that speak to different sets of actors, agendas, and socio-political contingencies (Hall et al., 2011).

The first form of power mobilised is the power of regulation that sidelined the PPFCFN, a very different assemblage formed around resin collectors, spirits, forest, and activism, organised along more fluid and horizontal lines of accountability. The network enjoys broad-based support locally, has ambitious aspirations for managing the Preah Roka forest landscape (west of the wildlife sanctuary), and actively mobilises a large network of patrol groups across the forest. Because the network was also active in pointing out the MoE rangers' involvement in illegal logging, it became marginalised and banned by the MoE, thus removing an undesirable political element in the conservation assemblage. The process resembles what Kramer (2017) calls 'constitutive exclusion' insofar as the PPRCFN had become an unintelligible political claimant and actor in the conservation assemblage (Kramer, 2017).

The second form of power at play – the power of legitimation – is more subtle and works through the zonation process itself. It provides a justification for how and why PA zonation should be conducted. It implies different practices of assemblages such as diagnosing the problem and prescribing the solution in technical terms and not in terms of entitlements, giving superiority to scientific notions of conservation over local norms, limiting people's inputs to identifying the location of resources and not their actual tenure (or lack thereof), and simplifying or overlooking political-economic factors that threaten to dissolve the logic of the assemblage (e.g., land dispossession due to economic land concessions). Altogether, the process has not addressed the demand for agricultural land and grazing, which are increasingly in need.

The third form of power is the use of force by provincial authorities involved in the zonation process to approve investment projects inside the protected area and facilitate logging syndicates that disregard the whole participatory zonation process and run against communities' interests. What we see at play through these exclusions is the visible hand of the state. The zonation process creates abstract land categories (the zones) to discipline people's actions and conform them to specific rules and regulations defined by the MoE. It allows certain land uses and practices compatible with their narrative and excludes others that do not fit this conservation assemblage. As such, behind the discourse of participation and community interest, the protected area zonation effectively enables territorial control and the spatial extension of state power. Historically, the imposition of a state territorial regime in peripheral landscapes has been consistent throughout colonial and post-colonial Cambodia (Baird, 2009). The zonation of protected areas offers a new practical and discursive tool to renew state control and limit people's autonomy and agency in managing forest resources.

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CHAPTER 4

(Re)thinking Environmental Governance in the Changing Climate Context of Northwestern Ghana

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Abstract

This chapter investigates the intersection of gender, generation, and agricultural livelihoods in the context of environmental governance. Through a case study in the Upper West Region of Ghana, it explores how climate change impacts are shaped by both gender and generational factors, with power relations and inequalities deeply embedded within environmental decision-making processes. The chapter offers new perspectives on the intricate relationships between institutions, structures, and processes in governing climate resilience. It argues that recognising the interconnectedness of gender and generation, and how these intersect with building climate resilience, offers valuable insights for environmental governance, particularly in co-designing inclusive and fit-for-purpose interventions. Achieving effective governance requires sufficient human and financial resources from the government, development partners, and other relevant stakeholders. Mainstreaming gender and generational considerations into environmental governance necessitates enhancing inclusive decision-making to shape social and ecological outcomes, as well as promoting the active participation of women, men, younger and older generations in decision-making processes.

Keywords: environment, climate resilience, development, gender, generation, Ghana, governance, planning

Background and context

The gendered impacts of climate change and the effectiveness of gender mainstreaming in Ghana's Upper West Region are critical issues that highlight the intricate interplay of socio-economic dynamics and power relations. This region's vulnerability to climate variability offers a valuable context for understanding the intersection of gender, generation, and environmental governance.

Rural communities in Ghana, particularly in the semi-arid northwestern region, face environmental challenges, including the over-exploitation of land and forest resources, biodiversity loss, and the impacts of climate change (Ministry of Environment, Science, Technology and Innovation, 2013; World Bank, 2021; Townhill, 2023; Awuni et al., 2023). The agriculture livelihoods in this region heavily rely on rain-fed production, making them highly susceptible to climate change and environmental degradation (Asante et al., 2017). The consequences of climate change, such as rainfall variability and temperature extremes, significantly reduce agricultural productivity, further increasing vulnerability due to existing poverty, power inequalities, and challenging economic conditions.

Literature indicates that women in the Upper West Region are disproportionately affected by climate change because of their roles as primary agricultural producers and household caretakers (Abubakari et al., 2016). This exacerbates food insecurity, as women are often responsible for food production and household nutrition. Climate change is also a significant factor in migration to forest zones and urban areas, leading to the feminisation of farming and increased burdens on those left behind (Osei-Amponsah et al., 2023a; Jarawura et al., 2024), especially the older generation. In addition, underlying factors, such as ethnicity, class, gender, and generation, influence power relations and access to productive assets and natural resources. Traditional gender norms often marginalise women's voices in policy formulation and climate adaptation strategies (Antwi and Antwi-Agyei, 2023). Adaptive capacities and resilience also vary based on lived experiences, available assets, and intersectional factors (Kaijser and Kronsell, 2014; Djoudi et al., 2016; Osei-Amponsah et al., 2023b).

The concept of environmental governance is a critical, yet often overlooked dimension in addressing the challenges of climate change (Armitage et al., 2012; Li et al., 2020). Environmental problems are interwoven with complex economic, demographic, socio-cultural, and political issues (Hedlund et al., 2021). Heavy rainfall, for instance, leads to flooding in many rural communities in semi-arid northwestern Ghana, resulting in environmental degradation, destruction of crops, livestock, and homes, as well as disease outbreaks (World Bank Group, 2021; Armah et al., 2010; Pienaah et al., 2023). Poor disaster preparedness and ineffective responses can exacerbate these impacts, especially for women and the elderly. The interconnectedness of these issues creates complex problems for environmental decision-makers, particularly given inadequate financial support for institutions. Despite efforts to enhance women's participation in climate governance, gaps remain in the implementation of gender mainstreaming strategies (Antwi-Agyei et al., 2021). Effective environmental governance requires active participation in decision-making at all levels, especially at the district and community levels. However, planning officers often lack the capacity to reach those most vulnerable.

This chapter draws on studies in northwestern Ghana to examine the extent to which environmental governance in planning and implementing climate-related interventions considers gender and generation issues, and the implications for households' resilience building.

Conceptualising environmental governance

Governance refers to the institutions, structures, and processes that determine decision-making dynamics on who makes decisions, how they are made, for whom, and with what consequences (Oakerson, 1992; Lockwood et al., 2010; Al-Faryan and Shil, 2023). It is a multifaceted concept encompassing political, economic, and administrative frameworks through which authority is exercised. Governance shapes societal organisation and management, integrating both formal and informal mechanisms of control and influence. As such, governance is often considered a key enabler or constraint of effective environmental management (Lockwood et al., 2010).

Environmental governance specifically pertains to the decision-making processes surrounding environmental issues, such as climate change, and their socio-economic implications, including enhanced livelihoods across different social groups, genders, and generations. Understanding environmental governance requires unpacking the systems, institutions, and processes that regulate human interactions with the environment (Levy and Newell, 2005). It encompasses multiple mechanisms through which human impacts on nature are structured and controlled, including rule creation, institutional development, monitoring, and enforcement. Beyond these formal components, environmental governance also comprises soft infrastructure such as norms, expectations, and social dynamics that shape stakeholder engagement and influence sustainable development outcomes (Bennett and Satterfield, 2018). However, governance in this domain is often hindered by institutional incoherence, top-down political processes, limited financial and human resources, weak cross-sectoral coordination, and the exclusion of marginalised groups and local knowledge systems. Addressing these challenges requires inclusive governance mechanisms that effectively navigate the complexities of environmental decision-making (Dennis and Brondizio, 2020).

A gender perspective is particularly relevant in environmental governance, offering a framework to analyse and enhance inclusivity in environmental decision-making (Nelson and Forsythe, 2023). Gender biases influence access to productive resources, the valuation of environmental assets, and concerns about environmental sustainability. As a social construct, gender shapes individuals' values, interests, and roles in environmental stewardship, with women often playing a crucial role in resource management and conservation efforts (Leach,

1992; Rocheleau et al., 1996; Leach, 2007). Despite its importance, gender and its intersection with generational perspectives remains underexplored in research, policy, and practice. Most studies examining the impacts of environmental degradation on agricultural livelihoods frame gender as a central factor, emphasising the interwoven roles of men and women in environmental challenges (Greiner and Sakdapolrak, 2013). However, a dual focus on gender and generation offers deeper insights into the opportunities, constraints, and failures within governance systems (Tacoli and Mabala, 2010). For instance, age influences how individuals experience and respond to environmental issues, including climate change, which in turn shapes governance structures and policies. Incorporating generational perspectives into environmental governance helps refine interventions, ensuring sustainable agricultural livelihoods and inclusive programs tailored to specific social and ecological contexts. Integrating gender and generational dimensions into climate resilience strategies enhances governance effectiveness and improves the socio-economic well-being of vulnerable and underserved communities.

The environmental governance context: institutions, structure and processes

Two key formal institutional approaches govern environmental (including climate change) issues, in Ghana. The first is environmental legislation. Article 36 (9) of the Constitution of the Republic of Ghana, declares that "the State will take appropriate action to ensure environmental preservation for future generations." Other legislative Articles support this declaration. The second approach is the use of policy instruments. The main policy strategy for climate action is the National Climate Change Policy (NCCP). It aims to "ensure a climate-resilient and climate compatible economy while achieving sustainable development and equitable low-carbon economic growth for Ghana" (MESTI, 2013). The National Development Policy Framework (NDPF) prioritises efforts to "enhance climate change resilience' under the broader theme of 'environment, infrastructure and human settlements" (NDPC, 2017).

The National Climate Change Policy is supported by the National Adaptation Strategy (2012), the Nationally Determined Contributions (NDCs) (2020 updated) and the National Climate Change Master Plan Action Programmes for Implementation (2015–2020). Linked to the National Policy is the National Environmental Policy, that seeks "to manage the environment to sustain society at large," with emphasis on "public participation and environmental governance." Ghana's National Adaptation Plan Framework recognises the importance of incorporating social disparities in planning because of the disproportionate impacts of climate change on different social groups. It seeks to "promote a gender-responsive plan," through which "gender needs will be prioritized in all the different phases of climate adaptation,"

to address "issues of social norms and inequalities that may further exacerbate the vulnerability of women to climate change" (EPA, 2018).

The structure addressing climate resilience in Ghana operates at national and sub-national (district) levels. At the national level, climate resilience interventions are broadly anchored in the overall national environmental and development policy frameworks. National-level policies and development frameworks inform district level development planning, climate action processes, and rural community resilience-building. The Ministry for Environment, Science, Technology and Innovation (MESTI), is the primary entity responsible for processes of planning, implementing and monitoring environmental interventions. The Ministry and its subsidiary body, the Environmental Protection Agency (EPA), are mandated to develop and monitor climate change policy strategies and actions. They do this in collaboration with relevant organisations including other Ministries, Departments and Agencies (MDAs), civil society organisations, the private sector, traditional rulers, representatives of local communities and development partners.

Ghana has a four-tier development planning structure. The structure comprises the National Development Planning Commission (NDPC) at the top tier, a second tier of 43 MDAs, sixteen (16) Regional Coordination Councils (RCCs), and a fourth tier of 261 District Planning Authorities (DPAs). The NDPC oversees district level planning and mainstreaming climate change into district medium-term development plans (MTDPs). The DPAs formulate the district medium term plans and submit these to the regions, to generate regional integrated plans. There are also MDA plans. The different plans are coordinated and collated by the NDPC into formulating a 4-year national medium-term development plan. The Commission integrates climate adaptation considerations into policy formulation and development planning. Figure 4.1 outlines the process of development planning in Ghana.

The Metropolitan, Municipal, and District Assemblies (MMDAs), are the planning authorities at the study area level. They are required to ensure that development plans are prepared with full community participation (NDPC 2018) and planning is done through the district planning coordinating units (DPCUs) (see Figure 4.1). Formulating and implementing development interventions by the NDPC is decentralised to ensure community needs and aspirations are harmonised in the core themes of the national development policy framework. Thus, the procedural aspect of environmental governance is embedded in district level development planning activities which includes initiating and coordinating the processes of programming, budgeting, and implementation of plans, in alignment with national development objectives and in conformity with the principles of sound environmental management. The Medium-Term National Development Policy Framework guidelines of the (MMDAs), provide 17 steps (Table 4.1) for developing District Medium Term Development Plans (MTDPs).

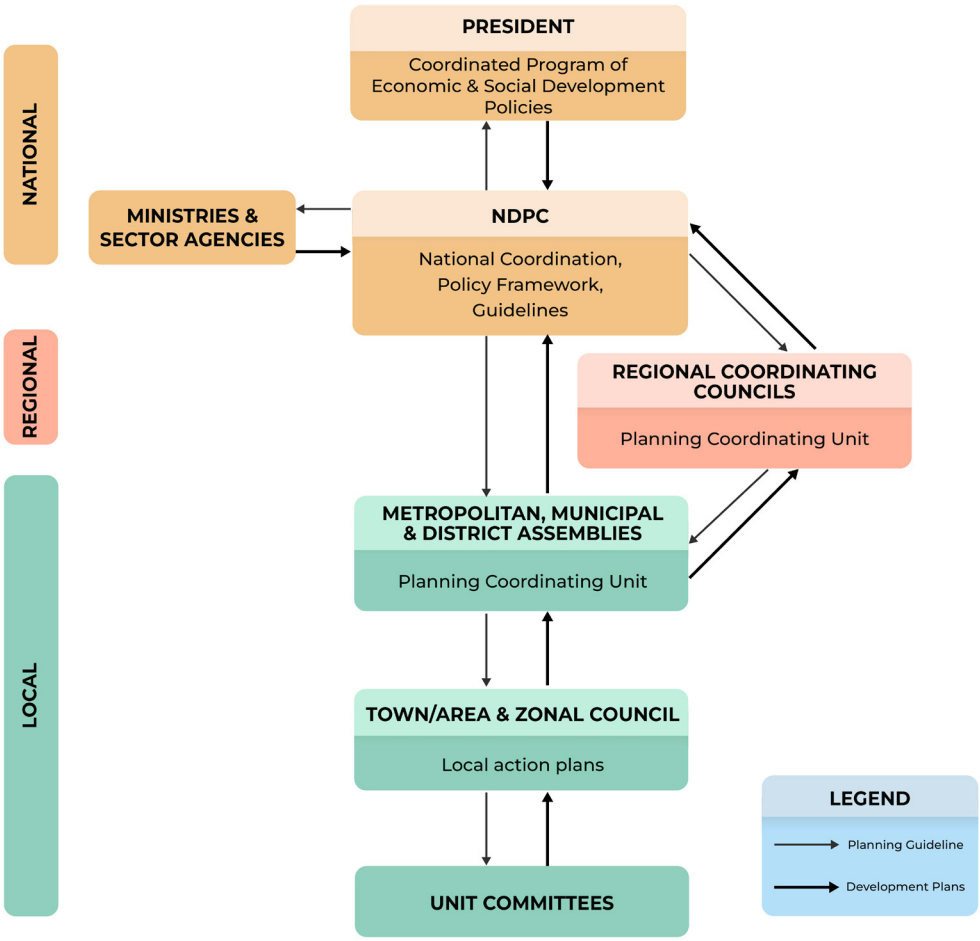

Figure 4.1: Process of development planning in Ghana. *Source:* Adapted from NDPC, 2002

Table 4.1: Development planning steps

STEPS	ACTIVITY
1. Vision, Mission, Functions and Core Values	The DPCUs review and state the vision, mission, functions and core values of the MMDAs in relation to their functions to enable them to contribute to the achievement of the national vision.
2. Performance Review	DPCUs of the MMDAs collect data and information to review their performance from the previous plan implementation period to ascertain progress made and lessons learnt.
3. Analysis of Existing Situation/Compilation of the District Profile	DPCUs provide a brief description of the current state of affairs of the district supported by maps, tables, charts and other pictorial representations and their development implications for the future.
4. Identification of Development Issues with Implication for Current Planning Period	DPCUs determine prioritized development issues for the current period, based on outputs from Step 3.
5. Prioritization of Development Issues DPCUs Prioritized Development Issues, Supported by Evidence of Records.	DPCUs prioritized development issues, supported by evidence of records.
6. Development Projections	DPCUs assist MMDAs to state their development projections for the current planning period, in relation to the adopted issues. This is to ascertain the additional social, economic and infrastructural services that should be provided.
7. Adoption of District Development Goals	DPCUs assist adoption of the suitable development goals in relation to the dimensions of the National Development Agenda, that reflect their development aspirations.
8. Adoption of Objectives And Strategies	MMDAs through the DPCUs adopt the corresponding policy objectives and strategies of the Agenda. The adopted policy objectives and strategies should be subjected to strategic environmental assessment.
9. Review and Formulation of Development Programmes and Sub-Programmes	MMDAs review and formulate programmes and sub-programmes, based on its mandate and functions.
10. Formulation of Programmes of Action (PoA) of MMDAs	DPCUs of the MMDAs prepare a Programme of Action for all the programmes and sub-programmes including monitoring, evaluation and communications, in relation to the national budget ceilings.

STEPS	ACTIVITY
11. Preparation of Indicative Financial Strategy	MMDAs through the DPCUs prepare an Indicative Financial Strategy over the planned period.
12. Preparation of District Composite Annual Action Plans	The District composite Programme of Action is phased out into Composite Annual Action Plans to be implemented by the Departments and Agencies of the MMDAs, in collaboration with NGOs, Private sector and the communities. Implementation involves translating the plan into real actions to achieve the set objectives.
13. Adoption of DMTDP	The draft DMTDP is developed and subjected to public consultations. The inputs generated from the consultations are used to finalize the DMTDP, which is then approved by Members of the General Assembly.
14. Indicators	Indicators are identified for measuring progress while targets are a specific, planned level of results expected to be achieved within a timeframe.
15. Dissemination and Communication Strategy	M&E information is shared and discussed with relevant stakeholders and decision makers.
16. Evaluation	DPCUs plan for evaluation based on National M&E Manual.
17. Participatory M&E	Participatory M&E is done for all key stakeholders directly involved in the M&E design and implementation process. It captures perceptions and assesses whether interventions have met these expectations, especially of the poor and the vulnerable in society.

While formal institutions, structures, and processes for environmental governance exist in northwestern Ghana, the procedural dimension, particularly inclusive and equitable decision-making is often inadequately implemented. This chapter argues that such deficiencies in procedural environmental governance undermine climate resilience-building efforts and exacerbate vulnerabilities within agricultural livelihoods, disproportionately impacting different genders and generations. By examining selected districts in the Upper West and Savannah regions, the chapter provides empirical insights into the implications of these governance gaps for achieving sustainable and equitable agricultural livelihoods in the face of climate change.

1. What are the most pressing climate change-related environmental challenges faced by farmers in northwestern Ghana, and how are these challenges perceived and experienced differently across gender and generation?
2. To what extent do current development planning processes in the study area incorporate the diverse climate-related needs and adaptive capabilities of men, women, youth, and older adults?

3. How do the procedural dimensions of environmental governance influence the effectiveness of climate resilience-building initiatives?
4. What are the key leverage points within development planning and environmental governance processes to foster more inclusive and equitable climate resilience-building that supports sustainable agricultural livelihoods for all gender and generational groups?

Methodology

This chapter draws on data from a larger study which explores the theme of social transformation in the context of climate change and development planning processes. To understand the generational perspectives in the context of environmental governance, we relied on a subset of the survey data using a sample of all respondents aged sixty[1] years and older (n=367) and an equal sample of respondents younger than sixty years randomly drawn from the larger survey sample of 2,017 responses collected in 2021, at the onset of the farming season. We classify generation as young (below 60 years) and old (above 60 years); and gender as man and woman. The respondents, drawn from different households, were sampled from 21 communities of seven districts in the Upper West (Wa West, Wa East, Sissala East, Lambussie, Daffiama and Nandom) and Savannah (Sawla-Tuna-Kalba) regions in north-western Ghana (Figure 4.2).

The communities were selected based on diversity in ethnicity, ongoing development projects, infrastructure distribution, migration trends, impacts of climate change, agrarian livelihoods, and poverty status. The survey focused on thematic areas related to household demographics, perceptions of climate change, coping strategies and climate resilience-building mechanisms, changing gender roles, power relations, policy effectiveness, and the extent to which interventions address developmental and climate change challenges.

Ethnographic and phenomenological approaches were used to capture the practices of everyday life, reveal gender and generational dynamics and achieve a deeper understanding of the core issues (Butler, 2020). This entailed in-depth key informant interviews (KIIs), historical reviews, life histories, focus group discussions, and observations conducted between May and December 2021. Qualitative data was collected in fourteen communities of the seven districts. Key informant interviews were conducted with 56 persons (two men and two women from each of the 14 selected communities), including community leaders and traditional chiefs. Two life

[1] Based on United Nations and the Ghana Population and Housing Census classification of 60 years and above as old (aged).

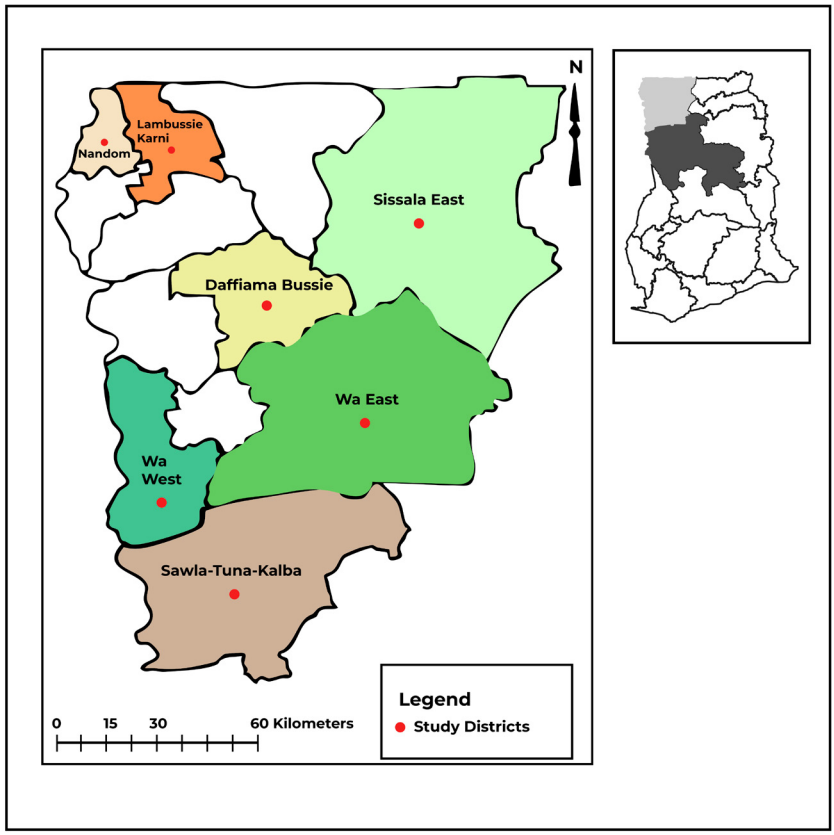

Figure 4.2: Map of the two regions, showing the study districts

histories were conducted with an elderly man and a woman. We also carried out gender-based KIIs with 24 development unit (planning, agriculture and gender-desk) officers. Themes explored in the interviews included how gender and generational issues are incorporated into development and climate resilience planning, budgeting, and implementation of development plans. We conducted critical analysis of development plans, and interviews with Development Planning Officers (DPOs), Area Council Chairpersons/Assembly Members and Community Members were also carried out. The qualitative approach employed historical review interviews with five departmental heads, a traditional leader, an assembly member, a youth leader, an association group leader, and an NGO manager in each district. This was to better understand the dynamics of climate change, gender, generation, and policy implementation at the district and regional levels. In addition, several focus group

discussions (a men's and a women's group each in the 14 communities) were held. Each focus group comprised of 7–10 participants drawn from diverse households, based on ethnicity, educational status, and farm size in the selected communities.

All data (except for those of the development officers) were collected in the ethnic languages (Dagaare, Sisaali or Waali) of the household respondents and focus groups. The quantitative data were analysed using SPSS version 20 for descriptive statistics while qualitative data were audio-recorded, translated, then transcribed and coded using NVivo. Content analysis was employed for the qualitative data, and the coding report was interpreted using the procedural element of the conceptual framing for environmental governance.

Findings and discussion

Environmental (climate change) challenges, households' livelihoods and resilience

Households in the study communities are experiencing a range of environmental challenges related to climate change, including more frequent dry spells, erratic rainfall patterns, and increasing temperatures. These changes are leading to significant consequences, such as water scarcity, crop loss and damage, food insecurity, reduced income, a rise in airborne diseases, and increased incidence of livestock pests. As one key informant poignantly noted, "Due to changes in the rainfall pattern in this community, we now experience a very long dry season period as compared to 10 to 20 years ago" (KII, Woman, Kokoligu, Nandom). This perception aligns with documented trends of increased dry spell frequency and shifts in the start of the rainfall season in the study area (Owusu et al., 2022; Okem et al., 2023). Notably, approximately four out of every five respondents, across gender and age groups, reported perceiving an increase in the occurrence of dry spells over the past 20 years (see Tables 4.2a and 4.2b).

Table 4.2a: Perceptions of Changes in Dry Spell Incidence by Gender

Perception	Men (%/N)	Women (%/N)
Increasing	**86.7** (339)	**81.6** (280)
Decreasing	**3.3** (13)	**1.6** (5)
The same	**5.0** (20)	**7.0** (24)
Don't know	**4.9** (19)	**9.8** (34)
Total	**100.0** (391)	**100.0** (343)

Pearson Chi-square = *10.6948, Pr = 0.013*

While a larger proportion of men (86.7%) than women (81.6%) perceived an increase in dry spells, the chi-square test reveals a statistically significant difference in perceptions between genders (p = 0.013). This suggests that gender dynamics may influence environmental observations, access to information, and lived experiences related to climate change impacts. In contrast, age group does not appear to be a significant factor in shaping perceptions of increasing dry spells (83.1% for younger respondents versus 85.6% for older respondents; p = 0.822).

Table 4.2b: Perceptions of Changes in Dry Spell Incidence by Age Group

Perception	<60 years old (Young) (%/N)	>60 years old (Old) (%/N)
Increasing	**83.1** (305)	**85.6** (314)
Decreasing	**2.7** (10)	**2.2** (8)
The same	**6.3** (23)	**5.7** (21)
Don't know	**7.9** (29)	**6.5** (24)
Total	**100.0** (367)	**100.0** (367)

Pearson Chi-square = *0.9157, Pr = 0.822*

The absence of statistically significant differences in perceptions between age groups could be attributed to the shared experiences of environmental phenomena within these agricultural communities. Both younger and older farmers are likely to be similarly exposed to the climatic conditions affecting their livelihoods. This shared reality may outweigh individual generational differences, leading to a convergence in perceptions, as supported by Jarawura (2014). The integration of local knowledge and shared experience across age groups fosters a unified perception of climate challenges, highlighting the importance of community resilience in the face of environmental change. Environmental realities and socio-economic factors may play a more critical role in shaping farmers' views than generational differences.

Rainfall remains the primary source of water for farming in the study areas. When respondents were asked about their perception of rainfall distribution during the last farming season, a consistent trend emerged across all demographic groups. Approximately 55% of respondents in each group reported perceiving the rainfall as poor, as illustrated in Table 4.3. A male farmer from Poyentanga, UWR, expressed concern, stating, "I have seen a difference in the rainfall pattern, and it is really affecting our farming." Both men and women farmers noted a shift in the onset of rains for agricultural activities, now beginning in May or June rather than March or April.

Table 4.3: Respondents' Perception of Rainfall Distribution During the Farming Season

Perception	Men (%/N)	Women (%/N)	Young (%/N)	Old (%/N)
Good	**17.4** (68)	**18.3** (63)	**23.2** (85)	**12.5** (46)
Very good	**2.8** (11)	**4.7** (16)	**1.9** (7)	**5.5** (20)
Poor	**55.3** (216)	**55.7** (191)	**55.9** (202)	**55.9** (205)
Very poor	**24.5** (96)	**21.3** (73)	**19.9** (73)	**26.1** (96)
Total	**100.0** (391)	**100.0** (343)	**100.0** (367)	**100.0** (367)

This data indicates a general consensus among respondents that rainfall is perceived as poor, irrespective of gender or generation. Notably, younger respondents are more inclined to rate the rainfall as good and less likely to classify it as very poor, while older respondents tend to perceive the rainfall as very poor and are less likely to rate it positively.

The inconsistent rains and prolonged dry spells during the cropping season have led to significant crop and livestock losses, adversely affecting household food availability and income across all demographic groups: men, women, youth, and the elderly. Despite acknowledging the growing impact of weather extremes, men and women, as well as young and old respondents, employ different coping strategies during dry spells. Table 4.4 highlights the most commonly adopted strategies.

Table 4.4: Households' Coping Strategies Against Impacts of Climate Change

Coping strategies	Men (%/N)	Women (%/N)	Young (%/N)	Old (%/N)	Total Number of Respondents
Adoption of irrigation	**66.7** (14)	**33.3** (7)	**61.9** (13)	**38.1** (8)	21
Reduce intensity of crop production	**33.3** (7)	**66.7** (14)	**38.1** (8)	**61.9** (13)	21
Change from crop to livestock	**80.0** (12)	**20.0** (3)	**40.0** (6)	**60.0** (9)	15
Diversify crop production	**61.5** (48)	**38.5** (30)	**52.6** (41)	**47.4** (37)	78
Use climate resilient seed	**63.1** (128)	**36.9** (75)	**53.2** (108)	**46.8** (95)	203
Change planting date	**57.5** (206)	**42.5** (152)	**52.0** (186)	**48.0** (172)	358

Coping strategies	Men (%/N)	Women (%/N)	Young (%/N)	Old (%/N)	Total Number of Respondents
Seasonal migration to urban areas	**50.0** (12)	**50.0** (12)	**25.0** (6)	**75.0** (18)	24
Seasonal migration to other rural areas	**52.2** (12)	**47.8** (11)	**30.4** (7)	**69.6** (16)	23
Permanent migration by some household members	**64.7** (11)	**35.3** (6)	**23.5** (4)	**76.5** (13)	17
Find non-farm employment	**54.2** (26)	**45.8** (22)	**45.8** (22)	**54.2** (26)	48
No measure adopted	**50.9** (143)	**49.1** (138)	**45.6** (128)	**54.4** (153)	281

A significant number of households, 281 respondents, reported not adopting any coping measures due to high costs associated with climate-smart strategies and unfavourable land tenure arrangements that discourage investment in adaptive practices. The findings reveal that men are more likely to adopt irrigation practices, shift from crop to livestock farming, and utilise climate-resilient seeds compared to women, who are more inclined to reduce crop production intensity and diversify their crops. Moreover, both genders exhibit similar rates of seasonal migration for urban employment opportunities; however, men have greater decision-making power over resource management due to entrenched patriarchal structures within land tenure systems (Apusigah, 2009; Kuusaana et al., 2013). For instance, women need the approval of their husbands or a male relation to approach a chief to access land (Tsikata and Yaro, 2011), and also men usually decide on which coping measures to use. While NGOs have begun raising awareness about the importance of inclusive governance structures that involve women and youth in decision-making processes, progress remains slow.

Although coping strategies exist, Danso-Abbeam et al. (2021) found that they are often inadequate for households to escape the impacts of climate change. For instance, livestock production could be an alternative avenue for women to build resilience through increased incomes, but only a few women owned livestock. Lack of financial capital and cultural norms limits them to owning chickens, guinea fowl and small ruminants and prevents them from owning cattle and donkeys. Most of the climate resilience interventions in the districts are centred on application of inorganic fertilizers and improved seed varieties, but little attention is given to interventions

that promote women's empowerment through access to and decision making on productive resources. Gender and generational factors significantly influence the coping strategies employed by smallholder farmers in northwestern Ghana in response to climate change impacts. Understanding these differences is crucial for designing targeted adaptation interventions that effectively address the specific needs and constraints faced by various demographic groups within these communities.

By tailoring strategies that empower women and younger generations while addressing systemic barriers related to land tenure and resource access, it is possible to enhance resilience against climate change impacts effectively.

Rural-rural and rural-urban migration is another adaptation strategy used by households to cope with climate change impacts. Respondents indicated that the youth have been migrating from their communities over the last 10 years. Table 4.5, presents data on the perceptions of youth migration in the study communities over the past 10 years, broken down by gender (men and women) and generation group.

Table 4.5: Perception of youth migration in the study communities for the past 10 years

Perception	Men (%/N)	Women (%/N)	Young(%/N)	Old (%/N)
Increasing	**30.7** (120)	**28.9** (99)	**30.89** (113)	**28.9** (106)
Decreasing	**48.1** (188)	**46.0** (158)	**47.4** (174)	**46.9** (172)
Same	**16.1** (63)	**18.4** (63)	**17.2** (63)	**17.1** (63)
Don't know	**5.1** (20)	**6.7** (23)	**4.6** (17)	**7.1** (26)
Total	**100.0** (391)	**100.0** (343)	**100.0** (367)	**100.0** (367)
	Pearson Chi-square =1.6924 Pr = 0.639		Pearson Chi-square = 2.1190 Pr = 0.548	

The majority of respondents, across all gender and generation groups, perceived that youth migration has been decreasing over the past 10 years. Around 30% of respondents believe that youth migration has been increasing, while 17% perceive no change. However, there is no statistically significant relationship between gender and perception or between age group and perception. This implies that other factors such as socio-economic conditions or personal experiences, may play a more important role in shaping perceptions of youth migration in the communities. The existing literature indicates that youth and men migrate to other districts within the Upper West Region to engage in illegal small-scale gold mining. Others migrate to the forest ecological zone in southern Ghana for farming and farm labour, while most girls and women travel to the big cities to work as domestic workers and market porters. Awumbila and Tsikata (2010) highlight this phenomenon of seasonal migration to southern Ghana as an alternative livelihood activity. Households lose

a significant share of their dynamic workforce with the out-migration of the youth which might result in adverse effects on agriculture and rural development in the context of a changing climate (Adaawen and Owusu, 2013).

Using weather information is critical for making farming activity decisions and building resilience. Table 4.6 shows that a low percentage (less than 10%) of respondents reported their household always used weather forecasts. This indicates a general reluctance or inability to consistently rely on weather forecasts for planning. Likewise, a significant portion of respondents mentioned their households never use weather forecasts.

Table 4.6: Use of meteorological weather forecast for planning farming activities by households

Do you use meteorological weather forecast for planning your farming activities?	Men (%/N)	Women (%/N)	Young (%/N)	Old (%/N)
Always	**7.7** (30)	**4.4** (15)	**6.5** (24)	**5.7** (21)
Sometimes	**46.3** (181)	**41.4** (142)	**47.9** (176)	**40.1** (147)
Never	**43.2** (169)	**50.7** (174)	**43.3** (159)	**50.1** (184)
Not any longer	**1.8** (7)	**2.9** (10)	**1.6** (6)	**3.0** (11)
Other	**1.0** (4)	**0.6** (2)	**0.5** (2)	**1.1** (4)
Total	**100.0** (391) **100.0** (343)		**100.0** (367) **100.0** (367)	
	Pearson Chi-square =7.8726 Pr =0.096		Pearson Chi-square = 6.7631 Pr = 0.149	

There is no statistically significant difference between the answers of the respondents. The findings suggest that the limited reliance on weather forecasts for farming planning is wide across households. This is due to a lack of access to reliable forecasts, and insufficient understanding of how to interpret them. The high percentage of respondents who use forecasts "sometimes" suggests that there is potential for increasing the effectiveness of agricultural planning through better education and access to reliable weather forecasting services. Training programs could enhance farmers' ability to utilise these forecasts effectively. Overall, these findings highlight the need for targeted interventions that improve the accessibility and usability of weather forecasts for households, which could ultimately enhance agricultural planning and productivity in the study communities.

According to IPCC (2022), adaptive capacity refers to "the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take

advantage of opportunities or to respond to consequences." In this study, we sought to understand respondents' perceptions of their households' adaptive capacity to deal with the impacts of climate change. Table 4.7 presents data on household capability in the face of a changing climate, segmented by gender (men and women) and generation group (young and old).

Table 4.7: Perceived capability of households to deal with impacts of climate change

	Men (%/N)	Women (%/N)	Young (%/N)	Old (%/N)
Excellent	**0.5** (2)	**0.3** (1)	**0.3** (1)	**0.5** (2)
Very good	**2.6** (10)	**2.6** (9)	**1.4** (5)	**3.8** (14)
Good	**24.3** (95)	**23.0** (79)	**24.8** (91)	**22.6** (83)
Poor	**45.0** (176)	**42.3** (145)	**45.8** (168)	**41.5** (153)
Very poor	**21.1** (83)	**19.8** (68)	**20.4** (75)	**20.7** (76)
Don't know	**6.4** (25)	**11.9** (41)	7.5 (27)	**10.6** (39)
Total	**100.0** (391) **100.0** (343)		**100.0** (367) **100.0** (367)	
	Pearson Chi-square = 7.1113 Pr = 0.212		Pearson Chi-square = 7.8537 Pr = 0.164	

The data indicates a general consensus that households do not feel exceptionally equipped to handle climate change impacts, with a significant majority rating their capabilities as "poor" or "very poor." However, there was no statistically significant relationship between gender and household capability ratings (p-value = 0.212) or between generation group and capability ratings (p-value = 0.164). There is a pressing need for support and resources to enhance climate resilience. The findings suggest that interventions should be designed to address the collective needs of the community rather than targeting specific groups. The findings highlight the importance of capacity-building initiatives that can empower households with the knowledge, skills, and resources necessary to cope with climate change. This could include training on sustainable agricultural practices, access to climate information, and financial resources for adaptation. The relatively high percentage of respondents indicating "don't know" suggests a need for increased awareness and education regarding climate change impacts and coping strategies. Addressing this uncertainty could help improve overall household capability and resilience.

Households' adaptive capacity has severe socio-economic implications for their food security. Most of the older generation respondents indicated that their household members would not be able to feed themselves until the next harvest season if the rains failed in a particular year and the harvest was poor. This (in)

ability to ensure survival in the event of low rainfall resulting in crop failure is related to households' climate vulnerability and resilience (Yaro, 2013). The situation is worse for "vulnerable households with fewer crop and animal diversity to manage the climate variability and change. Such households have fewer routes to escape the droughts and less rainfall" (Sissala East, Bugubelle; women FGD). Table 4.8 presents data on households' perceptions of food security status in the event of rainfall failure, segmented by gender (men and women) and generation group (young and old).

Table 4.8: Households' perception of food security status in case of rainfall failure

	Men (%/N)	Women (%/N)	Young (%/N)	Old (%/N)
Yes	**20.0** (78)	**13.7** (47)	**(16.1)** 59	**17.9** (66)
Somehow	**28.6** (112)	**25.4** (87)	**(29.9)** 110	**24.3** (89)
Not sure	**6.1** (24)	**9.6** (33)	**(7.1)** 26	**8.5** (31)
No	**45.3** (177)	**51.3** (176)	**(46.9)** 172	**49.3** (181)
Total	**100.0** (391)	**100.0** (343)	**(100.0)** 367	**100.0** (367)

A minority of respondents believe they would remain food secure in the event of rainfall failure. This indicates that a small portion of the population feels confident in their ability to secure food despite adverse weather conditions. A significant percentage of respondents perceive they would not be food secure in the event of rainfall failure. This highlights a considerable concern regarding food security, suggesting that many households feel vulnerable to the impacts of climate variability.

In terms of gender, the data indicates a high level of perceived vulnerability to food insecurity in the event of rainfall failure, particularly by women respondents indicating "no" (51.3%). This could be linked to their roles in food production and household management. The distribution of responses across gender and generation groups, shows that perceptions of food security are relatively consistent. This indicates that the challenges related to food security in the face of climate variability are widespread across different demographics, underscoring the need for targeted interventions aimed at enhancing food security. This could involve providing education on sustainable agricultural practices, improving access to resources, and developing community support systems (e.g., collective farm labour services) to help households better prepare for climate impacts. Addressing food insecurity challenges requires a multifaceted household approach that does not necessarily focus on unique interventions for different demographic groups.

In the next section, we reflect on the dimensions of environmental governance to understand the capacity, functionality and performance of the district planning

system in the two regions, in effectively addressing the climate change related impacts faced by different genders and generations.

Processes of environmental governance and implications for climate resilience building

A review of the 2018–2021 MTDPs showed that all the 17 steps (Table 4.1) of the development planning guidelines were ticked as having been done. However, field interviews show that only 4 (Steps 2, 4, 5 and 12) of the 17 Steps were actually executed by the DCPUs in drafting the MTDPs. According to a key informant, the DCPUs are provided with "some kind of capacity building to understand the indicators and the steps in doing the medium-term development plan" (KII, 29 November 2023). However, they acted as institutional bricoleurs (Haider and Cleaver, 2023) in adapting processes from the suite of steps in their context of low human and financial resources and capabilities.

Step 2 – a performance review was duly conducted for the 2014–2017 MTDPs. The performance review was done, "to see what was planned, what we did and what was outstanding" (KII, 26 November 2023). Representatives of district departments, Area Council executives (Chairman, Secretary and Treasurer), Traditional Authorities and representatives of Civil Society Organisations participated in the performance review, and the results were indicated for all the 2018–2021 MTDPs. The main climate change issues mentioned by agriculture, forestry and natural disaster officers during the review included changes in rainfall patterns resulting in droughts, floods and reduced agricultural productivity. Despite the reported increasing impacts of climate change, the issues discussed during the review were not taken up in formulating the 2018–2021 MTDPs plans, and therefore no climate resilience interventions were implemented to address them in the local governance system. Only one district highlighted "reforestation of degraded forest and off-reserve areas through the Plantations Development and afforestation programmes" (District Assembly, 2014–2017 Performance Review), as an environmental management issue.

Step 3 – the situation analysis was not conducted mainly due to inadequate financial and human resources. This step, according to the guidelines, requires, "in-depth analysis of climate change impacts; the extent to which the causes and impacts of migration is contributing to and or affecting development; gender, including societal roles and responsibilities of men, women, boys and girls, the power relation between them and how it influences access to and control over resources such as land, credit and technology; […] It should also identify the strategic needs/interests which will lead to a change in the status of men and women […]." Under this Step, the Unit committees, with the advantage of being closer to

households "play the role of mobilizing the communities for public hearings, for implementation of development plans, […].providing data, monitoring and evaluating community development plans." This requirement does not say much about generation, especially the aged.

Steps 4 and 5 – (identification and prioritisation of issues) build on outputs from Step 3. The failure to implement situation analysis means the requisite information was not fed into Steps 4 and 5. Therefore, the 2018–2021 MTDPs did not capture the complexities of gender and generation, especially for the most climate vulnerable households, as their voices were not heard in the process. At the sub-district level, Steps 4 and 5 involved identifying community needs and priorities at Zonal and Area Council levels, to prepare the Community, Zonal, and Area Council Development Plans. However, as testified by a district planning officer, "in our case, we have to do it at zonal councils because of resource constraints." In another district, compiling and prioritising the needs were done through community forums and meetings: it was explained that, "when we were preparing the Area Council plans, our unit committees were there, Chiefs of the various communities were there, leaders of women groups were also there, youth leaders, like the Youth parliament, influential opinion leaders also came, and the physically challenged. So, these people helped us to come out with our Area Council Plan which was given to the Municipal Assembly" (KII Assembly man, 23 November 2023). However, the compiled needs were usually construed as tangible resources and infrastructure and not on the impacts of climate change. A 36-year-old female community member explained that*:*

> We will normally meet with the Assemblymen and our Unit Committee people to talk about what we need for our community. Then we will mention them, like school, water, dam, hospital. Then they ask that we pick the one that is mostly needed in the community, then we raise our hands for them to count to see who is interested in like borehole, then those who are interested in a school. So, the majority that will choose like school, then the school will be our topmost priority. The last time, we selected a school (FDG, 24 November, 2023).

The identification of needs and prioritisation is done by a few privileged community members, especially those in leadership positions. The process does not devolve to the entire community, thus is missing the voices of some social groups particularly women, youth and the aged. This is expressed in the following excerpt from a District Planning Officer:

> For the previous years and even this current medium term, because of lack of funds we did not do the 236 communities one, we rather did the Area Council one where we invited the key people, the Assemblymen, chiefs, representatives of women groups and each of the youth groups, but ordinarily, the best approach is to go to the people in the

> community for them to bring out their pressing issues and rank them but because of lack of funds, we picked the leaders from the community. So, in a way we believe leaders from the community represent their people, so when we get them at the Area Council, whatever we are doing there will transcend to the community (KII, District Planning Office, 23 November 2023).

At the community level, the traditional governance system is critical. Chiefs mobilise their communities for developmental projects and liaise between their communities and development agencies for climate resilience interventions (Yaro et al., 2015; UNDP, 2018). Informal norms and rules that govern the environment and natural resources in communities are usually chieftaincy institutions managed by traditional councils. In most communities, traditional leaders, such as chiefs, liaise with the spiritual head (*Tengan dem*) and his council of elders (usually landlords and/or family heads made up of men) to discuss and institute rules for managing the environment. Although women do not serve on the council, they sometimes act as advisors and/or observers, and report to the men (usually their husbands) matters relating to the destruction of the environment and natural resources, based on the concern to sustain their livelihoods. The institutions are collectively enacted through spiritual invocations and fines on offenders, by the chiefs, spiritual heads and landowners. These are also all men, both young and old generations. Informal institutions are critical for decision-making on livelihoods, building household climate resilience and migration decisions, as they sanction access to land. They are also central in defining power relations in the communities as they effectively control the political economy and reinforce formal institutions. However, informal and formal institutions are not well integrated to effectively inform decision-making on strengthening communities' climate resilience. For example, landholding for farming is based on customary tenure which is usually unwritten, and not embedded in the state documented process.

Step 12 is for preparing district composite plans and implementation of annual action plans. This entails the harmonisation of Zonal and Area Plans and Departmental needs into the district MTDPs for implementation. The study identified a gap between the procedural steps outlined in the national planning guidelines and what was executed by the district governance system. The discrepancy was attributable to cumbersome activities, inadequate skills, capacity and financial support.

For instance Table 4.9 presents data on various policy interventions aimed at addressing gender issues to build climate resilience, with respondents rating the extent to which these interventions are implemented.

Table 4.9: Policy interventions on gender issues to build climate resilience (%)

Intervention	Not at all	To a limited extent	To a moderate extent	To a great extent	To the fullest extent
Department receive training and tools on gender planning, analysis and evaluation.	0.0	4.2	25.0	50.0	20.8
Department allocates sufficient budget to support the integration of gender issues in implementation of development plan.	8.3	41.7	25.0	12.5	8.3
New knowledge and mechanisms of implementing gender-related development interventions.	0.0	8.3	33.3	54.2	4.2
Implementing planned gender friendly climate adaptation and mitigation interventions.	0.0	4.2	54.2	37.5	4.2
Necessary knowledge, skills and attitude to carry out gender data collection and analysis.	0.0	4.2	25.0	50.0	20.8
Field staff trained in gender awareness and sensitisation.	0.0	20.8	45.8	29.2	4.2
Far too many constraints in effectively implementing planned gender friendly climate adaptation and mitigation interventions.	0.0	4.2	54.2	37.5	4.2

The institutional analysis indicates a need for improvement in gender planning resources. Only 20% of development officers across seven districts strongly agreed that they received adequate gender planning training and tools. Compounding this issue, approximately half of the officers felt that budget allocations for gender integration were limited or absent altogether. This finding aligns with research by Arthur (2016) and UNDP (2018), which underscores the persistent challenge of insufficient funding for gender mainstreaming initiatives. Even when budgets are allocated, effective implementation remains a hurdle.

While most respondents acknowledged that training and tools for gender planning were being implemented to some extent, the moderate rating suggests that further improvements are needed to enhance gender awareness among field staff. The fact that a large percentage of departments receive gender planning training signals a dedication to promoting gender sensitivity in climate resilience initiatives,

and it could positively impact future policy implementation. However, the lack of sufficient budget allocation for gender integration poses a significant obstacle that may impede the successful implementation of gender-responsive policies.

The majority of respondents reported gaining new knowledge and tools for gender-related interventions, indicating growing recognition of gender's importance in climate resilience. This, in turn, may foster more effective and inclusive interventions. While gender awareness training appears to be reasonably common, the study did not collect data on the integration of generational challenges and opportunities into climate resilience efforts, representing a potential area for further investigation.

Gender mainstreaming is increasingly recognised as crucial for successful climate resilience interventions, influencing collaborations with development partners and local NGOs. While earlier studies (Duncan, 2004; FAO, 2018) highlighted the lack of gender components in training manuals and insufficient staff knowledge, more recent manuals often contain the necessary information. However, a significant gap remains: development planners and implementers often lack a deep understanding of the structural and cultural changes required for effective gender mainstreaming (Buchy and Basaznew, 2005; Shrestha et al., 2019). Consequently, planning processes, intervention design, and implementation often fail to adequately address the underlying structural inequalities that shape how different social groups (women, men, young, and old) cope with climate change impacts, including variations in gender responsibilities and power dynamics. Continuing with a "business-as-usual" approach (Osei-Amponsah et al., 2023b) risks exacerbating existing inequities among vulnerable social groups, hindering their adaptive capacity, even if the perceived impact of climate change (e.g., dry spells) appears similar across these groups.

Rethinking environmental governance

Ghana operates a decentralised governance system at the sub-national (district) level. The Local Governance Act 936 (2016) grants Metropolitan, Municipal, and District Assemblies (MMDAs) the authority to formulate, implement, and govern environmental policies (Hackman et al., 2021). In line with this, the national planning entity provides guidelines for local authorities to adopt. The institutions, structures, and processes of environmental governance within the national development agenda aim to address challenges such as the inadequate inclusion of gender and vulnerability issues in climate change policies and the lack of local ownership of climate change interventions (NDPC, 2022). This book chapter explores how climate change impacts and coping strategies are shaped by gender

and generational differences, as well as the inclusiveness of decision-making processes in environmental and climate resilience planning.

Our findings reveal no significant differences in climate change perceptions across gender and generational groups, except that more men reported experiencing dry spells compared to women. However, women in northwestern Ghana are disproportionately affected by climate change due to their reliance on natural resources for their livelihoods and their responsibilities in securing food, water, and fuel for their households. For instance, a higher proportion of women expressed concerns about food insecurity when rainfall is insufficient and harvests are poor. Despite their critical role in managing natural resources, women remain underrepresented in environmental governance and decision-making processes. This exclusion results in policies that fail to adequately address their specific needs and vulnerabilities, perpetuating existing inequalities. Social norms further limit women's access to decision-making spaces and farmland resources, exacerbating their vulnerability to climate impacts (Alare et al., 2022).

Coping strategies differ across gender and generational lines. Men tend to adopt financial-intensive measures such as irrigation and livestock rearing, whereas women and older generations often rely on adaptive strategies that involve resource management within the household. Understanding these variations is essential for designing effective climate interventions that are sensitive to the capacities and needs of different social groups. Climate resilience-building efforts should focus on collective household risks while acknowledging that vulnerabilities and adaptive capacities are shaped by socio-cultural norms and development planning processes (Eriksen et al., 2021). Addressing the inequalities requires a collective, inclusive approach that empowers all social groups, men, women, youth, and the elderly to participate in climate resilience decision-making.

All respondents, regardless of gender or generation, perceived a rise in youth migration over the past decade. Many young people are leaving agriculture-based livelihoods in response to climate-induced challenges, seeking better opportunities in urban or peri-urban areas (Teye et al., 2024). This migration disrupts traditional family structures and community ties, complicating the intergenerational transmission of agricultural knowledge and resource management practices.

Our study highlights gaps in development guidelines related to climate resilience planning, particularly concerning the needs of younger and older generations. Current policies do not adequately reflect the social transformations occurring between generations, limiting the effectiveness of interventions. While gender mainstreaming is emphasised in climate resilience planning, challenges such as inadequate budget allocations and limited integration of socio-cultural dynamics persist.

Effective environmental governance should be implemented at the district level with national-level oversight, ensuring local governments have the discretionary

power needed to represent their communities effectively (Ribot, 2003). This institutional space allows planning officers to self-organise, make informed decisions, and take action (Lebel et al., 2006). However, our findings suggest that these efforts remain insufficient, underscoring the need to rethink environmental governance for climate resilience in northwestern Ghana.

For environmental governance to be effective, it must incorporate clear direction, harmonised coordination, adequate capacity, needs-based planning, and accountable implementation of interventions (Lockwood et al., 2010). In our case study, the Medium-Term Development Plan (MTDP) guidelines provided a comprehensive vision for the national development agenda over a four-year period, outlining step-by-step activities for drafting, validating, implementing, and monitoring district development plans. The guidelines also defined the roles and responsibilities of various actors, with oversight from the District Planning Coordinating Unit (DPCU). For instance, addressing challenges such as low institutional capacity to manage climate variability and inadequate, fragmented climate data (GoG, 2021:117) requires a structured follow-through from policy formulation to implementation. Ensuring sufficient capacity at all procedural stages, through financial and human resource allocation is crucial for conducting participatory appraisals and community needs assessments, such as Step 3 (in-depth situational analysis) and Step 13 (public consultation to validate draft district development plans). Climate resilience interventions must consider the diverse lived experiences of household members within specific social structures, ensuring that the actual needs and priorities of vulnerable men, women, youth, and the elderly are addressed. This will help reduce their exposure to climate and non-climate stressors and enhance their adaptive capacities.

The Annual Action Plan of MMDAs serves as the foundation for district program-based budgeting, in accordance with the Public Financial Management Act 921 (2016). Only priorities outlined in the Plan receive an implementation budget. Our study found that planning officers collected climate-related needs assessments from select communities and departmental units, but local communities had no power over the final decision on what was included in the Annual Action Plans. To enhance accountability, communities must be empowered to influence the planning process. Additionally, establishing a dedicated climate change expert or desk officer within the governance structure would ensure the mainstreaming of climate issues and resilience-building efforts throughout all 17 steps of the planning process. This approach would prevent climate change from being treated merely as a cross-cutting issue and instead integrate it as a core component of national and local development agendas.

By highlighting the interconnectedness of gender, generation, and power relations in environmental decision-making, this chapter has provided insights into

creating more equitable and effective responses to climate change. However, further research is needed to explore the intersections of gender, generation, ethnicity, social class, and networks in environmental governance. A deeper understanding of these dynamics will enable more inclusive and effective decision-making processes.

Conclusion and recommendation

The climate vulnerable hotspots and agriculture-dependent communities of the Savanna and Upper West Regions in northwestern Ghana are facing significant challenges due to climate variability and change, compounded by pressures on natural resources and rapid socio-economic shifts. These impacts directly affect the ability of households to build climate resilience. While formal and informal institutions exist to facilitate community participation in development planning, the study reveals critical gaps, particularly regarding the inclusion of women and older generations, and the limited implementation of procedural steps due to resource constraints. This ultimately results in the exclusion of the needs of the most vulnerable populations in climate resilience interventions, potentially leading to maladaptation or non-adoption of the interventions. To ensure effective environmental governance and build genuine climate resilience in the future, development practitioners should prioritise the following actions:

- **Investing in comprehensive capacity building:** This includes training programs at all levels, from government institutions to local communities, focusing on gender and generational issues, climate resilience strategies, and participatory planning techniques. Such investments will empower stakeholders to make informed decisions and allocate resources effectively. Looking ahead, these capacity-building initiatives should also incorporate climate forecasting and scenario planning to prepare communities for a range of potential future climate impacts.
- **Scaling up participatory approaches:** Future climate resilience initiatives must fully integrate the needs and perspectives of those most affected by climate change through inclusive and equitable participatory processes. This requires proactive efforts to engage women, youth, and older generations in the design, implementation, and monitoring of interventions. Utilising digital platforms and community-based facilitators can enhance participation and ensure that diverse voices are heard.
- **Prioritising financial mechanisms:** Development partners must commit to sustainable funding mechanisms that specifically support gender-responsive and generation-inclusive climate resilience projects. These mechanisms should

ensure that adequate resources are available for effective implementation, monitoring, and evaluation. Innovative financing approaches, such as climate bonds and community-based revolving funds, should be explored to leverage additional resources and promote local ownership.

– **Establishing adaptive monitoring and evaluation frameworks:** Robust frameworks are essential for continuously assessing the effectiveness of climate interventions and adapting strategies based on real-world impacts. These frameworks must include the collection and analysis of gender- and generation-disaggregated data to understand how climate change affects different demographic groups. Furthermore, these frameworks should incorporate community-based monitoring systems to empower local stakeholders to track progress and identify emerging challenges.

Effective environmental governance in the two regions hinges on building capacity, strengthening institutions, and ensuring well-coordinated processes. Addressing the current inadequacies in financing and institutional capacity is paramount. By prioritising these areas, decision-making processes related to environmental issues and climate resilience can become more inclusive, responsive, and effective. This will ensure that the diverse needs and perspectives of all community members are considered, leading to more sustainable and equitable outcomes, and fostering a future where communities are empowered to adapt and thrive in the face of climate change. The focus should be on creating an environmental governance system that promotes shared monitoring, continuous learning, and adaptive management, ensuring long-term climate resilience for all.

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CHAPTER 5

Grabbing River Rhythms: Fishing Communities and Water Justice in Two Swamps of the Magdalena River

Juliana Forigua-Sandoval, Bibiana Duarte-Abadía and Rutgerd Boelens

Abstract

The middle basin of the Magdalena River (Colombia) is composed of wetlands and swamp complexes that are interconnected by streams and culverts. Fishing associations have witnessed their riparian water connectivity affected by different interventions such as the construction and operation of hydroelectric dams and the expansion of oil palm monoculture by large landowners. In this contribution, we propose to conceptualize river grabbing in the Magdalena river's context as the disturbance of the river connectivity through the control of river rhythms by actors who dispossess fisher associations of their artisanal production. Specifically, based on an ethnographic analysis of the productive activities of fisher associations in the swamps of La Gloria (Cesar) and Llanito (Santander), we identify how different infrastructures and interventions disrupt the migratory cycle of fish and the flows of water among the swamps and the main river. Finally, building on water justice frameworks, we analyze the actors, strategies, and discourses involved in each case and highlight the challenges and opportunities for collective action to gain recognition and defend the rights and interests of artisanal fishers. We conclude by discussing the implications of our analysis for water governance.

Keywords: River Grabbing, Wetlands, Colombia, Rhythms, Water Justice.

Introduction

The Magdalena River has been a subject of diverse studies and reflections throughout the intellectual history of Latin America (Camargo, 2022; Duarte-Abadía et al., 2015; Fals Borda, 1986; García-Aguilera, 2022; Hernandez-Rodriguez et al., 2022). Stretching across Colombia from south to north, traversing twelve departments, it is characterized by significant socioecological biodiversity encompassing diverse ecosystems, ways of life, and modes of production. Originating in the departments of Huila and Cauca, it descends from the Andean wetlands at 4,000 meters to the sea

at Bocas de Ceniza, near Barranquilla. The State, agribusiness sector, enterprises, and diverse actors have intervened in the river, constructing canals, hydroelectric plants, refineries, and pipelines for oil extraction (Restrepo, 2006; Gutiérrez, 2016; Boelens et al., 2021).

These interventions have resulted in impacts on the wetlands that serve as the source of the livelihoods of fisher associations in the middle basin of the Magdalena. Specifically, the wetlands consist of swamps, marshes, floodplains, culverts, and streams that feed the riverine communities. These ecosystems connect water and land bodies, with hydrological dynamics dependent on the connectivity and influence of the river's main channel. The bifurcation between the culverts and the river is crucial for water storage, leading to the formation of swamps which are vital ecosystems for the direct and indirect connections of rivers and their hydrography. These swamps rely on rainfall patterns. During the winter season, particularly from March to May and September to November, organic sediments are channeled into the swamps. Once the cycle concludes, water storage increases due to the fractal formation of the swamps, generating a multitude of interconnected small water bodies (Jaramillo et al., 2012).

This transport of sediments is essential for fish migration. The formation of deep zones or bays, open water areas and vegetation zones along the shore enhances the trophic chain and provides habitat and protection for flora and fauna. In this sense, swamps are more than water sources; they are repositories of nutrients, food, and organic life that sustain and nourish fish populations (Camargo, 2022) and by extension the people who live in the area. Fish migration is also influenced by the hydrological cycle and the phenomenon of "*Subienda*" and "*Bajanza*."

This phenomenon is closely tied to the river's seasonal climate patterns, particularly the summer and winter rhythms. The *subienda* typically begins in the summer, between December and February. As water levels drop and the floodplains dry up, fish migrate from the swamps in search of cooler, more oxygen-rich waters, swimming in large schools upstream through the main channel. During this time, the fish mature and grow fat, prompting fishing communities to intensify their activities. The rhythms occur again between June and August, a period known to fishers as the "small *subienda*" due to the smaller number of fish swimming upstream. Then, water levels reach their peak, signaling the beginning of the *bajanza*. This occurs during the winter months: from March to May, and again from September to November. During these periods, fish swim downstream toward the lower Magdalena River, seeking areas to spawn. They enter the swamps, where they find abundant vegetation, shelter, and nutrients. As the river floods, it fills the swamps, allowing the fish to enter. Here, the juvenile fish (*alevinos*) feed and grow in the nutrient-rich environment. This cycle repeats annually (Andrade-Pérez, & García-Cháves, 2016).

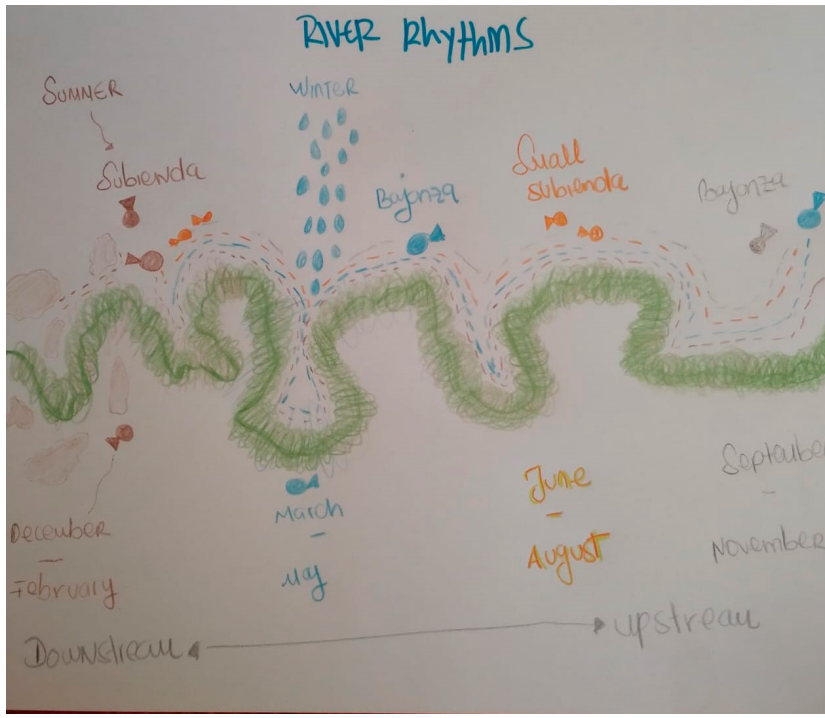

Figure 5.1: Hand-drawn illustration depicting the phenomena of Subienda and Bajanza. Source: Juliana Forigua-Sandoval fieldwork notebook

The connectivity between branches, culverts and streams is central for artisanal fishing. Understanding this helps identify the river governance practices of the fisher associations and the inherent times of their riverine lives: the timing of the hydrological cycle, the migration of the fish, and the dynamics of erosion and flooding (Camargo, 2022). In this chapter, we examine how the process of river grabbing directly relates to the effects that hydropower and livestock infrastructures have produced on the migratory cycle of fish and the disconnections that this has brought to the formerly connected swamps. Besides, using a water justice framework, we analyze how riverine communities have dealt with river grabbing practices. An important aspect of river grabbing in the Magdalena River's riparian contexts is related to the compromising of river connectivity through the control over river rhythms. This in turn undermines artisanal fisher associations' production and, therefore, riparian life.

What does it mean to grab a river?

Recently, environmental and social scholars have paid attention to the processes of dispossession of water resources through the practices of water grabbing. This term has diverse interpretations depending on the context. A general definition provided by Mehta et al. (2012) establishes that water grabbing involves situations where powerful actors control or reallocate water resources used by communities for their own benefit. In this chapter we recognize the complexity of the land-water nexus (Krause, 2017) and pay attention to the everyday injustices suffered by different populations that rely on water ecosystems. Research on water grabbing has mostly focused on agricultural landscapes and irrigation systems, particularly on power relations related to inequalities, distribution, location, and reallocation of water supplies at local, regional, national, and global scales (Dell Angelo et al., 2016; Heikkinen, 2024). Water grabbing has been defined in relation with the debate about land grabbing and the land rush (Borras et al., 2012), emphasizing control and appropriation of natural resources and mechanisms of accumulation by dispossession (Harvey, 2003). Land grabbing processes are directly performed in order to gain control over the ways in which water is used, by whom, when, for how long and for what purposes (Veldwisch, et al. 2018; Prieto et al., 2021).

Borras et al. (2012) conceptualize grabbing as linked to the dynamics of capital accumulation rooted in food, energy, climate change, and financial crises by centers of capital accumulation. However, there are few studies that analyze the implications of water grabbing in fluvial territories. Therefore, we focus on river grabbing on the Magdalena River and its middle basin, to contribute to debates of site-specific and contextual injustices around river governance and to identify the strategies that riverine communities employ to address these injustices.

Due to a long history of land dispossession in Colombia's fertile valleys, many peasant communities have sought to create their own space along the river; in order to survive they became an 'amphibian population' (see Fals Borda, 1986: 179). Krausse (2017) refers to this process as space-making, in which people whose lives are closely entwined with the rhythms and courses of the river have an active role in making space along the river (see also Oslender, 2002; Jackson et al., 2022; Wantzen, 2023; Wantzen, 2024). Space-making includes people's engagement with water flows. Fishers move and sustain their livelihoods following the rhythm of the river; their territoriality moves as the river flows. In this sense, fisher communities develop different 'fluvitories' (Krausse, 2017) based on the river's rhythms associated with the phenomenon of *subienda* and *bajanza*. This process entwines with the routes of fish migration, too. As one expression of 'riverhood' (Boelens et al., 2023), the notion as 'fluvitory' also breaks with the dichotomy between people,

and land and water, and broadens the understanding of 'making space' through the synchronized movement of water, plants, animals, sediments and humans.

We argue that alterations to the connectivity in the swamp ecosystems of the Magdalena River constitutes a type of river grabbing. It also connects to the work by Metha et al. (2012: 198), who use the term 'grabbing' as it "*draws attention to the involvement of capitalist players and stakeholders in water management and the rise of new political and economic power relations through diverse trajectories of neoliberalism*" (see also, Van Eeden et al., 2016). These actors implement different strategies, attempting to control the rhythms of the river to acquire more lands (by drying out the spaces of the river) over which they gain territorial control and from which they can profit. This process affects the livelihoods of fisher associations and riverine peasant communities through encroachment, it grabs amphibian stories, practices and memories, that all make space along the river. River grabbing deeply affects the constitution of amphibian lives, livelihoods and worldviews and constrains and limits the benefits that society can draw through interaction with the river. Changing the flows and course of the rivers directly transforms socio-spatial relations along the river.

We emphasize the recognition of fisher associations' governance, namely, the customary arrangements and socio-legal procedures they employ as strategies to protect their fluvitory lives against the process of river grabbing. Understanding such lives involves the examination of fishers' livelihoods, regulations and their productive activities. It also encompasses fisher communities' governance; the decisions and actions along the river entail a negotiation and interactions among numerous formal and non-formal organizations, as well as private and state actors (see Duarte-Abadía et al., 2016).

Fisher associations' water governance amidst river grabbing practices

This text reflects on water governance and justice amid agrarian change, focusing on conflicts driven by diverse populations to protect their knowledge, cultural values, and decision-making around rivers. Specifically, it examines fisher associations' negotiations with the Colombian state and private sector regarding interventions in the Magdalena River. It stresses the importance of addressing injustices tied to rivers' ecological complexity, recognizing their dynamic nature in water governance.

Rivers embody multiple rhythms, such as flooding, erosion, and fish migrations, which are altered by different actors. Understanding these dynamics helps identify the diverse governance approaches. Moving beyond static land views, the water-land

nexus reveals competing interests among fisher associations, peasants, private sectors, the state, and landowners. This analysis must overcome the binary of land versus water (Lahiri-Dutt, 2013) and engage with the temporal rhythms of rivers to deepen our understanding of river grabbing (Krause, 2022; Jackson et al., 2022).

The water justice framework recognizes the fisher rights embedded in rivers as "hydrosocial territories" (Boelens et al., 2016). Neo-colonial and extractive practices disrupt rivers' synchronized flows, transforming norms and legitimacies around territorial control (Boelens, 2011). As elites control river connectivity, they influence Colombia's political and economic dimensions, given the Magdalena's centrality to national productivity.

Our contribution critiques the static liberal concept of rights, emphasizing the historical, changing strategies of fisher associations in resisting river grabbing and adapting to infrastructures. The fisher's rights are continually renegotiated, reshaping legal, political, and cultural frameworks (Zwarteveen et al., 2005; Suhardiman & Rigg, 2021). This involves situated knowledge about rivers (Boelens et al., 2023), recognizing the unique meanings and claims tied to specific communities and challenging neoliberal water management that privileges private actors (Duarte-Abadía et al., 2023).

To understand these dynamics, the chapter analyzes:

1. The legal, economic, and political factors behind state and elite control of river connectivity.
2. Current norms and rules on river rhythms, including legal and customary frameworks.
3. Conflicts over who has authority over river access and knowledge.
4. Emerging community-driven fisher's rights discourses rooted in cultural practices.
5. The interrelations of these ideas in understanding rivers' socio-ecological integrity and rhythms.

Ethnography and Rhythmanalysis of artisanal fishing

This reflection arises from an ethnographic exercise conducted from March 2023 to March 2024. The first author made several visits during this period to two swamps along the middle Magdalena River: the Llanito swamp, located in the Santander department near Barrancabermeja city and the Gloria swamp-complex in the Cesar department. The research engaged with Lefebvre's notion of "Rhythmanalysis" (2013): we explore how rhythms shape everyday human experience by examining the intersection of time, space, and movement. In this context, we analyze how the natural cyclical rhythms of the river have been disrupted and altered by the state

and the agribusiness sector, impacting the daily productivity and livelihoods of artisanal fishers.

The collected information focused primarily on the productive activities of fisher associations and their fishing techniques. The practice of fishing has been extensively documented in Colombia by a broader network of researchers exploring the amphibious spectrum, which includes communities and ways of life intertwined with water, swamps, and riverine daily life (see Duarte-Abadía et al., 2015; Hernandez-Rodriguez et al., 2022) We aim to contribute to these understandings by reflecting on amphibious life.

The first author accompanied fisher associations to engage in fishing activities and learn about their tools such as the *atarraya*, *chinchorro*, and *nasa*, as well as their fishing techniques like the *faenas*: gatherings of fishers who travel in canoes to listen to the fishes' movements, map their locations, and catch them while they are active. Artisanal fishing stands in opposition to industrial fishing and illicit practices such as the *trasmallo*, a fishing method using electricity which catches a larger quantity of fish but kills both mature and juvenile fish. We sought to understand how various interventions and infrastructures managed by the state, enterprises, and landlords affected the productive activities of these associations, as well as why they continued to defend their traditional fishing methods.

More specifically, the first author conducted 30 semi-structured interviews with artisanal fishers. In each swamp, 15 interviews were conducted with association leaders to comprehend their activities, demands, methods of river governance, and interactions with private and state actors. She attended meetings and assemblies where associations engaged with state entities such as Cormagdalena (the Autonomous Regional Corporation of the Magdalena River), CAS (the Autonomous Corporation of Santander), Corpocesar (the Autonomous Regional Corporation of Cesar), and municipal offices. Additionally, several fieldwork visits helped to understand the ecology of the swamps and the water connectivity among river branches, streams, culverts, and the main channel of the river. We explored how this connectivity has been impacted by various infrastructures, resulting in the decline of fish populations in the swamps and the depletion of vital fishery resources for the associations.

The conversations we had with the associations led to an understanding of artisanal fishing through a historical and rhythms lens. The swamps selected for this reflection were inhabited, according to local memory, approximately 100 years ago. Riverine life evolved with the introduction of infrastructures like hydropower plants and the establishment of state institutions like Ecopetrol (the National Oil Company), machinery for oil extraction, and oil pipelines. These communities have faced various cycles of river grabbing, so our reflections are rooted in a long history of conflict, landlord power, and the memories of amphibious people.

La Gloria Swamp complex

La Gloria swamp complex is situated in La Gloria municipality in the Cesar department, located in the northeastern region of Colombia. These swamps border the Magdalena River and are interconnected by streams and culverts. The area's landscape is mainly characterized by oil palm monoculture and livestock farming. Strong landlord influence prevails, with territorial control of the river being contested by peasants and fisher associations. The conflicts in this region primarily revolve around the control of stationary islands (stationary islands are formed by the movement of sediments, appearing in summer and disappearing in winter) and land and water appropriation by agribusiness and *haciendas*. According to the Departamento Administrativo Nacional de Estadística (DANE, 2014), since 2013, 4,997 hectares of oil palm monoculture have been cultivated in La Gloria, representing 57.2% of the municipality's total cultivated area.

Figure 5.2: Hand-drawn map of La Gloria municipality, highlighting the surrounding swamps and its proximity to the Magdalena River. Source: Juliana Forigua-Sandoval fieldwork notebook

Fisher associations in the Cesar department are united under FEDEPESCE (Federación de Pescadores Artesanales y Ambientalistas del Departamento del Cesar). These groups aim to protect artisanal fishing from illegal and unsustainable practices like *trasmallo*. Fedespece aims to scale up fisheries governance through negotiations with AUNAP (Autoridad Nacional de Acuicultura y Pesca) and the Ministry of Agriculture.

As mentioned earlier, the movement of sediments and the seasonality of the river lead to the formation of stationary islands along the Magdalena River. These islands are considered public property of the Colombian state. According to the 1900 Law of 2018, these islands are primarily allocated to communities that have historically used them for cropping. During dry periods, fishers cultivate sweet potatoes and cassavas to ensure food security for the communities. In wet and winter seasons, the flooding process allows the river's recovery; the islands are submerged, and fishers return to their fishing activities. Nevertheless, landlords have taken advantage of this seasonality of erosion and flooding, both in winter and summer, with the objective of drying up and enclosing flood areas, thereby transforming communal river spaces into private properties – effectively grabbing the river. Furthermore, through the introduction of cattle and oil palm monoculture, landlords inhibit the river's natural recovery. This process of river grabbing signifies the control of the seasonality of the river and, consequently, the control of the rhythms of riverside life.

As a fisherwoman said:

> There is a huge problem with water, and it's that you can't set boundaries for water. You can't say, 'Oh no, this little part of the pool is mine.' No, since it's a public good, every time there's a drought, landlords move the fence. So, other conflicts start to arise, creating difficulties for fishermen, for instance. If you look at it, fishermen deal with issues related to oilpalm and livestock. Extensive cattle ranching, particularly in La Gloria for example, which is a problem repeated in other places, causes all those with cattle to cut down the trees around the wetland so the cows can go out and drink water. This has multiple impacts on the fauna and flora, because, for example, the trees surrounding the wetland serve as passageways for the monkeys and all the species that live in the community—the white-faced monkeys, birds, etc. So of course, deforestation ends up being a big issue there, and institutions have never paid attention to us. (Anonymous testimony, personal communication, 2024)

The ecological shifts in the river induced by the oil palm monoculture industry also constitute a form of river grabbing. Oil palm has seen a significant expansion across the country. According to FEDEPALMA (Federación Nacional de Cultivadores de Palma de Aceite), oil palm stands as the most productive oleaginous crop, with

one hectare yielding 6 to 10 times more oil compared to other crops. Nationally and regionally, oil palm is utilized for animal nutrition and food production. The cultivation of oil palm demands a substantial amount of water, often leading to adverse effects on nearby water bodies such as the Magdalena River and the swamps of La Gloria. FEDEPALMA estimates that 6,600 cubic meters of water are needed per hectare of oil palm crops annually. If droughts last longer than two months, the required amount of water increases (El Palmicultor, n.d.). The water requirements of these plantations contribute to the depletion of river water levels, exacerbating erosion processes (Vargas et al., 2015).

FEDEPESCE has implemented diverse strategies to draw the Colombian state's attention regarding the appropriation and grabbing of stationary islands, as well as the dewatering mechanisms employed by landowners to assert territorial control over the river. Specifically, during the winter, when the river is in its recovery phase, landowners use motor pumps to divert river water for private purposes. Similarly, the introduction of cattle prevents the river from recovering, further contributing to its depletion. According to the National Land Agency of Colombia (Agencia Nacional de Tierras), under the former authority of INCODER (Instituto Colombiano de Desarrollo Rural), a subdivision of the Ministry of Agriculture, the Colombian state has mandated the demarcation of stationary islands. This includes the removal of fences, motor pumps, and cattle to reclaim these areas for public use by local communities.

At an institutional level, there is a shift going on regarding the management of wetlands and swamp systems. In the 1970s, these river areas were officially drained to make them usable for extensive livestock farming and intensive agriculture. Similarly, they were subject to titling and transitioned from communal to private property regimes. This change generated many conflicts in the management of these wetlands. The peace agreement, between the national state and the Revolutionary Forces of Colombia (FARC) in 2016, aims to dismantle these titles, that is, to delimit the swamps and wetlands to return these spaces to the fishers. This institutional effort triggered by the collective claims of fishers is called the *water restitution process*. Water restitution recognizes the history of appropriation, use, and management of the river lands. Therefore, water restitution means rehabilitating aquatic spaces to revive the food system of the fisher communities.

However, there has been little visible progress from the state in this matter. Due to the lack of records on the amount of land taken by landlords and agribusinesses, the reclamation process remains unclear, and documentation has been lost amidst institutional changes. The restitution process is vague, and the islands continue to remain under the control of landlords. Leaders from La Gloria regularly travelled to Bogotá for meetings and assemblies organized by the Land Restitution Unit (URT) as part of their political activism. Their efforts primarily focused on mobilizing agrarian discourses. However, Colombian institutions have not yet properly

recognized fishing associations, and public policy lacked a targeted approach. Without a clear recognition of fishing associations as key political actors, the issues and demands surrounding water and land restitution cannot be fully addressed.

Llanito swamp

El Llanito is located in the Santander department, 30 kilometers from Barrancabermeja. It is territorially organized around the swamp. According to its inhabitants, since 1930 diverse populations from the upper Magdalena have migrated to this territory and began productive activities linked to artisanal fishing. The community's story is interwoven with idealized metaphors of the swamps, fish migration, vegetation, and fauna. Artisanal fishing is the distinctive activity of their history; the llaniteros are fishermen and fisherwomen.

The Llanito swamp is a wetland connected to the Magdalena and Sogamoso rivers. The connectivity between the river branches, the canals, the swamps, and the main channels of both rivers guarantees the fishing economy. The migration of fish is the most important ecological process in the swamp. Between 2014 and 2019, the Hidrosogamoso Dam was constructed on the Sogamoso River (Santander department), near the La Paz mountains. The dam is owned by ISAGEN in cooperation with the state and national and international stakeholders. The Betania and El Quimbo dams are present as well, affecting the overall flow of the river. However, it is the Hidrosogamoso dam that has directly impacted the Llanito swamp. The presence of the dam disrupts the natural flooding dynamics, which historically nourished the swamp and supported local fisheries. The fishers' association APALL (Asociación de Pescadores Artesanales y Acuicultores del Llanito) reported the implications of the dam's construction for fisheries. Historically, the fish from the Sogamoso nourish the Llanito swamp and the Magdalena River, based on the flooding dynamics. The construction of the dam deeply affected the fish migration (*la subienda* and *la bajanza*).

Water discharges, or the volume of water flowing through a river over time, fluctuate seasonally. During the rainy season, the Sogamoso River's flow increases due to rainfall in the basin, raising water discharge and potentially causing flooding and increased flow into the Magdalena River. In contrast, during the dry season, reduced rainfall lowers river flow and discharges. Managing sluice gates in dams is key to regulating this flow, but these interventions also disrupt natural rhythms critical to fish migration. The altered timing and volume of water discharges, driven by gate operations and reservoir regulation, hinder the migratory rhythms of fish, which depend on natural flooding cycles to access breeding and feeding grounds. This disruption leads to population declines and reduced biodiversity in connected wetlands and river systems.

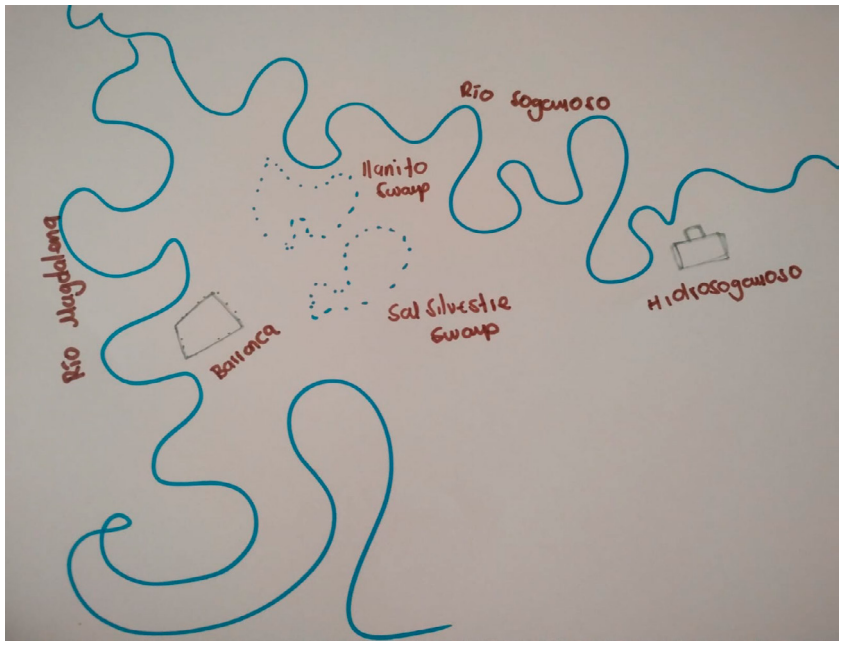

Figure 5.3: Hand-drawn map of El Llanito Swamp highlighting the surrounding swamp San Silvestre, Barrancabermeja city and Hidrosgamoso dam, and its proximity to the Magdalena and Sogamoso rivers. Source: Juliana Forigua-Sandoval fieldwork notebook

In words of one fisherman:

> …but let's say that one of the factors for the drying up of the river, and of the wetland, is the Hidrosogamoso dam. Because, as I told you, it has greatly influenced things after the flooding we had, which caused this area to dry up quite a bit—it got filled with a lot of silt. So, from then on, everything started to deteriorate. For example, fishing wasn't the same anymore; the fish practically disappeared because it's too dry and very silted now. When it floods, for example, now with the coming rainy season—next month and May—if there's a good rainy season, the river rises, releases water, and fills this place. But the water disappears quickly; it doesn't last here. As fast as the water comes in, it flows out right away, and the fish have to leave because there's nowhere for them to take refuge. Everything is silted, so the fish must leave. And, on top of that, it seems that the fish being brought in are no longer the same. Of course, the fish don't grow; they stay small. (Anonymous testimony, personal communication, 2023)

The control of flooding and erosion seasonality by ISAGEN also implies rules, power relations, and social orders that deny the people's governance, specifically, of

fishers' associations. The connectivity of the river was affected by the dam, which also reorganized the social dynamics of the river and the swamps. The obstacles to hydrological connectivity in this case imply the disconnection of negotiations between fisheries in the swamps, peasant and indigenous communities settled in the Yariguíes mountains, and civil organizations defending water ecosystems like Rios Vivos Santander (a social movement opposing the construction of dams in Santander).

The construction of Hidrosogamoso, the negotiations between ISAGEN and the communities, and the lack of legislation to protect the fishers resulted in the grabbing of the swamp and both rivers. The process of river grabbing not only includes practices of drying upriver spaces but also entails institutional arrangements around the mega hydraulic works that hinder fisher associations in maintaining their connections with the river and other populations – socio-ecological disruption. For instance, the pollution created by the materials used during the dam construction affected the water quality of the hydrological system, leading to the death of fish due to the chemicals used. APALL reported a 70 percent decrease in fishing activity since the dam's construction (Roa-Avendaño and Duarte-Abadía, 2007). Diverse solutions have been negotiated with ISAGEN, Cormagdalena, and the local municipality. In addition to compensation, they requested the construction of a summer dike with a floodgate to control the flooding and the erosion of the swamp. The association aimed to manage the dike and the hydraulic design to improve connectivity between the Sogamoso and Magdalena rivers and the Llanito. They sought to get back control over the river's rhythm. However, ISAGEN, controlling the upper part of the river, never met their demands. The construction and use of floodgates primarily serve the dam's operation rather than aiding fishers in controlling river connectivity.

In response, the Llanito communities have altered their fishing practices. They no longer fish in the swamp but travel to the main channels of the Magdalena and Sogamoso rivers, as well as the Lebrija and Chicamocha rivers. This change has made their practice more demanding and arduous due to extended travel and days spent camping along the riverbanks. Consequently, the identity of the llaniteros has evolved; with compensation from ISAGEN, APALL invested in constructing fish pools for aquaculture. While their flagship fish, *Bocachico*, has nearly disappeared, the cultivation of *Mojarra* and *Trucha* introduces a new fishing identity: the aquaculturist and fish farmer, as opposed to the traditional artisanal fisher who comprehended swamp dynamics, fish migration, and the reproductive cycles of fish. These fish pools represent an alternative for generating new productivity, albeit less sustainable.

Despite coexisting with various infrastructures like Ecopetrol (located in Barrancabermeja), landlord power and different armed actors, the llaniteros

always upheld their belief in artisanal fishing in swamps while opposing illegal and unsustainable practices. However, the presence of Hidrosogamoso has gradually transformed their identity. Their only viable option now is to adapt their fishing rules and governance of the river to a business model that can provide well-being for their families. Specifically, the dam obstructs river connectivity and natural flows, directly impacting artisanal fishing by reducing fish populations. The altered water dynamics hinder fish migration, resulting in a lack of fish for local fishers, which threatens their livelihoods and the region's ecological balance.

The traditional "faenas," gatherings in the middle of the night to search for and catch fish, have been supplanted using plastic pools and chemicals to fatten the fish. A fisher said, "We must turn to the land because the water is no longer a dignified option for us."

Challenges and opportunities for fishers' associations to govern the Magdalena River swamps

In this section we scrutinize the actors, strategies, and discourses entangled within each case, and we explore the challenges and opportunities confronting fisher associations in their advocacy for rights and interests. This section unfolds across four segments delineated by the water justice framework elucidated earlier. First, we delve into the distributive arrangements that follow from the legal, economic, and political structures that underpin different actors' opportunities to govern river connectivity. Subsequently, we delineate the norms and regulations governing river access and distribution. Third, we identify the competitive assertions and authoritative sources determining river control (or exclusion). Lastly, we reconstruct the discourses surrounding the river, shedding light on how the knowledge of fisher's associations has been undervalued by both the state and the private sector.

Distributive inequalities

As previously mentioned, the Magdalena River holds significant economic, political, and cultural importance for the Colombian state and the nation's productive activities. Over three-quarters of Colombia's populace resides along its banks, contributing 86% of GDP. Moreover, half of the country's freshwater fishing occurs in the Magdalena. However, the historical dominance of haciendas, consequent land concentration and the role of agribusiness have characterized the landscape since the inception of the republic. Just 7.8% of landowners lay claim to 51.6% of the territory, with smallholders controlling a paltry 4% and mid-sized landowners commanding 44.4%. This region's productivity is intensive, propelled by meat production and mining practices. Hydropower, exemplified by Hidrosogamoso,

significantly bolsters Colombia's energy reserves and contributes a substantial percentage to its GDP. Under national legislation, the Magdalena River necessitates private sector intervention for clean energy generation, with ISAGEN S.A. pledging to furnish 18% of the nation's energy needs. The prevailing economic pressures and resulting disparities stemming from the Middle Basin's productivity in the Magdalena are unmistakable. The interdependency among small, mid-sized, and large economic units, alongside public-private alliances involving entities like ISAGEN and oil palm producers, complicates production for fisher associations.

Economically and productively, negotiations between fisher associations, the state, and the private sector unfold on an uneven terrain. The modest output of freshwater fishing pales in comparison to the substantial contributions of behemoth enterprises like Hidrosogamoso. Similarly, contesting the economic hegemony of landowners necessitates grappling with the specter of historical colonialism and Colombia's deeply entrenched land concentration issues. River grabbing and the deprivation of its material and symbolic essence entail a complex web of processes where pinpointing direct responsibility proves elusive. Power dynamics are nebulous and fluid, as state and corporate actors operate not with a singular rationale but with diverse interests. Engaging in anti-grabbing endeavors compels associations to contend with a gamut of local, national, and international actors whose interests may not always align and who vie for control over Colombia's economy and productive activities.

Equally significant are the micropolitics within fisher associations. In the Llanito Swamp, fishers opt to negotiate with ISAGEN and adapt their fishing techniques to circumvent challenges. Conversely, in La Gloria, a more confrontational stance prevails, with demands for the removal of fences and restitution of water through legal and political activism against landlord dominance.

Interaction of norms and rules at local and national levels

The river's governance is managed by diverse rules and norms, which are subject to rhythms variations. While comprehensively examining these intricacies proves daunting, our focus primarily revolves around hydropower dynamics and the appropriation of islands by landowners at the expense of fishing associations. In the Llanito swamp, the rhythms of the river are controlled by the discharges of the hydropower plant. Fishing communities have denounced the decrease in water level and changes in water quality (the use of biochemicals to clean the water prevents fish from eating vegetation, zooplankton, and diverse organisms necessary for their growth). According to the fishing associations, the design of the gates can be managed by the construction of a summer dike. During negotiations with ISAGEN, APALL demanded the construction of the dike according to their

own knowledge and managed by the community in harmony with the cycles of fish migration and the seasonality of erosion and flooding dynamics. However, the dike was never built by the enterprise. The ANLA (Autoridad Nacional de Licencias Ambientales) is the entity entitled to order the opening of the gates in accordance with national laws corresponding to the energy transition enacted by the Minister of Mines and Energy.

On the other hand, FEDEPESCE has engaged in negotiations with the National Land Agency, in collaboration with NGOs and activists, to advocate for changes in legislation concerning stationary islands and the process of 'water restitution'. According to national law (Article 69 of Law 160 of 1994 of the Congress of the Republic), the primary authority responsible for managing stationary islands is the National Land Agency. Fishers' associations have strategically utilized agrarian discourse and the disputes of peasant communities to elevate the national debate surrounding the tenure of such lands. This effort entails bringing to light the customary rules and norms that govern artisanal fishing: the use of non-abrasive gear that respects the river's vegetation and fauna, adherence to fishing bans during the *veda* period to promote fish reproduction and conservation, the prohibition of illicit fishing methods such as *trasmallo*, night fishing, and fishing in fish breeding areas. Recognizing the communal nature of stationary islands also implies acknowledging the territorial rights of fishers and their internal agreements to govern the river.

The acknowledgment of the customary laws of fisher's associations is more likely to be achieved through collaboration with the National Land Agency and the resolution of agrarian disputes surrounding land, particularly due to the national mobilization for agrarian reform spearheaded by the leftist government of Gustavo Petro (2022-2026). In this regard, the institutional infrastructure is predisposed to facilitate the removal of fences from these islands. Conversely, opposing and negotiating with ISAGEN, the ANLA, the CAS, and the Ministry of Mines and Energy presents greater challenges, given the emphasis on the energy transition and the national promotion of clean energy through hydropower plants. There is a dual discourse and approach at national level regarding river governance. On one hand, there is a government effort to restore the ecological integrity of the river, including reclaiming river islands. On the other hand, there is a promotion of more hydropower projects as part of energy transition goals.

Fuzzy authorities

Diverse claims and authorities intersect within the river's domain, with actors operating at national, regional, and local levels. Beyond detailed characterization of each of these entities, we aim to underscore the authoritative claims of fisher associations, whether in dialogue or negotiation with both the state and the private

sector. For APALL, the struggle centers on determining who has the authority to advocate for the river and implement infrastructure adjustments to manage flooding and erosion dynamics. The construction of an alternative design of channels and dikes, tailored to the river's seasonal fluctuations between winter and summer, has not been considered by technical professionals working at ISAGEN. Despite fishers' claims regarding the critical importance of these adjustments aligning with the river's rhythms and patterns, both public entities and the enterprise have dismissed the association's assertions. Their authority is rooted in the expertise of engineers, the ANLA, and the CAS. Conversely, for FEDEPESCE, this claim is more porous, given the complexity of actors involved in land tenure. While the association may have some knowledge of certain landlords, wielding power is challenging due to the presence of armed conflict actors who have forged alliances with the state and landlords in the region to maintain territorial control. Recognizing fisher associations as political actors is fundamental for constructing new authorities.

The most challenging aspect for the associations is gaining political authority within their respective contexts. While legislation, public policy, and the characterization of fisheries by the DANE (National Department of Statistics) have progressed to ensure the human, social, and productive rights of these associations, national law has not translated into safeguarding the integrity of the fishers and their territories nor guaranteeing their ability to fish using their traditional methods in swamps. It is important to note the power dynamics underlying everyday life in the middle Magdalena: territorial control and the emergence of new governance structures amidst crime and violence, facilitated by actors who are not easily traceable. Also, parastatal power remains prevalent in the region, alongside patronage dynamics and corruption within institutions. Given this context, the prospects for fishers to attain local authority are challenging. However, forming alliances within the national state can at least make their presence visible to decision-makers and create a base for local negotiations.

Discourses and ideologies

The river is entwined with diverse discourses and competing ideologies. The Hidrosogamoso plant is enveloped in notions of progress and future sustainability for the nation. Similarly, the Magdalena River is perceived as Colombia's productive artery. Economic activities are promoted through a neoliberal lens, aiming to foster middle-class growth in both rural and urban areas. In this context, the political objective of development programs for energy transitions extends beyond making energy demands more sustainable; it also serves to perpetuate the process of river grabbing and obscure the subjectivation of the democratic class who can potentially undermine social struggles against capitalism and market-oriented policies.

The expansion of oil palm monoculture transcends the haciendas and the colonial legacy of land tenure. Additionally, there is a push to introduce buffalos into the riverine areas, advocated by the FEDEGÁN (Federación Nacional de Ganaderos), which attributes to these species a more sustainable production model accessible to peasants and small-scale producers. Dubbed "black gold," this initiative disregards the environmental implications for water, as these animals require access to and presence in the water, displacing fishers in the process.

The counter-response of fisher associations is diverse and multifaceted. Negotiations between APALL and ISAGEN have led to the emergence of a new identity for the llaniteros: the aquaculturists, who seek to enhance their own production to align with political developments and the national commercial agenda. On the other hand, for FEDEPESCE, the protection of artisanal fishing is synonymous with the protection of the river itself. The natural migration and reproduction of fish is inseparable from the stewardship of the river. The opportunity lies in bolstering their productive pursuits and strategizing the consolidation of their fisher identity across diverse political landscapes. These communities have yet to garner recognition as productive entities within formal institutions. Acknowledging fishing as a productive economic activity of considerable worth forms an integral facet of political identity construction, essential for legitimizing alternative modes of production and the economic contributions of these associations, notwithstanding their divergent survival strategies.

Reflections on river governance

The notion of river grabbing highlights the injustices ingrained in river ecosystems. These injustices stem from the accumulation processes perpetuated by diverse actors including the private sector, agribusiness, and state actors. It is essential to emphasize how the grabbing process operates through different infrastructures, exerting control and manipulating river rhythms, thereby underscoring the need for a comprehensive understanding of the constant fluctuations in landscapes. River grabbing not only buries amphibious memories and denies the possibility of fluvitory existence but also reinforces the dichotomy between land and water. It perpetuates water injustice, resulting in the enclosure of the river and the dispossession of fishers' livelihoods. The lack of institutional infrastructure to protect fishers along the Magdalena River has facilitated the grabbing of swamps and interconnected rivers. As one expression of 'riverhood', the understanding of river rhythms helps to better understand and raise awareness of what river grabbing means to the transformation of Magdalena's hydrosocial territories, especially in terms of disrupting river ecological integrity. In the Magdalena River,

water injustice arises when the hydrosocial ecological dynamics are disrupted by violently altering river rhythmicity of life.

Negotiation, organization, and decision-making concerning the management of productive and livelihood activities on rivers must be informed by an awareness of these rhythms' dynamics. The norms, agreements, and negotiation of fishing associations are intricately linked to the ever-changing materiality of riverine life (also see Oslender, 2002; Krausse, 2017; Jackson et al., 2022; Wantzen, 2023). Disputes over the legitimacy to govern the Magdalena River can be comprehended through the lens of economic implications and interests surrounding hydropower plants, alongside discourse on energy transition promoted by the state. Historical processes of land tenure rooted in hacienda heritage, coupled with shifts in agribusiness dynamics such as the emergence of oil palm monoculture and livestock, contribute to class formation, including the rise of middle and small producers who do not fit the traditional categories of fishers or peasants. Thereby, the agribusiness sector and hydropower operators strategize sustainable discourses, foster middle-class formation, and seemingly diminish the influence of large landlords in maintaining territorial control.

Recognizing the intricate relationship between land and water nexus in shaping the Magdalena River's water bodies, alongside the dynamic processes of erosion, flooding, sediment transportation, fish migrations, and the seasonal cycles of cropping on stationary islands, provides an insight into the diverse rules and norms governing fishing associations. By doing so, we can transcend the dichotomy between land and water bodies, as well as between productive activities and sustainable practices. The mobilization of divergent and competitive ideologies vying for control and governance over the river is at the heart of this power struggle. Emphasizing the strategic interconnectedness of rivers, it becomes evident that powerful actors seek to control connectors such as culverts and streams to synchronize river rhythms for their own benefit.

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CHAPTER 6

Prahok Fish Processing: Insights into Marginalised, Female Livelihoods at the Tonlé Sap Lake, Cambodia

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Abstract

Dried fish are an accessible commodity and source of income for millions of people, providing nutrition, employment, and an alternative food source in areas limited in year-round access to fresh fish. This chapter provides a case study of the Tonlé Sap Lake, Cambodia, Southeast Asia's largest freshwater lake, where poor environmental governance and high natural resource use are impacting the dried fish economy. Processing dried, smoked, and fermented fish is a primary livelihood activity for many small-scale, low-income women living at the lake. However, dried fish governance is absent from government policy, and women's roles in the fish value chain tend to be ignored, invisible and unrecognised (IIU). The environmental governance of the lake is complex; actors at all scales (local to international) (mis)manage its natural resources, and the State's main environmental governance strategy focuses on economic gain. The lake has experienced a decline in both the diversity and volume of fish due to overfishing, climate variability, damming, and agricultural intensification over the last two decades; however, perhaps the fisheries crisis is abating with the relatively recent expansion of the aquaculture industry. As one source of dried fish is reduced, another emerges.

Many low-income households rely on small fish species to produce and consume dried fish products, whereas aquaculture uses the same small fish as a cheap and convenient feed. Where one livelihood activity is growing, another may diminish. Governance is needed for the resource-use conflict between small-scale fish processors and the growing aquaculture industry using the same fish resources. Additionally, as aquaculture has become more available (in Cambodia and neighbouring countries), prices have decreased, and wild-caught fish cannot remain competitive. Compounded by environmental changes at the lake, small-scale processors face mounting pressure on the viability of their livelihoods. This case study will explore the importance of dried fish's contribution to livelihoods at the Tonlé Sap. Furthermore, it will discuss the governance and lack thereof for the fish species that small-scale fish processors rely on and the implications if dried fish remains unaccounted for in government policy.

Keywords: dried fish, governance, livelihoods, aquaculture, Cambodia

Introduction

Cambodia's Tonlé Sap lake is a contested space, with multiple actors vying for the natural resources found in this region, including the fish, trees, sand, and floodplain agricultural land (Linh et al., 2022). The fisheries sector offers a livelihood for many rural Cambodian households situated around the Tonlé Sap lake and floodplain regions; fishing and fish processing are important income generators for those at the Tonlé Sap, many of whom live in poverty (Johnstone, 2013) with limited access to alternative livelihoods (Béné & Friend, 2011). Fish dependent livelihoods are increasingly strained as the lake is experiencing a significant decline in fish due to overfishing and environmental degradation (Chevalier et al., 2023). Cambodia is reaching a critical point where economic growth intersecting with environmental degradation is limiting resource access for the most impoverished.

Fishing on the Tonlé Sap Lake tends to be a male-dominated activity (Resurreccion, 2008), while women more commonly work in post-harvesting activities. Much of the research on Cambodia's Tonlé Sap fishery focuses on capture fisheries (Bahadur et al., 2020; Marschke & Berkes, 2006), in part linked to active community fisheries programs that emerged in the early 2000s (Ratner et al., 2017). Widely overlooked are post-harvest activities, that is the handling, processing, and marketing of fish, where women play a significant role (FAO, 2016). Gendered power relations stemming from cultural and social norms mean that women's contributions are undervalued (Galappaththi, 2022). Even so, fisheries are an important livelihood option for women in Cambodia, and beyond. For example, globally women make up 35% of those employed in the small-scale fisheries value chains, and represent 49.8% of the people employed in the post-harvest segment (FAO, 2023). Dried fish processing (including smoked, and fermented fish) is an important aspect of post-harvest activities, providing nutrition, employment, and alternative food sources in areas limited in year-round access to fresh fish. In Cambodia, fishing households in the Tonlé Sap traditionally incorporate some form of dried fish into their livelihood portfolio, as a nutritional component or as a specific livelihood activity (Lokuge, 2020).

Feminist political ecology (FPE) provides an enriched analytical lens for understanding gendered power dynamics in the context of natural resource use within wider political-economic frameworks (Resurreccion & Elmhirst, 2008). FPE emphasises alternatives to market-based capitalist logic by prioritising marginalised livelihoods, basic needs, and well-being over discussions of efficiency and productivity (Harris, 2015). This work draws on FPE concepts of scale and intersectionality within the context of unequal resource production, access, and control along socio-economic and gendered lines (Ojeda et al., 2022). Understanding the livelihoods of fish micro-processors requires consideration of scale; while many

work individually, their lives are influenced by changes from the household to the global level. FPE accounts for scalar impacts of environmental degradation, power relations, and development that are embodied by individuals (Elmhirst, 2015; Gonda, 2019). While the majority of those processing fish are women, this research takes an intersectional view, moving beyond gender to understand how other social differences impact experiences of power and influence, particularly social and economic status (Sultana, 2021). In Cambodia, the social status of female fish workers is not high (Kusakabe, 2016) and a culturally engendered hierarchy situates women as having a lower status than men of the same socio-economic background (Lamb et al., 2017). Thus, the most marginalised group within the dried fish value chain are the micro-scale female fish processors living in poverty.

The chapter aims to address the information gap in the livelihoods of micro-processors, focusing on why micro-processors continue to be disenfranchised and what this means for their future. I show how female fish micro-processors at the Tonlé Sap are disproportionally impacted by the environmental and socio-economic shifts occurring in Cambodia, and that their livelihoods are at risk of disappearing. Specifically, I focus on the micro-processors[1] who make prahok. Prahok, a fermented fish paste commonly used in Cambodian cuisine, is traditionally produced at the individual or household level. Between February 2023 and November 2023, 60 key informant interviews were conducted with micro-processors, fish farmers and fisherfolk in a floating fishing village in the Tonlé Sap[2] and fish sellers at nearby markets.

This chapter begins by examining Cambodia's transition from wild-capture fishing to aquaculture and the relationship between people and fish species, namely female micro-processors and the small fish species used for prahok that are now also used to feed larger fish species being grown in fish farms. After introducing female prahok makers from one village, I unpack several challenges women face in navigating a shifting fish economy. I argue that without adequate governance of fish resources, people at the Tonlé Sap will experience further marginalisation. To prevent the growth of socio-economic inequalities, fisheries governance interventions must account for women in fisheries supply chains and focus on the needs of the most marginalised groups.

[1] In Cambodia, micro-scale enterprises are considered to have less than 10 employees and assets valued at less than USD 50,000 (MISTI, 2005). Notably, micro-enterprises make up 97.6% of businesses in Cambodia, with a majority (62%) being women-owned (IFC, 2019).

[2] Kampong Khleang commune, approximately 10,000 people located 50 kilometres from Siem Reap and is a major source of fish and fish products. Simultaneous translation from Khmer to English was done during the interviews through a local translator.

From wild catch to aquaculture

In the past, wild-caught fish and fish products were sufficient to meet food demands; however, there is a strain on inland capture fisheries from overextraction and environmental degradation, creating a gap in supply (Joffre et al., 2019). Aquaculture is therefore seen as a viable strategy for food security and nutrition, as well as socio-economic development and GDP growth (MAFF, 2015). Small-scale cage and pen fish culture reportedly has its origins in Cambodia dating back to the tenth century, whereas pond culture was more recently introduced in the 1960s (FAO, n.d.). While aquaculture is one of the fastest growing sectors, its development lags behind compared to other countries in the region (Lang, 2015). Fish farming operations are typically done on a small scale, but producers experience constraints from poor water quality, reduced water supply, lack of seed[3] and feed, and limited knowledge of fish culture technology and production methods (Sreyleak & Mardy, 2024). More recently, the government and international donors have been promoting aquaculture to create extensive and semi-extensive systems for domestic food production and intensive systems for commercial export (UNIDO, 2023). However, the country still needs to address issues of environmental sustainability, and fair socio-economic inclusion among women and rural workers within the production system (Kruijssen et al., 2018). Additionally, there is yet to be a market analysis of the impacts on the wild fish market with the influx of aquaculture fish.

In Cambodia, aquaculture and capture fisheries management appear to be detached from one another. There is no policy for managing aquaculture feed inputs from wild capture fish. The current National Strategic Plan for Aquaculture Development notes, "More effective management of the wild [fish] resource is beyond the scope of this strategy, but awareness of the pressure attributable to aquaculture must be raised amongst fish farmers and government officials alike" (MAFF, 2017: 35). Trash fish[4] (*trey noi*) is the most common source of feed used by small-scale fish farmers (Joffre et al., 2021) (Figure 6.1). A more accurate descriptor of trash fish is small, low-value fish, or forage fish. Pellet feed as an alternative is prohibitively expensive for most fish farmers as there is a limited supply and high

[3] Aquaculture seed encompasses the young stage of a species and is used to stock ponds. High quality seed is important for successful aquaculture production but remains a challenge to secure or produce in low-income countries (FAO, 2024). Seed in Cambodia comes from three main sources: local hatcheries (carps, barbs, tilapias), imported from Vietnam (catfish, snakehead) or from the wild (Kruijssen et al., 2018).

[4] Trash fish, or forage fish, are small, low value fish that are often used as feed for animals or fish but can also be used for human consumption. A considerable amount of trash fish is comprised of juvenile fish from commercially important species (Belton & Thilsted, 2014). Those using low-value, small fish as aquaculture feed call the fish trey noi, meaning bait fish.

Figure 6.1: *Trey noi* is fish too small to be processed. It is instead used as fish feed for aquaculture. Photo by Colleen Cranmer, 2023

cost of importing from Vietnam (Joffre et al., 2016). The continuing dependence on forage fish for small-scale aquaculture producers increases pressure on wild capture fisheries and diverts cheap and nutritious fish away from low-income people who could consume or process the fish.

While there is an increasing amount of cheap aquaculture fish, smaller wild-caught species still retain their importance for many Cambodians' nutritional security. Small wild fish harvested locally from inland areas continue to fulfil the demand of poorer subsistence households (Joffre et al., 2021). Interviews confirm that many people rely on wild fish from the lake for sustenance and livelihood production. However, as wild fish is processed, dried, and transported to urban areas, it gains value and becomes more expensive relative to dried farmed fish. Many people hold a perception that wild-caught fish is better in taste and quality, and some are willing to pay a higher price. A woman selling a selection of dried fish at a small market explains: "I buy my fish from small sellers, only the good quality fish. People do not like aquaculture, and I prefer to sell wild-caught fish, even if they are smaller. Some people try to pass off aquaculture as wild, but aquaculture fish is cheaper. My buyers trust me that my fish is wild and good quality" (Interviewee M1). Dried fish is a mainstay of Khmer culture; it is a staple in many Khmer dishes

with many households consuming some form of fish product regularly (Lokuge, 2020). A preference for small wild-caught species and the products that can be made from them can be seen as a cultural dimension of food security in a way that aquaculture is not (Belton & Thilsted, 2014).

Notwithstanding the cultural importance and desire for wild fish products, aquaculture can provide an alternative source for those who cannot afford or access wild-caught fish. A market seller noted: "There is no lack of fish because of aquaculture. Before, the customers didn't want [dried] aquaculture fish, but now they have no choice. People do not ask what it is; they just buy. If someone asks for wild fish, I may have some set aside that I can sell. Those who have the money to buy wild caught will" (Interviewee F15). People who consume dried wild fish over farmed fish appear to fall into two categories: those who are poor and rely on catching the fish themselves for subsistence and micro-processing, and those who are well-off and can afford to buy the end-product at a market. This duality of dried wild fish reveals its importance not only for nutritional security for the rural poor but also for the value-added created by processing and the cultural significance it provides.

The Prahok value chain at Kampong Khleang

Prahok (fermented fish paste) is typically made from small, wild-caught species, trey riel[5] or trey kampleang[6]. Prahok holds significant cultural value for Cambodians and plays a crucial role in ensuring food security and nutrition for those living in low-income rural areas (Wang et al., 2022). The majority of those producing prahok are women, often having learned the process at a young age by helping their mothers. With a low barrier for entry, prahok processing is the only job many micro-processors have had and know how to do. Prahok production coincides with the seasonal flooding of the Tonlé Sap; when the flood recedes, an abundance of trey riel and trey kampleang become available between November and March. Due to the seasonality of production, micro-processors work long days during these months.

The prahok value chain typically works as such: fisherfolk catch forage fish from the Tonlé Sap and sell to middle-people, who then sell to the micro-processors where they will clean, chop, salt, and mash the fish. The product is then picked up by a middle-person and mostly sold to local and city markets, but some is exported to Thailand or to the Khmer diaspora outside of Southeast Asia. However, the prahok value chain is shifting. The flow of forage fish from the Tonlé Sap is becoming

[5] Notched mudcarp, (*Henicorhynchus entmema*)

[6] Moonlight goruami (*Richopodus microlepis*)

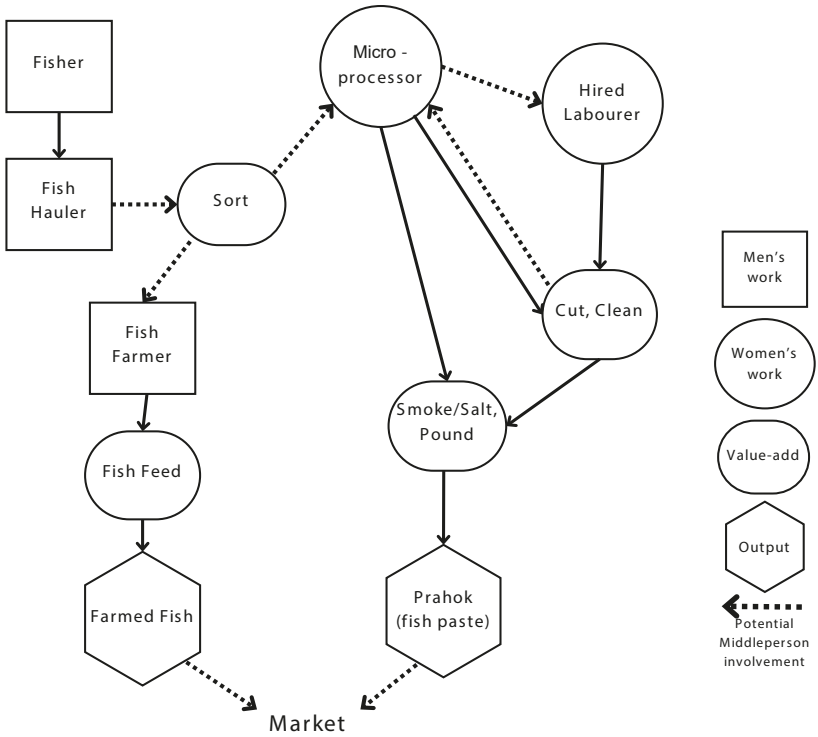

Figure 6.2: The flow of forage fish into farmed fish and prahok value chains at Kampong Khleang. Created by Colleen Cranmer, 2023

more complex due to the rising demand for human consumption, live feed for farmed fish, and livestock feed (Somany et al., 2011). Forage fish is increasingly sold to fish farmers, and the demand for fish feed is year-round. Middle-people buy large amounts of forage fish and sort the fish by species. If the species is the right size and type for prahok it can be sold to a micro-processor; otherwise, the fish goes to fish farmers. Yet, using forage fish for aquaculture is inefficient; a high input of forage fish is needed to produce a lower yield of farmed fish (Joffre et al., 2021). The fish raised in these ponds are sold to middle-people who ship them fresh within the province or interprovincially. People living at the Tonlé Sap often cannot afford to buy aquaculture fish and instead rely on what they can fish themselves from the lake. All of this culminates in a situation where there is less forage fish available for micro-processors to use for their livelihood production.

How micro-processors participate in the value chain is also shifting. Many micro-processors are now selling their labour to other processors in the village who have better access to fish resources. The processors hiring labourers are still micro-scale businesses, but compared to an individual making their own prahok, they process significantly more fish. At Kampong Khleang, there is a house that facilitates the largest prahok production in the commune for export to markets. The owner hires women from around the village to prepare and half-process (clean, cut and salt) fish, which is then brought to the house for the final stages of fermentation. Women prepare fish early in the morning, either at their own house or working as a group at one person's home, cutting and cleaning fish on plastic sheets. Figure 6.2 shows a simplified value chain of how forage fish are used in fish farming and prahok and includes the role of 'hired labourer' as another segment of the value chain.

Prahok micro-processor challenges: findings from the village

The main challenges experienced by prahok micro-processors are cyclical and reinforcing. Firstly, as a primarily female occupation, the intersection of the low social status of fish work, plus a gendered hierarchy in Cambodian society puts prahok micro-processors at a socio-economic disadvantage. Second, fish processing is a low paying, unstable job that leaves fish processors with limited ability to improve their financial situation and continues a cycle of poverty for them and their children. Lastly, the significant environmental degradation and overfishing at the Tonlé Sap is depleting fish resources. Coupled with an increase in aquaculture to fill the wild-fish supply gap, more forage fish is being used as feed, further reducing micro-processors' access to fish.

Social status

While prahok processing offers the women at Kampong Khleang an economic opportunity, they experience barriers within the value chain that prevent them from improving their livelihoods. Women in Cambodia hold a lower socio-economic status than men (Lamb et al., 2017). A traditional code of conduct, *chbap srey* (rules for women), outlines women's behaviour to keep a passive and modest demeanour and the obedience they must have to their parents and husbands (Pearson, 2011). They experience challenges due to limited education, formal job experience, market connections, time constraints, mobility restrictions, inadequate representation, gender discrimination, and demands from family responsibilities (Kusakabe, 2016). To compound matters, women's work within the fish value chain is often ignored,

invisible or unrecognised (IIU), and advocacy for their rights receives less attention compared to men engaged in offshore fishing activities (Finkbeiner et al., 2021).

Socio-cultural norms reinforce women's marginalisation, particularly for women who come from a low socio-economic background. Often young girls are expected to help their mothers process fish after school, and some will leave school at an early age to help earn money for the family, minimising their education and a chance for higher skill jobs. When they become adults and have a family, they are expected to take care of the household, limiting their time and mobility to do work outside the house. Observations at households often reveal the gendered division of labour and the burden of care women take on. A woman at Kampong Khleang explains: "I do the processing and all the housework, sometimes I am tired, and it is a lot of work, but it is common. It has always been like that, so I am okay with this" (Interviewee O10). She further explains she cannot take on a job outside of the house because her family needs someone to take care of them; if she was not there the chores would not get done.

Women acknowledge that fish work is a flexible job, but the work is situated within restrictive gender norms. "I would want to work extra, but it's not possible because of household duties. I could not work far away. Prahok is the only income I have access to. My husband expects food to be ready when he gets home from work" (Interviewee O18). They can do the work out of their homes or close by within the village, giving them the ability to earn an income while still having the time to look after their families. This sentiment is common throughout the commune, "I cannot go out for other work, so I stay here because I am able to take care of the children and my older father" (Interviewee C18). The social expectation of women to do the household chores and take care of the family puts them at a disadvantage in not having the freedom to explore alternative job opportunities, thus making fish processing an important income generator as the work can be done at their homes. Socio-cultural embedded gender norms deepen the marginalisation of micro-processors, making it near impossible for them to improve their social and economic position.

Reinforcing poverty

Fish processing offers women an economic opportunity but is also constraining at the same time. Processing is one of the only economic options available and pays so little that the work keeps micro-processors in poverty. The most impoverished people in the commune do not have access to enough financial or natural capital to make a living and are changing how they approach their work. A growing number of women at Kampong Khleang are selling their labour to other micro-processors. These labourers were once fisherfolk themselves, or ran their own processing

business, but as costs increase and fish access decreases, they decide to sell their labour for a more risk averse livelihood. One woman explains, "I started processing two years ago, before I was fishing but I did not catch much and spent a lot on fuel. I used to use the illegal nets but I stopped, I got caught and my net was destroyed. Now I just buy fish from the person who fishes, clean, gut and sell to my neighbour who makes the prahok" (Interviewee F16). Fish processing appears to be a fallback option for those in the village that struggle with the high-cost and restrictions associated with fishing.

Selling labour appears to be the least risky option for poorer families who cannot afford or want to take the risk on fishing or running a business. For those that run a processing business, there are capital investments required. Inputs include, large quantities of fish, salt, packaging, fermentation drums, and labour wages. Additionally, the product can take several weeks to produce, so income from the product is not immediate. Selling labour is seen as an easier and faster means of getting money to cover daily expenses. The owner of the largest prahok production in the commune explains: "People half process because it is easier and faster. Many families need a daily income. They find fish and need to sell them quickly for their daily expenses. For families they earn less money [only half-processing] but they get money quicker" (Interviewee N23). Pay for processing fish is extremely low and depends on how much fish is available, emphasising the precarity of the work. "For cutting one kilo of fish, I get 200 to 300 Riel (0.05–0.07 USD). Depending on the amount of work it could be 40–50 kilos a day. If there are not many fish, I might only work in the morning and get about 5000 to 10,000 Riel (1.25–2.50 USD)" (Interviewee O18). Unable to save money, more micro-processors are selling their labour and only earn enough to cover daily expenses.

Environmental degradation

Prahok micro-processors depend entirely on a consistent flow of forage fish, but significant pressure on the value chain is mounting due to diminishing fish resources. The sustainability of the Tonlé Sap is increasingly compromised by environmental problems stemming from insufficient management, both domestically and from upstream neighbouring countries. Deforestation, intensified agriculture, hydropower development, rapid population growth, overfishing, sand mining near Phnom Penh, and climate change are among the contributing factors to the lake's degradation (Uk et al., 2018). Natural resources are commodified for development and economic growth purposes, (Wichterich, 2015) to the detriment of the poorest and most marginalised at the Tonlé Sap.

Overreliance on the lake's natural resources without adequate management for their sustainability is now showing its impacts. Natural habitats in the Tonlé

Sap lake and floodplain have declined in the past 25 years (Mahood et al., 2020), and there is a noticeable decline in fish species diversity and volume, particularly among larger species (Chevalier et al., 2023; Gillespie & Penny, 2022; Ngor et al., 2018). While higher trophic-level fish decrease, smaller lower trophic-level fish sustain total catch size (Ngor et al., 2018). Smaller fish species are a mainstay for many livelihoods at the Tonlé Sap; however, the limited environmental management supporting their sustainability proves problematic. Since the 1990s, Cambodian fisheries have experienced an increase in commodification and overexploitation, primarily through a fishing lot system that allowed large commercial fisheries to control the space and deplete the lake's stock (Sneddon, 2007). Despite more recent governance reforms at the lake to reduce overfishing and illegal catch, little has changed. This is due to a lack of enforcement of fishing regulations, bribery practices, while co-management amongst stakeholders has largely failed due to insufficient interaction, limited budgets, and decision-making remaining in the hands of the central government (Ratner et al., 2017; Sok & Yu, 2021).

Over the past three decades, local communities have directly witnessed a decline in both the quantity and variety of fish available. Interviewees at the village consistently remark on how there are fewer fish now compared to the past. The impacts of fish availability are not isolated to rural areas. Further down the value chain, a market seller in Siem Reap finds it difficult to get enough fish to make prahok. "I used to use trey riel but I can't get enough of it to make prahok. It's not easy to get from the Tonlé Sap. I stopped making prahok with trey riel seven years ago" (Interviewee M4). Other interviews reveal that some micro-processors change the type of fish they process or altogether leave fish processing; however, many do not have this option and continue with the only work they know how to do regardless of the hardships.

Decreasing fish amounts leads to a shift where less fish is being processed and is instead sold as fish feed for aquaculture. A micro-processor working at the small Kampong Khleang market explains: "Trey noi makes us more money more quickly and is a lot less work. It is risky with prahok, we need 3 to 4 kilos to make and sometimes it is expensive, and we cannot make a profit. Whereas selling trey noi makes a profit right away" (Interviewee S25). What fish is available is used for the most profitable means. Processing is labour-intensive and does not guarantee a profit, the fish processed into prahok may not sell for a good price, or sell at all, therefore, forage fish is increasingly sold as fish feed. During times when there is an excess of fish, it will be made into products for consumption; however, such excess is becoming less common.

Overexploitation of the lake's natural resources is evident in the reduced availability of fish. The increasing use of forage fish for aquaculture without effective management further exacerbates the sustainability crisis. This creates a positive

feedback loop, intensifying the problem. Reduced fish availability forces a choice between using fish for processing or to sell as feed. The easier and more profitable option is fish feed, yet it utilises more fish and does so less efficiently. This approach privileges market-oriented natural resource use above the everyday needs of livelihoods (Harris, 2015; Rocheleau, 2015), reducing the amount of fish available for consumption by subsistence populations. Unless managed with sustaining the fish population in mind, it is likely the Tonlé Sap fisheries will continue to decline.

Discussion

Evidence from Kampong Khleang points to a situation of increasing marginalisation for the poorest members of the community. Female micro-processors, restrained by socio-cultural gendered norms and trapped in a cycle of poverty, are experiencing further marginalisation from the loss of fish resources due to environmental decline and overfishing. The challenges micro-processors experience is at the individual and household level, but are reproduced at cultural, international, and national scales. Analysing Cambodia's socio-cultural engendered power system (Wichterich, 2015), women appear to be resigned to their roles as fish processors and caretakers, stemming from the patriarchal norms engrained from a young age. Socialised roles fundamentally shape how women take part in the workforce (Hapke & Ayyankeril, 2004). Discussions with women at Kampong Khleang show their perceptions of work outside of fish processing is limited because gendered restrictions are accepted as the norm. For real change to occur, the underlying structural issues that limit women need to be addressed at a societal scale. Despite documents that tout gender inclusivity, so far, development programs are kept apolitical (Sok & Yu, 2021). Integrating gender equality into development agendas within institutions that perpetuate gender inequality may benefit some individuals, but will unlikely bring about any deep structural transformations of inequality and discrimination (Cornwall & Rivas, 2015).

In the case of Cambodia's fisheries, the focus from international actors has been on economic growth, with little attention to socio-cultural issues that limit participation of people working at the individual or household level. For example, projects on post-harvest fish production emphasise economic development, such as the recent government goal to establish a Cambodia Quality Seal (CQS) program for exporting fresh water processed fish products to European markets (UNIDO, 2022). An increasingly common perspective is that Asian fish producers should target international markets to capitalise beyond domestic and regional markets (Tezzo et al., 2021). While this approach may increase GDP and benefit small and medium enterprises (SMEs), exports demand more fish resources and excludes

micro-processors from taking part. Micro-processors do not have the resources to process and trade within quality and safety regulations that would grant them access to more markets. Similarly, Marschke and Wilkings (2014) found aquaculture certification in Vietnam is likely to create a divide between those who have the capacity to meet standards and smaller producers who cannot due to the financial inputs required. Without government and donor support that is inclusive to micro-processors, they are unable to take part in certification schemes to export products, further segregating micro-processors from accessing markets.

At the national scale, power over natural resources plays a significant role in why micro-processors face increasing marginalisation. Socio-economic processes are controlled by the political elites who prioritise GDP growth by exploiting natural resources. For example, viewing the government's approach to fishery resources through the lens of feminist political ecology exposes an approach focused on financial gains above social and environmental considerations (Harris, 2015). There is no policy for dried fish, and the proper management of forage fish is considered an issue for the future, as all efforts are focused on ramping up aquaculture production. In short, aquaculture holds greater potential to contribute to GDP than dried fish and is therefore given more attention. Evidence from Bangladesh suggests aquaculture intensification significantly contributed to increased fish consumption for both poor and non-poor households, improving availability and affordability, but advantages gained from aquaculture resulted in heightened competition for resources and markets (Toufique & Belton, 2014). Inclusive, sustainable natural resource management is critical for achieving social equality and healthy livelihoods. However, policy and governance measures often reinforce the commodification and exploitation of resources for capital gain with limited consideration for the inequalities they may exacerbate (Clapp et al., 2018).

FPE shifts the discourse from the capital accumulation to the experiences of women and marginalised groups, their basic needs, and what constitutes well-being (Harris, 2015). Conversations with micro-processors show well-being to mean they have enough fish for them and their family, they are in good health, and their children or grandchildren can go to school and get a better job in a city. Considering a scalar analysis over time, micro-processors' well-being can be viewed as a combination of what was and what is – subsistence livelihoods of the past where they can provide for themselves, merging with their desire to integrate into the capitalist system. This desire likely stems from necessity due to poor state resource management decisions. The decline of Cambodia's freshwater fisheries in the 1990s coincides with its integration in the global capitalist market (Sneddon, 2007; Springer, 2010) and also aligns with perceptions of livelihood declines of the people at Kampong Khleang. Without romanticising difficult rural livelihoods, how fish livelihoods functioned prior to species declines indicates that previously used

economic systems worked. Gibson-Graham (1997) argues that there are other economic systems beyond capitalism, operating at smaller scales, at the household and community level. In the past at the Tonlé Sap, a sustainable supply of fish coupled with small-scale fishing supported people's well-being through economies of local selling, gifting, and sharing.

However, the Tonle Sap fisheries are currently unsustainable (Chevalier et al., 2023) and the ecosystem decline creates shocks and stressors that are experienced in gendered ways (Elmhirst, 2015). Micro-scale female fish processors are one of a few marginalised groups disproportionately affected by the deteriorating ecosystem and mismanagement of fish resources. For example, micro-processors have to change how they participate in the value chain. Already socially and economically disadvantaged, an increasing number of micro-processors cannot access large quantities of fish to sustain their business. Those who can access fish make a (marginal) profit, while those who cannot have to rely on selling their labour. The income from their work only covers basic family needs, leaving them with little ability to save money. The gap in wealth and inequality is widening along the fish supply chain. Similar to Belton et al.'s (2018) findings of fish dryers in Bangladesh, fish processing is a last resort for those most socially and economically disempowered. This is even more evident for hired labourers. Working as a hired labourer represents a low-risk, and perhaps the only, livelihood option for the most socio-economically disadvantaged women at Kampong Khleang. Here, the intersectional identities of low socio-economic status and gender compound, contributing to the most impoverished becoming poorer. As fish species at the Tonlé Sap continue to decline, micro-processors are having to navigate how to best earn an income amidst these changes.

Cambodia is experiencing rapid development; as one of the fastest growing economies in the world, its human development index (HDI) increased by 56.9% between 1990 and 2021 (UNDP, 2024). However UNDP's (2024) report found within-country inequalities are growing; consequently Cambodia's 2024 HDI has decreased back to its 2018 level. It is likely that the regression partly stems from a common outcome of neoliberal development, whereby the most marginalised groups are not accounted for in governance, further exacerbating societal inequalities (Harris, 2015). There is no dried fish policy, fisheries management remains poor, and development projects target SMEs, leaving micro-processors at the margins. Without adequate governance and policy intervention that focuses on the needs of women and their roles in the fish value chain, the viability of their livelihoods faces an uncertain future.

Conclusion

This chapter has highlighted the livelihoods of micro-scale processors and the challenges they face within a transitioning fish economy. Socio-cultural marginalisation and environmental degradation, compounded by aquaculture intensification, create a precarious and uncertain situation for micro-processors. Contributions to the broader discussions in feminist political ecology are made by examining scales of patriarchal and socio-economic power dynamics that contribute to micro-scale processors' marginalisation. Moreover, it elucidates the importance of addressing structural and intersectional inequalities that hinder women's participation in the dried fish value chain and their ability to create sustainable livelihoods and enhance their well-being. Fisheries governance and policy must prioritise the most marginalised groups in fisheries supply chains to effectively address and prevent the growing socio-economic inequalities.

Central to the argument for inclusive natural resource governance is the need to assess how Cambodia's increased aquaculture production might impact the livelihoods of those dependent on wild-caught fish. How will aquaculture intensification impact shared fisheries, water, and other resources? Furthermore, to what extent will an increase in aquaculture affect micro-producers' competitive access to markets? For female micro-processors who already lack access to fish and limited job alternatives, how will they earn an income if there is not enough fish to process? As one sector grows, and one shrinks there are opportunities for labour transitions that have gone unassessed. The fragmented approach between wild-capture fisheries and aquaculture risks missing opportunities for livelihood improvements for workers, particularly micro-processors relying on forage fish for their livelihoods.

The use of wild fish is contentious in aquaculture, with decades of innovation underway to produce appropriate feed pellets: this is a case where small fish are cheap, but they will also not likely sustain this sector (Joffre et al., 2021). The fish population is already under strain in the Tonlé Sap, facing multiple pressures (Chevalier et al., 2023); without a holistic governance strategy of wild-caught fish resources and uses, aquaculture intensification risks exacerbating problems in this important ecological system. The landscape of fish processing is changing alongside the aquaculture sector. While wild-caught dried fish products play a vital role in supporting low-income livelihoods nutritionally, culturally, and financially, the long-term viability of this resource is jeopardised by the absence of effective governance and policy that manages small, wild-fish species inputs for the aquaculture sector.

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CHAPTER 7

The Struggle to Make a Living: How EU IUU Fishing Policy Impoverishes Local Fisheries' Livelihoods in Vietnam

Tong Thi Hai Hanh and Alin Kadfak

Abstract

Globally, the EU is leading the fight against illegal, unreported, and unregulated (IUU) fishing. The aim is to restore marine resources and sustain fishers' livelihoods in the long-term. Based primarily on its market power, the EU forces third countries to reform their fisheries legislation to eliminate IUU fishing. Highlighting a case study in Vietnam, this chapter demonstrates that the EU IUU fishing policy is impoverishing, not sustaining, the livelihoods of fishers and other fisheries-related actors (e.g., intermediaries and fishing logistic providers). Both the EU and Vietnamese governments prioritise eliminating IUU fishing, with little to no attention to the policy impacts on the livelihoods of fishers and fisheries-related actors. The EU's IUU fishing policy has been imposed on Vietnam without consideration of its history of fisheries development and the social-ecological conditions that shape fishers' and fisheries-related actors' dependency on IUU fishing. Addressing this dilemma requires the EU and third countries to guide and support fishers and fisheries-related actors to reduce their dependency on IUU fishing, rather than immediately ordering them to stop. The Vietnamese case study offers an empirical contribution to debates on the failure of environmental governance to secure the livelihoods of resource users. It contributes to broader debates around the question "sustainable for whom?" and looks at how top-down policy interventions could have been done better.

Keywords: IUU fishing, fisheries regulation, Vietnam, livelihoods, EU, IUU, sustainability

Introduction

Illegal, unreported, and unregulated (IUU) fishing has become the main framework for understanding unsustainable fishing practices globally (Garcia et al., 2021; Sumaila, 2019). The United Nations General Assembly (2006: 11) has stated that IUU fishing is "one of the greatest threats to marine ecosystems and continues to have serious and major implications for the conservation and management of ocean resources, as well as the food security and the economies of many states,

particularly developing states." While it has been challenging to estimate the volume and values of IUU fishing, the most comprehensive figures of 11 to 26 million tonnes of IUU fishing worldwide, calculated by Agnew et al. (2009), are now outdated. The recent assessment of the current state of affairs comes from the IUU Fishing Risk Index,[1] which provides a comparative overview of 152 coastal countries. This index informs the standardised measure of the degree to which states are vulnerable to and effectively combat IUU fishing based on 40 indicators, using publicly available numbers. This comparative methodology shows that the risk of IUU fishing has grown worldwide, and that Africa and Asia are the most vulnerable regions (Macfadyen & Hosch, 2023). Given this, there is an urgent need for states to take action to fight against IUU fishing.

As the world's largest seafood market, the EU has taken the lead in the fight against unlawful fishing practices, preventing the flow of potential IUU seafood products from external third countries into the EU market (Elvestad & Kvalvik, 2015; Kadfak & Antonova, 2021; Kadfak & Linke, 2021; Miller et al., 2014). In 2008, the EU introduced Regulation No. 1005/2008 "Establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing" (the EU IUU Regulation). As justification, the regulation states that: "The action by the Community should be targeted primarily at behaviour falling under the definition of IUU fishing and which causes the most serious damage to the marine environment, the sustainability of fish stocks and the socioeconomic situation of fishermen abiding by the rules on conservation and management of fisheries resources."

Through the Regulation, the EU established a carding system, whereby a yellow card signals a warning period and a red card pushes for a complete ban of seafood exports of the third countries, to start official dialogues with third countries. Through this system, the EU provided tailor-made recommendations and followed up with state-to-state dialogues and close inspections (Kadfak & Linke, 2021). This system proved to be an effective technique, given the economic (Sumaila, 2019) and reputational risks of losing the EU as a major export market. The cards serve as external pressure compelling third countries to reform their management of fisheries to combat IUU fishing. Third countries often find themselves in a passive position, having to amend their fisheries legislation according to the EU's tailor-made recommendations to have the cards removed (Kadfak & Antonova, 2021; Naiki and Rakpong, 2022). From the time the EU IUU regulation came into force in January 2010 until May 2022, the EU engaged with more than 60 countries to improve measures to combat IUU fishing.[2] During this period, 27 countries received a yellow card and 6 received a red card.

[1] See a full indicator list here https://iuufishingindex.net/.

[2] http://www.iuuwatch.eu/the-iuu-regulation/eu-carding-decisions/

Most of these carded countries are developing nations where a significant portion of the population involved in the fisheries industry – such as fishers, seafood intermediaries, and boat repairers – rely heavily on this sector for their livelihoods. The issuance of these cards immediately affects the reputation and seafood trade of the carded countries, leading to changes in trade dynamics and fisheries legislation (Kadfak et al., 2023; Kim & Lim, 2024; Naiki & Rakpong, 2022). These changes, to varying degrees, affect the livelihoods of those dependent on the industry. Studies show that insecure livelihoods drive fishers to resist fishing regulations, which leads to continued illegal fishing activities (Berkes et al., 2001; Cinner, 2011; Ha & van Dijk, 2013; Hanh & Boonstra, 2018; Pomeroy, 2012). In this context, understanding the impact of these policies is crucial for developing strategies that support fishers and others in the industry to sustain their livelihoods while eliminating IUU fishing. However, most studies that have addressed the impact of the EU's IUU fishing policy on carded countries have focused on the seafood trade and fisheries legislation (Kim and Lim, 2024; Naiki and Rakpong, 2022). Very few, if any, have examined the policy's impact on the livelihoods of the individuals involved in fisheries value chains.

We learn from other examples that actors beyond fishers, i.e., traders, processors, and NGOs, have crucial roles in enacting and routinising social practices after the reforms or policy interventions (Djelantik et al., 2020; Doddema et al., 2020). For instance, policy interventions often aim at changing fishing activities at sea and have influenced the performance of non-fisheries activities, such as landing, (pre-)processing, storage, or transport of seafood commodities after the reform (Doddema et al., 2020). This chapter aims to fill this gap by exploring how the EU's IUU fishing policy, as an external pressure, affects the livelihood of various actors in the third countries' fisheries industry, using Vietnam as a case study.

Vietnam received a yellow card in October 2017, mainly because of its illegal fishing practices beyond its exclusive economic zone (EEZ) and its inability to validate seafood traceability. Vietnam is the world's seventh-largest marine capture producer and third-largest seafood exporter (FAO, 2022). The EU is one of Vietnam's top five seafood export markets. The seafood export to the EU generates approximately 1.3 billion USD annually, of which 30% comes from fishing (World Bank, 2021). This makes Vietnam particularly vulnerable to the impact of the EU's IUU fishing policy. Exploring this impact on the livelihoods of those involved in Vietnam's fisheries will enhance our understanding of the EU's broader influence on fisheries throughout East and Southeast Asia, regions where the EU has a major influence on policy interventions in fisheries (see Kadfak & Linke, 2021; Yen & Liuhuang, 2021).

To explore the impact of the EU-led fisheries reform on the livelihoods of those involved in fishing activities, we employed a mixed method to collect data from January 2022 to January 2024. First, we conducted 39 semi-structured interviews

with various actors across six coastal provinces in Central Vietnam: Thua Thien Hue, Da Nang, Quang Nam, Binh Dinh, Phu Yen, and Khanh Hoa. These provinces have the highest concentration of fishing boats, accounting for approximately 40% of the nation's total fleet (VIFEP & RIMF, 2021). Specifically, we interviewed 9 boat owners/captains and 6 fish workers who often use longlines and hooks, purse seines, and gill nets to catch a variety of fish species such as skipjack tuna, squid, mackerel, king mackerel, and mahi mahi. Most of these interviewees were from Da Nang, Binh Dinh, and Phu Yen. In addition, we interviewed other individuals involved in the fisheries industry, including 5 employees and/or owners of seafood processing enterprises, 4 seafood intermediaries, 1 boat repairer, 1 spare-parts seller, and 1 ice supplier. While most of the employees and owners of seafood enterprises are based in Khanh Hoa province, a major seafood processing hub in Central Vietnam, the other seafood intermediaries we interviewed (boat repairer, spare-parts seller, ice supplier) all work at one of Vietnam's five largest fishing ports located in Da Nang. Our interviews with those working directly in the fishing industry were limited somewhat by the fact that many declined to participate in our study. To gain another perspective on the impact of the reforms on the livelihoods of those involved, we interviewed 10 government officials and 2 academics. We further mitigated the limitation on direct interviews through two additional data collection methods – reviewing secondary sources and conducting participant observation.

Second, to this end we conducted a review of academic and government reports, as well as news sources pertaining to IUU fishing and the implementation of the EU's IUU fishing regulations in Vietnam. These supplementary sources were utilised to triangulate and enrich insights gained from our interviews. Third, drawing on the first author's extensive research experience in Vietnamese fisheries since 2006, participatory observations were conducted at three fishing ports in Da Nang, Binh Dinh, and Phu Yen. These observations focused on the control and inspection of fishing boats, the trade of harvested fish, and the trade of materials required on fishing trips (e.g., ice, food, and fishing gear).

The chapter is organised as follows. The next section describes the history of Vietnamese fisheries management and the shift of management after the yellow card, followed by mapping all actors that were affected by the reforms. We then present the negative impacts of EU IUU regulations on different actors involved in fishing. The final section discusses the impacts of the EU IUU fishing policy before highlighting recommendations to take into account the right to food sovereignty and well-being of actors involved in fishing. This chapter challenges the idea that environmental governance leads to improved livelihoods by providing empirical evidence that shows the failure of environmental governance to ensure the livelihood security of resource users. It contributes to broader debates around the question "sustainable for whom?" and looks at how top-down policy interventions could have been done better.

The yellow card – a twist to Vietnamese fisheries

Fisheries play a crucial role in the socio-economic development of Vietnam, providing employment for approximately 2% of the country's workforce, which totals 53.6 million labourers (VIFEP & RIMF, 2021). The export of caught fish to all markets generates around 3.5 billion USD for Vietnam, or 1.2% of the country's export turnover (VIFEP & RIMF, 2021). This section discusses the rapid growth of Vietnam's fishing industry over the past three decades and how the yellow card interrupts the industry as a whole.

Vietnam's fishing boom is the result of the government's efforts to increase the capacity of fisheries and to guard its marine territory from China. After the country's unification in 1975, Vietnam implemented numerous policies aimed at developing the fisheries industry in an effort to eradicate starvation and reduce poverty (Pomeroy et al., 2009). In the 1990s, fishers received preferential loans and tax reductions, under Decisions No. 358 and 393/TTg in 1997, to build fishing vessels with the capacity to fish offshore. In 2003, the government issued the Fisheries Law and the Master Plan for the development of Vietnam's fisheries to 2010, with an orientation to 2020, creating a legal basis for the management and development of large-scale fisheries to increase exports and improve the well-being of people living in rural coastal areas.

Prior to the early 2000s, Vietnam had around 80,000 fishing boats (Hai, 2018). Up to 84% of those had less than 90 horse power and 72% had less than 45 horse power (Pomeroy et al., 2009). This means that most of them fished close to shore. Only 16% of the fishing boats (or 12,800 boats) fished offshore. It is estimated that fishing grounds occupied 11% of Vietnam's EEZ (Pho, 2007). The total fish catch of Vietnamese fishing boats was around 1.4 million tonnes/year.

One purpose of promoting offshore fishing vessels was to safeguard water territory, as observed through conflicts between Vietnam and China on the South China Sea. For instance, in May 2014, a deep-water Chinese oil rig and steel-hulled fishing boats entered Vietnam's EEZ illegally, damaging Vietnamese wooden fishing boats. This incident prompted the Vietnamese government to issue Decree 67 to encourage people to build bigger, more modern fishing boats capable of resisting threats from Chinese boats and fishing further from shore to protect Vietnamese territory. Vietnamese fisheries policies prompted more people to take loans to build bigger, stronger boats, which have fished further from shore, even beyond Vietnam's EEZ (see more detailed discussion in Roszko, 2015; 2017). The open-access characteristic of Vietnamese fisheries management, together with the campaign to promote industrial fishing, triggered overfishing (Boonstra and Dang, 2010; Harper & Sumaila, 2019) and pushed Vietnamese fishers to intrude into neighbouring waters to fish, even as far as the Pacific Islands (Song et al., 2019).

Studies show that the number of Vietnamese offshore fishing boats, or "blue boats," has increased to 33,000 in 2019 (EJF, 2019). According to our interviews with government officials, boat owners, and fish workers, fishing beyond Vietnam's EEZ often yields a larger catch, and hence greater profits, thus encouraging more fishing outside Vietnam's EEZ. To do so, blue boats deploy several techniques, such as fishing flagless, changing vessel identities, turning off communication equipment and lights, operating on unpatrolled marine routes, or bribing coastal state officers (EJF, 2019; Song et al., 2019).

Intrusion into other countries' waters has raised concerns and triggered the intervention of the EU IUU regulations. In addition to these illegal fishing practices, the EU argues that Vietnam lacks the measures to prevent IUU products from entering its market and to "ensure the traceability of fishery products," noting inconsistencies in catch certificates and insufficient port controls, among other issues. The yellow card decision addressed breaches of the agreements, regulations, and measures that aim to prevent IUU fishing. Along with the yellow card, the EU outlined nine recommendations to improve Vietnam's capacity to implement monitoring, surveillance, and control (MSC) to combat IUU fishing. With the EU market at stake, Vietnam has starting implementing fisheries reforms, which involves not only regulatory changes but also changes to everyday fishing practices in the country.

With EU consultation, Vietnam rewrote its previous fisheries law, Fisheries Law 2003, and added a number of by-laws to help implement the new law, Fisheries Law 2017, which went into effect in 2019 and has five new points: (1) it defines and regulates illegal, unreported, and unregulated (IUU) fishing; (2) it regulates the monitoring of fishing boats and fish catch traceability; (3) it shifts how it manages fishing boats – from the engine's horsepower to a boat's length; (4) it controls the number of fishing boats by implementing fishing quotas and restricting construction of new boats; and (5) it increases administrative fines for fishing boats that violate regulations to prevent IUU fishing.

In everyday practice, since 2019, all offshore fishing boats must install a vessel monitor system (VMS) and all designated fishing harbours must have offices that monitor and control fishing activities. So far, 96.62% of all off-shore fishing vessels have VMS (Thọ, 2023). The location of these fishing boats at sea can now be seen on screens installed at fishing harbours and fisheries management offices. These boats are warned to return to Vietnam's EEZ if they go beyond it. Sanctions are imposed on boats that deliberately go outside Vietnam's EEZ and/or that turn off their VMS. Fishing boats are required to report port-in and port-out before they depart for fishing and arrive for uploading their catch.

These reforms have improved fisheries management on the ground, and the number of blue boats encroaching on other countries' waters has been substantially

reduced. That said, the reforms have also negatively impacted the livelihoods of those involved in fisheries – fish workers, boat captains/owners, boat constructors, ice and fishing-gear suppliers, middlemen – a reality that has not yet been explored.

Who are involved in fisheries activities?

Boat owners can only go fishing once they have a sufficient number of captains and fish workers, fishing gear and boats, and supplies of fuel, ice, and food. Moreover, boat owners want to know in advance where they can sell their catch after each trip. This means that fishing activities involve not only boat owners, captains, and fish workers, but also many sellers of fishing gear, food, ice, and other seafood intermediaries. To understand how the issuance of the EU's yellow card impacts the entire industry, we categorise the actors into three groups – fishing actors, pre-fishing actors, and post-fishing actors – and describe their relevance.

Fishing actors include boat owners, captains, and fish workers. Most of them live in coastal villages and heavily depend on fishing for their livelihood. They often have low education, especially fish workers. Depending on the length of the fishing boats, these actors fish in three zones, namely inshore, middle shore, and offshore. Of these, the actors fishing in the offshore fishing zone are the most regulated and impacted by Vietnam's fisheries reforms and the EU IUU regulations. As our focus is the impact of these regulations, "fishing actors" in this chapter refers specifically to offshore boat owners, captains, and fish workers. These actors have different roles on fishing trips and receive different profits. Boat owners are usually from better-off households. To build or buy a fishing boat, boat owners need to have 1–3 billion VND (50–150,000 USD). The majority of boat owners borrow this money from banks, and their loans are supported, thanks to the government fisheries development policies. In most cases, boat owners are also the captain of the fishing boat, and the leader on each trip. If they are too old to be captains, they have their sons or relatives do so. Boat owners prepare the necessities of a fishing trip, including fuel, food, fishing gear, documentation (e.g., vessel registration, fishing license, logbooks, list of fishing crew) before each trip. Captains and boat owners decide on fishing grounds and fishing duration.

Fish workers typically come from poor or middle-income households. Boat owners prefer hiring fish workers from their own villages. Fish workers do not have employment contracts with boat owners – one fish worker can work for many boat owners – and they do not have a guaranteed salary. Their salary depends on the fishing trip's profits. Among the fishing crews, fish workers receive the lowest payment. After deducting the costs for fishing gear, fuel, food, and ice, boat owners announce the profit to their crews. Boat owners take 50% of the profits; the other

50% is divided equally among the fishing crew (including boat owners if they are also members of the crew). The profit of each trip varies a lot – from one hundred to several hundred million VND. If boat owners are not the captain, they will give the captain greater profit. Sometimes captains earn twice the income of fish workers. In a worst-case scenario, if boat owners fail to make profit from a fishing trip, the captain and fish workers will take nothing home. According to the Department of Fisheries (cited by Thời, 2024), Vietnam has employed 180,000 offshore fishing actors (including captains, boat owners, and fish workers).

Pre-fishing actors are those who provide inputs before fishing trips occur, including those who sell fishing gear, spare parts or tools, fuel, ice, food, and water; and also, those who build and repair fishing boats. The actors involved in pre-fishing activities are located in, or within the vicinity of, fishing ports. These actors operate at various scales, depending on the services and inputs they offer, as well as the size of fishing ports. Providing fuel, building, and/or repairing fishing boats are enterprises that tend to require substantial capital and a workforce. On the contrary, fishing gear, ice, water, and food are often provided by individual households. Among these household-managed businesses, those selling fishing gear and ice tend to be larger than those selling food or water. The scale at which pre-fishing actors operate is further influenced by port size and proximity to urban centres. There are no statistics on the number of pre-fishing actors operating across Vietnam's 125 fishing ports; however, at Tho Quang fishing port situated in Da Nang, which stands out as one of Vietnam's five largest fishing ports, there are an estimated 190 pre-fishing actors, each of whom hire between 3 and 35 labourers.

Once the fishing trip is completed, boat owners sell the catch to post-fishing actors, including seafood intermediaries and processing enterprises. Most of them sell to seafood intermediaries, but a very few sell directly to processing enterprises. There are three tiers of seafood intermediaries: the first buy fish from boat owners, then sell directly to the second tier of seafood processing enterprises. Many first-tier seafood intermediaries have close connections to certain boat owners through lending money prior to a fishing trip. In return, boat owners are bonded to sell their catch to these intermediaries at lower prices. The first-tier intermediaries buy a diverse number of species in contrast to the second- and third-tier intermediaries. Second-tier intermediaries buy some species of fish based on orders from seafood processing enterprises and restaurants. The third-tier intermediaries buy seafood from the second tier and sell directly to local consumers. It is estimated that Vietnam has 280 seafood-processing enterprises employing from dozens to thousands of labourers (Đăng, 2023). At Tho Quang fishing port, there are 31 first-tier seafood intermediaries, 61 second-tier intermediaries, and 200 third-tier intermediaries (Thọ, 2015). Our interviews reveal that first- and second-tier middlemen hire between 3 and 15 labourers each.

Impact of EU IUU fishing policy on livelihoods of actors involved in fisheries

> Five years after Vietnam received the yellow card, fishing actors' livelihoods are impoverished. More and more fishing boats lie ashore. (Interview 20, government official)
> Fishing farther away [beyond the EEZ] often brings us high fish catch and profit. However, because of the yellow card, we are unable to fish here. Now we are compelled to fish in the fishing grounds of Vietnam [within the Vietnamese EEZ] otherwise we will get fined. However, these grounds are overcrowded with fishing boats and have few fish. Fishing in the permitted zones often results in an insufficient catch to cover variable fishing costs and generate profits. Fishing further afield could potentially yield more fish, but it is illegal and risks sanctions. (Interview 30, boat owner)

Similar reflections are common in our findings from the field, which inform our focus on the trade-off between securing fisheries livelihoods and compliance with IUU fishing regulations aimed at sustaining marine resources. The following section addresses the impacts of the yellow card on the three categories of actors.

Impacts of EU IUU fishing policy on fishing actors

The main impacts of the EU intervention on fishing actors are the reduction of fish catch and fish prices and the increase in fishing costs. First, fishing actors complain of their smaller fish catch due to the decreased area of fishing grounds. According to our interviews, they now catch between 30–60% of what they once did. Boat owners, captains, and fish workers disclosed that prior to the issuance of the yellow card, they did fish beyond Vietnam's EEZ, often on the high seas and occasionally in the waters of other countries such as the Philippines, Malaysia, and Indonesia. However, after the yellow card, these actors were constrained to fish within Vietnam's EEZ. This shift is a result of changes in both fisheries regulations and enforcement.

Before the yellow card, Article 5 "Management of fishing activities in Vietnamese waters," Decree 33/2010/NĐ-CP (a bylaw of the 2003 Fisheries Law), stipulated that "Fishing boats with engine power of 90 CV or higher operate in the offshore zone and on the high seas," and that "In addition to engine capacity, fishing boats must comply with safety regulations applicable to each fishing zone." This could be interpreted that the high seas were considered Vietnamese waters, and that as long as fishing boats met the requirements for engine capacity and safety regulations, they were permitted to fish on the high seas.

However, Article 7 of the decree stipulated that "Organizations and individuals intending to fish on the high seas or in the waters of other countries must submit applications to the Directorate of Fisheries." These applications were required to

meet the conditions specified in Article 6, which outlined the prerequisites for fishing outside Vietnam's waters. While boats fishing in waters authorised by other countries were obligated to obtain agreements or permissions from the respective coastal countries before fishing, those fishing on the high seas were only required to fulfil technical and administrative requirements mandated by the Vietnamese government.

The ambiguity in identifying Vietnamese waters under Article 5, coupled with the Vietnamese government's weak law enforcement due to shortages of resources (human and financial) and tools (e.g., vessel monitoring systems), facilitated fishing beyond Vietnam's EEZ. According to those we interviewed, the majority of fishing boats encountered no obstacles when fishing on the high seas or in foreign waters. Only a few were unlucky enough to be apprehended by the authorities of those countries.

After the yellow card, following the EU recommendations, the Vietnamese government reformed its fisheries legislation and management practices through the introduction and implementation of the 2017 Fisheries Law and bylaws to combat IUU fishing. Regarding fishing zones, Article 43, Decree 26/2019/NĐ-CP (issued 8 March 2019), states that "Fishing boats having lengths from and above 15m fish in the offshore zone." To fish outside Vietnam's EEZ, on the high seas and in the waters authorised by other countries, fishing boats have to satisfy six requirements regulated in Article 46, including: (i) having length from and above 15 metres and not violate illegal fishing regulations; (ii) being assigned codes by the International Maritime Organisation (IMO); (iii) having observers in accordance with regulations of the regional fisheries management organisation or coastal countries; (iv) crew members must obtain certificates of completion of the course on fisheries management within international waters if the fishing license is issued for fishing in the waters under the jurisdiction of the regional fisheries management organisation; (v) being equipped with marine communications equipment, including VHF radio transmitters and receivers maintaining a continuous DSC watch on Channel 70 or 16; MF/HF radio transmitters and receivers; NAVTEX receiver, emergency position-indicating radio beacons (EPIRB) and GPS equipment; (vi) having installed vessel monitoring equipment capable of automatically transmitting information through the satellite communications system.

To improve compliance with these regulations, fishing boats, having a length of 15 metres or more, are required to install vessel monitor systems (VMS) to be able to fish offshore. Under pressure from the yellow card, the Vietnamese government put much effort into preventing fishing actors from engaging in illegal fishing on the high seas and in foreign waters. It established a vessel-monitoring system that can trace fishing boats from afar. If fishing boats with their VMS turned on cross the EEZ, they receive notifications from the authorities to return. In addition, the

government organised patrols in the waters close to the EEZ. Along with improved law enforcement, the government runs public service announcements on the consequences of illegal fishing, urging fishing actors to stop violating other countries' waters; it also provides boat owners and captains with maps of Vietnamese waters. As a result, the Ministry of Agriculture and Rural Development notes that the incidence of Vietnamese fishing boats violating foreign waters has notably decreased. Since 2018, Vietnam has stopped fishing boats from trespassing into waters of the Pacific Island countries. Compared to 2016, the number of fishing vessels apprehended for illegal fishing by foreign authorities has dropped by 84.35% (Anh, 2023). However, it is important to note that records of the number of Vietnamese fishing boats violating other countries' waters are usually generated (only) when these boats are apprehended by authorities.

Taking advantage of the fact that relevant authorities cannot cover the vast expanse of the sea to monitor and inspect fishing activities, many fishing boats turn off their VMS to conceal their locations. In a recent press release, the Ministry of Agriculture and Rural Development announced that 4,375 fishing boats had no VMS signals over six months (Tuệ, 2024). Provincial authorities report that they often lose VMS signals from fishing boats when they are near the border between Vietnam and other countries (Trung, 2024). Both central and local authorities find it challenging to determine whether these boats are fishing within or outside Vietnam's EEZ. In addition to the decreased area of the fishing grounds, fishing actors also mentioned that catch reduction is due to the degradation of marine resources. All those we interviewed agreed that marine resources outside Vietnam's EEZ are more abundant than within it.

The second impact of the EU intervention on boat owners and fish workers is the reduction of fish prices, which has happened for three reasons. One is the reduction of seafood exports to the EU after Vietnam received a yellow card. According to our interviewees, seafood exports to the EU fetch higher prices than exports to other countries or the domestic markets. One seafood intermediary disclosed:

> For skipjack tuna of the same size and quality, I pay 100,000 VND/kg [4.15 USD] for those destined for the EU, but only 90,000 VND/kg [3.7 USD] for those consumed locally. (Interview 26, a second-tier seafood intermediary).

According to the Communications Director of the Vietnam Association of Seafood Exporters and Producers (VASEP), before the yellow card (from 2015–2017), seafood exports to the EU accounted for 30–35% of Vietnam's seafood exports. After the yellow card, this figure dropped to 10.7% in 2019 and 9.4% in 2020 (Hạnh, 2023). Moreover, seafood processing enterprises have to pay additional costs for products

exported to the EU, including fees for the catch certificate and storage charges. All Vietnamese seafood shipments are now inspected prior to receiving permission to import, resulting in export companies paying storage charges while waiting for these inspections. These costs, subtracted from the purchase price at harbour, are an added burden for fishing actors. As one interviewee put it:

> Seafood processing enterprises are also impacted by the yellow card and the reforms, but they manoeuvre to reduce the impact. They "share" most of the impact with seafood intermediaries who "share" it with the fishers by reducing fish prices. Fishers complain that seafood intermediaries are squeezing their fish prices. In turn, seafood intermediaries complain that their profits are reducing as they have problems with traceability (e.g., in procedures, fees to get catch certification), but cannot increase their selling prices. Fish prices are decided by the seafood intermediaries and processing enterprises. Fishers have few choices and their voices are not heard regarding the prices. (Interview 6, an academic)

There is also a decrease in fish freshness. Although many blue boats stay within Vietnam's EEZ, fishers argue that the degradation of Vietnam's marine resources have pushed them to stay longer at sea to get "enough catch" (i.e., to cover gas money and some profits). But longer trips reduce the freshness of their fish and also the price, as one seafood intermediary noted:

> Fish are less fresh than before as the duration of fishing trips get longer. Less fresh fish have a lower price than fresh ones. For fresh mackerel, I pay 50–60 thousand VND/kg. For less fresh mackerel, I pay 20–30 thousand VND/kg. (Interview 39 – a third-tier seafood intermediary)

A third reason why fishing actors, mostly boat owners, bear more costs after the yellow card is that the reforms require boat owners to install vessel monitoring equipment so their locations and fish catch can be traced and tracked. Boat owners have to pay 18–20 million VND for the equipment and a monthly connection fee of about 400 thousand VND. The reforms' new requirements for fishing boats also increased costs for some boat owners. As mentioned above, before the yellow card, offshore fishing boats were required to have engine power from and above 90 CV; now, boats are required to be at least 15m long. More than 3,500 fishing boats have engine power above 90 CV but are less than 15m long (Hiền, 2019). To fish offshore, these boat owners have to lengthen their boats; otherwise, they have to move to the middle shore. Either option costs them money: lengthening their boat will cost 200 million VND; moving to middle shore will cost time to familiarise themself with the new fishing ground and millions of VND to repair and buy new fishing gear able to catch the species living in this zone.

For all these reasons, fishing profits are decreasing significantly. Some fishing actors frequently incur losses, while others manage to generate some earnings. Most of those we interviewed agree that:

> We receive less and less money per fishing trip compared to the past five years [before the yellow card]. The profit per fishing trip has decreased by at least 50%. (Interview 11, a boat owner)

Prior to the yellow card, the fisheries development policies (mentioned above) coupled with high profits had encouraged boat owners to take credit to construct offshore fishing boats and buy/upgrade their fishing gear to fish offshore. Seeing many offshore boat owners in their vicinity earning good profits, they expected to clear their debts in several years. The yellow card destroyed these expectations. Many boat owners made fewer fishing trips or left their boats ashore to minimise loss. Unlike fish workers, who can take jobs on land due to the reduction of fishing profit, most boat owners have little choice but to keep fishing to pay off their debts – even though their efforts may cause them to lose more. As the following quotes reveal:

> Boat owners are the most vulnerable actors. Most of them had to borrow money to build fishing boats. Because of the reduction in fishing profits, they may be unable to pay off their debt. They have few chances to find jobs on land as most of them are aged. (Interview 9, a government official)
>
> Since 2017, profit has been reduced significantly. We often earn nothing from fishing trips. Many fishers exit fishing to find jobs on land. It's difficult to recruit fishers nowadays. To attract fishers, I have to lend them 3–4 million VND and offer them 1 million VND before each trip. If the trip brings profit, I will deduct the amount they borrowed before paying them. If the trip isn't profitable or even losses, I don't know when I will get my money back. Some fishers still owe me 4–15 million VND. (Interview 12, a boat owner)

Most boat owners and fish workers agree that issuing a yellow card to Vietnam was fair given that Vietnamese fishing boats illegally fished in foreign waters for years. However, fishing actors do not agree with the EU's conditions for withdrawing the card, as one boat owner expressed:

> I think it is reasonable that the EU issued the yellow card to our fisheries. We have violated other countries' waters. The yellow card helps prevent people from the violation. But I disagree with the EU when they said that they will not withdraw the yellow card even if there is only one Vietnamese fishing boat violating other waters. The majority of us comply with the IUU regulations; we do not violate other countries' waters. Why do we have to

> suffer the consequences caused by a few fishing boats? This is unreasonable. (Interview 12, a boat owner)

Likewise, Vietnamese government authorities and researchers we interviewed all disagreed with the EU's approach to removing the yellow card. The EU IUU fishing policy was applied to Vietnam without due consideration of its specific context, for instance, for multi-species fishing with the challenge of keeping records of all species and Vietnam's high dependence on fisheries as a livelihood for coastal communities (see also Song et al., 2020). Fishing actors were forced to comply immediately with the new regulations regardless of their livelihood, as illustrated by two fisheries authorities:

> We need to combat IUU fishing. However, we cannot combat IUU fishing as quickly as the EU demands. We need time to transform the livelihoods of fishing crews. Once their livelihoods are transformed, once their livelihood depends less on fishing, we can start implementing anti-IUU fishing policies. (Interview 21, a government official)
>
> In a recent dialogue, the EU stated that they will remove the yellow card if 100% of Vietnamese fishing boats stop violating other countries' waters. I don't agree with them. Nothing is absolute. It's difficult to have 100% of fishing boats not violating other countries' waters. It's impossible to have such perfect compliance on land, let alone at sea. (Interview 7, a government official)

In addition to the demand that no blue boats fish beyond Vietnam's EEZ, the EU recommends that the Vietnamese government needs to increase sanctions to stop IUU fishing acts. This is because, according to the Ministry of Agriculture and Rural Development (cited by Khôi, 2022), the EU argues that the enforcement, management, and sanctioning of violating fishing boats is not strict enough and lacks consistency across different localities. They contend that the sanctions imposed are not sufficiently robust, compared to those of other countries in the region, and fail to provide a credible deterrent. To this end, the Vietnamese government is urging localities to strengthen law enforcement and sanctions. Consequently, in addition to economic impacts, fishing actors bear mental impacts. Before the yellow card, they had more freedom to fish, with no VMS, reports, logbooks, or inspections. Now, they feel more controlled and are forced to comply with numerous regulations. As one fishing actor put it:

> After 2017, fishing activities have been tightened, and the government has issued more regulations and implemented more management. As a result, we have a high risk of getting sanctions. (Interview 12, a boat owner)

Under pressure to pay off their debt and secure their livelihoods, boat owners violate fisheries regulations to catch as many fish as possible. They turn off their VMS to fish in the middle zone or outside Vietnam's EEZ. It is estimated that only 50% of fishing boats maintain VMS connections. The others turn off their VMS to cover their violations (Triển and Thái, 2022; Bình, 2023). Some boats still violate the waters of neighbouring countries, e.g., Malaysia, Thailand, the Philippines, and Indonesia (Há and Tá, 2024; Trinh, 2024; Vân, 2023). Fishing actors often evade sanctions by avoiding designated fishing ports where strict penalties are enforced. These acts make revoking the yellow card more challenging. We now turn to the underexplored impacts of EU IUU fishing policies on pre- and post-fishing actors.

Impacts of EU IUU fishing policies on pre-fishing actors

Among pre-fishing actors, boat builders and repairers are particularly impacted by the yellow card. Before receiving the yellow card, boat-building companies had more orders than they could handle, leading to headlines such as "Boat Building Companies Are Overloaded" (Linh, 2016). However, following the yellow card, the Vietnamese government imposed quotas on fishing boats. Construction of new fishing boats is controlled and restricted to reduce fishing capacity. Boat owners are allowed to construct a new fishing boat only if their current one is unusable.

In a situation where many fishing boats are either lost or generate minimal profit, owners often decide to exit the industry when their boats become inoperable. Boat builders no longer receive construction orders, and many have lost their jobs. This change is reflected in headlines now reading "Desolation in Boat Building Companies" (Thảo, 2021) and "Boat Building Companies Hungry for Orders" (Thọ, 2019). Some boat builders continue by repairing boats. As the number of fishing boats arriving and departing port diminishes, there is less money for boat repair. This is further aggravated by the number of fishing boats docked at port as boat owners fear being fined for various infractions (as noted in section 4.1). The owner of a boat-building company, interviewed by Thọ (2019), and a boat-repair person we interviewed lamented, respectively, as follows:

> In 2019, my company only repaired 5 fishing boats. We built no new fishing boats in 2018 or 2019. Before [the yellow card] we used to have hundreds of workers but now only 10 remain (Thọ, 2019).
>
> The number of fishing boats using my services has been reduced by 50–60%. I planned to pass my profession on to one of my sons, but now I have changed my mind. (Interview 28, a boat repairer)

Similarly, those selling fishing gear, ice, food, and spare parts face similar impacts. Fewer boats docking at fishing ports has led to reductions in business income. As expressed by a spare-parts seller and an ice supplier in Tho Quang fishing port:

> My husband and I inherited this shop, opened in the early 2000s, from my parents. After a fishing trip, boat owners often buy spare parts to fix their boats. We earned quite a good income before. Recently, the number of fishing boat arriving here to sell their catch decreased by 40–60% as the authorities are more disciplined, they give more and stricter sanctions for fishing boat violations. Fewer boat owners buy spare parts from my shop. My income has decreased by 50%. (Interview 29, a spare-parts seller)
>
> Recently, my business has experienced a downturn. There's a noticeable decline in arrivals and departures of fishing boats at the port. The quantity of fish catch offloaded here has dwindled, and there's a substantial reduction in the demand of ice for fishing trips and preserving fish. My ice sales have decreased considerably. (Interview 38, an ice supplier)

These interviews empirically demonstrate that pre-fishing actors are impacted by changes in fisheries governances, specifically reduced business opportunities as fewer boats require inputs for fishing trips. Yet, these voices are mostly absent in discussions of fisheries governance.

Impact of EU IUU fishing policy on post-fishing actors

Seafood intermediaries derive their income from purchasing caught fish and then selling to others: middlemen, seafood enterprises, and customers. The yellow card impacts seafood intermediaries by reducing the volume of fish they procure and their selling price. Trading fish earmarked for export to the EU typically yields them the highest profits, as they can command higher prices for these fish while incurring lower costs. However, after the yellow card, the reduction in seafood exports to the EU diminished their profits. According to our interviews, the first- and second-tier seafood intermediaries are experiencing profit losses ranging from 10%–20%, while third-tier intermediaries, primarily involved in domestic fish sales, are minimally affected.

Seafood intermediaries face heightened challenges with the implementation of the fisheries reforms. Now, procuring fish for EU exports is more arduous, as catch certificates are required. Many boat owners struggle to provide evidence of their catch's origin due to discrepancies between logbooks and VMS data, or its absence. Additionally, their overall fish trade has significantly decreased given stricter management measures and increased sanctions imposed by fisheries authorities:

> As the sanctions are too hard, fishing boats no longer come here to sell their catch. Fish catch offloaded through this fishing port has decreased significantly. (Interview 27, a first-tier seafood intermediary).
>
> Fewer and fewer fishing boats arrive here. The amount of seafood I purchase has decreased by 40%. The number of middlemen working at fishing ports also decreased. Previously, at this time [around 10:00 p.m.], this area was completely filled with plastic stools, baskets, and people. Seafood intermediaries even had physical fights to get a space to buy fish. Now there are only a few. Before, my lowest daily income was 300 thousand VND [12.3 USD] a day, now my highest daily income is 200 thousand VND [8.2 USD]. (Interview 26, a second-tier seafood intermediary).
>
> Seafood intermediaries express frustration with sanctions due to their detrimental effect on business. Regarding the issue of IUU fishing, they expressed: We urge the authorities to cease sanctions so that we can continue our operations. (Interview 27, a first-tier seafood intermediary)

Beside these direct impacts, first-tier intermediaries bear indirect impacts. As noted above, intermediaries frequently lend boat owners money prior to fishing trips and expect to be repaid immediately afterwards. However, with declining fish catches and diminishing profits, many boat owners are unable to fulfil their financial obligations. Some resort to evasive measures to avoid settling their debts. Consequently, first-tier intermediaries suffer financial losses, leading most to refrain from granting new loans. This creates a negative ripple effect for honest boat owners who are unable to borrow money to cover their fishing costs and, thus, cannot afford to take their boats out.

Seafood processing enterprises are also impacted, since many of them lost orders from their EU customers after the yellow card, leading to profit reductions ranging from 20%–60%, depending on the volume of their trade with the EU. Most seafood processing enterprises are seeking out new markets in non-EU countries, including the Middle East, Korea, Japan, and the United States, though this strategy cannot fully compensate for the losses incurred. Furthermore, the implementation of fisheries reforms, particularly of traceability systems, has raised production costs for seafood processing enterprises. As a significant portion of the domestic fishing catch is ineligible for catch certificates, processing enterprises are compelled to import caught fish from other countries to process and re-export to the EU. While these imports increase costs, they yield lower profits compared to using domestically caught fish, as noted by owners of several seafood processing enterprises:

> Purchase orders have been reduced by 50%, and the company's total profit has been reduced by 20%. After losing EU purchase orders, we have to find other markets to

> compensate for the loss. Without these new markets, the reduction of total profit would be higher. (Interview 1, an employee of a seafood processing enterprise).
>
> The extent of [the yellow card's] impact has gradually reduced. The EU is our company's most profitable market. We used to export 70% of our product to the EU. After the yellow card, many EU customers stopped purchasing from us. We now export only 30% of our products to the EU. We have to restructure our export markets, that is, find new customers in other countries to survive. Nowadays, the US is our most profitable market. (Interview 3, an owner of seafood processing enterprises)
>
> Luckily, we did not lose the EU purchase orders after the issuance of the yellow card. However, our profit has been reduced by 30%. Due to the strictness in certifying the origin of caught fish, our purchase of domestic fish has decreased. We have to import fish caught in other countries. … Seafood products made of imported fish cost more than those made of domestic fish. Our company has looked for other markets e.g., Japan, US, and Korea, but this can only partially compensate for the loss. (Interview 2, an employee of seafood processing enterprise).

Our findings show that boat owners, captains, and fish workers are not the only ones strongly impacted by the reforms resulting from the yellow card; other actors have also experienced pressure to adjust their everyday livelihoods in the face of reduced demands for seafood exports and the stagnation of fisheries production due to the strict regulations. In the next section, we will discuss our contribution to emerging debates around the tension and trade-offs between environmental governance and livelihood security in fisheries.

Discussion and conclusion

Our case study demonstrates that roughly six years after the implementation of EU IUU regulations in Vietnam, the livelihoods of fishing, pre-fishing, and post-fishing actors are deteriorating rather than being nourished or sustained. Actors involved in fisheries, especially boat owners, have struggled to adapt to the reforms. Prior to the yellow card, they were encouraged to invest in offshore fishing activities but now face major restrictions on their operations, and many find themselves trapped by the reforms. At the same time, fishers and boat owners further suffer the consequences of illegal actions perpetrated by a minority of fishing actors. Despite complying with regulations, such as fishing within Vietnam's EEZ, they cannot achieve sustainable socio-economic conditions.

The implementation of the EU IUU regulations in Vietnam focuses solely on places where marine resources are exploited. It disregards the right to a livelihood and secure well-being of actors involved in fishing, and the detrimental social

effects this engenders. The regulations result in counterproductive actions by fishing actors – not complying with regulations, turning off VMS to disguise fishing locations – which only exacerbate the challenges of combating IUU fishing. By neglecting the broader aspects of fishing livelihoods, fisheries governance is less likely to garner legitimacy or to achieve its objectives (Béné et al., 2010; Charles, 2011; Pomeroy, 2016; Pomeroy, 2012).

Combatting IUU fishing is crucial for the sustainability of marine resources. However, this endeavour must not come at the expense of the livelihoods and well-being of all those involved in fishing. The fight against IUU fishing should consider the socio-economic conditions and livelihood contexts of those involved in fishing (Béné et al., 2010; Charles, 2011; Pomeroy, 2016; Pomeroy, 2012). Accordingly, measures should extend beyond marine resources and fisheries to encompass livelihood options that ensure food and income security for all those involved in fisheries (Béné et al., 2010; Pomeroy, 2012). Providing alternative livelihoods could be an option to reduce certain actors' livelihood dependency on fisheries (Cinner et al., 2009; Daw et al., 2012; Rahman & Begum, 2011). But this provision needs to recognise, as well, that for some actors, engagement in alternative livelihoods may be constrained by low levels of education and/or alternative skills (Hanh & Boonstra, 2019; Marschke & Betcherman, 2016).

This chapter has provided examples of how environmental policy conflicts with livelihood security, drawing on the case of Vietnam's fisheries reforms. IUU fishing is the main cause of overfishing and marine resource degradation. To ensure that fish are caught in healthy oceans, international actors like the EU have introduced IUU regulations to combat IUU fishing and to sustain marine resources and the livelihood of resource users. Yet, the implementation of the EU IUU regulations in Vietnam brings significant challenges for fisheries-related livelihoods, some of which we have captured in this chapter. The dilemma for the Vietnamese government is how to balance the external pressure to govern its resources while also ensuring the survival of livelihoods for Vietnamese people.

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CHAPTER 8

Livelihood Transitions To and Away from the Coal Economy in India

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Abstract

As coal mines expand across Central and Eastern India, rural groups typically protest against displacement and demand better compensation. Meanwhile, and often in the immediate vicinity of the expanding mines, people previously displaced but now working in the coal economy protest against mine closures. Millions across the country are situated somewhere between attempts to protect agrarian livelihoods and keeping a job in the coal economy mainly seeking to get by as their lives slowly become increasingly conflated with, and dependent on, coal. In this chapter we draw on long-term and recent engagements across two coal-producing states in India to reflect on difficult livelihood transitions to and away from coal mining. We attempt to untangle the seemingly contradictory responses of protests against new mines but also against subsequent closures years later when the coal is exhausted. We highlight coalfield conditions characterised by deep uncertainty about what the future holds, where just getting by within the informal coal economy appears the most feasible option for many. As the mines inevitably close, the livelihood transition away from coal may represent additional challenges compared to the earlier transition from farming to mining as it leaves a majority lacking assets like land or professional degrees when they yet again seek alternative livelihoods. Environmental governance policies would do well to harness the human energy and ability of millions of informal workers for more productive, equitable and sustainable outcomes.

Keywords: energy transition, environmental governance, agrarian livelihoods, coal mining, land relations, India

Introduction

Key to the arrival and expansion of large-scale mining in the Global South is the distortion of agrarian social structures and the enforced livelihood transitions of communities (Borras et al., 2011). Ensuing agrarian change comes with widespread effects on property relations, labour conditions, and the distribution and

appropriation of resource incomes and surpluses as mining inevitably transforms social relations and causes widespread degradation of the local environment (Bebbington et al., 2008). In this chapter we explore the coalfields of India where a lack of effective environmental governance shapes rural populations' continuous struggles and contestations over resources and livelihoods. We analyse how rural groups react to enforced livelihood transitions when large coal mines in India open and, decades later, when they are exhausted and therefore close. This analysis may open up policies that are better able to ensure that the closure of mines come with opportunities to remake livelihoods in a post-carbon setting, prioritising community participation in environmental governance in India's coalfields.

India's economic expansion in recent decades has depended on coal from its central-eastern region.[1] In this region, and particularly in and around the coalfields, people collectively identify as Adivasis, India's indigenous peoples, depending on forest-based livelihoods and small-scale agriculture. One consequence of the vast expansion of open pit coal mining is thus the forceful removal of large numbers of people from their livelihoods (Oskarsson et al., 2019). Such processes have resulted in tremendous difficulties for individuals and communities to find new ways of living as compensation has typically been missing or inadequate. A large body of research has detailed social movement and political party mobilisation to demand a better deal, primarily from improved compensation for land and other forms of loss to the mining companies (Lahiri-Dutt, 2014; Oskarsson et al., 2024). Over time the demand of urban India for increased electricity supply has ensured continued coal expansions in spite of much delay and enormous contention in the coalfields. Mine-side communities have typically been forced to settle for a forced transition away from agrarian livelihoods with monetary compensation, and at times, one mining company job per displaced household.

While social and environmental mine-side disruptions are clearly enormous, there is however a different story to be told. This is since coal is not merely a source of displacement but also a locus for inward migration as new jobs become available when the industry expands, and a range of related industries and service establishments are introduced in previously poor, agrarian settings. While difficult, unregulated and frequently dangerous, (mainly informal) coal work often offers better possibilities for landless, marginal and typically lower caste or indigenous farmers and forest-dwellers compared to those in the pre-existing agrarian economy of rain-fed agriculture and forest collection activities. And various service jobs

[1] Thermal power based on coal accounts for more than 70% of national electricity generation in spite of advances in solar and wind power and alternative sources like nuclear and hydro (International Energy Agency, 2020). Imported coal mainly from Indonesia varies from year to year, usually making up 10–20% of total use (Oskarsson et al., 2021).

in the coal towns provide relatively attractive alternatives for broad sections of the landless poor who otherwise survive as agricultural labourers (Lahiri-Dutt, 2016; Nayak, 2022). As many as 15 million people are at present estimated to work in the informal coal sector, for example truck drivers, coal peddlers, and brick kiln workers compared to the official coal mine workforce of a few hundred thousand (Bhushan et al., 2020). In addition, many of the former land owners have been able to secure formal jobs within the mining industry as part of compensation packages enabling them to live with life-time job security, and even aspire to a middle-class lifestyle. Seen in this manner, coal as a livelihood is significant and reaches far beyond the formal sector and the few who have professional degrees.

We draw on empirical material from two Indian coalfields where recent mine closures have occurred to highlight the tumultuous nature of enforced livelihood change in India which rural populations have little ability to participate in, or decide over.[2] Our cases are not intended to be comparative but rather allow for a broader understanding of contrasting land and livelihood relations in India – on Adivasi and non-Adivasi land and across different federal states.[3] To understand trajectories of livelihood change related to mine openings and closures we draw on recent as well as long-term ethnographic research complemented by historical documents. This allows us to look across the cases for generalisable conclusions on how different groups have engaged with the coal sector and managed to 'extract' benefits from these nationally driven resource projects. We seek an understanding over time of the different forces that shaped initial displacement and dispossession, slow incorporation into the coal economy through formal and informal livelihoods, and the possibilities to transition to other livelihoods once the mines closed.

Our first case, the North Karanpura coalfield in Jharkhand state, is considered a typical case of coal expansion in India since the 1990s with open pit mines expanding on indigenous lands officially recorded mainly as forests.[4] This allows us to see how agrarian and forest-dwelling indigenous groups largely lacking formal land tenure documents have been affected by the establishment of mines, and later

[2] Patrik Oskarsson has been the project leader for several research grants from 2015 to the present exploring the coal sector in Jharkhand state. Suravee Nayak completed her PhD in 2025 focusing on the Talcher coalfield in Odisha. Nikas Kindo completed his PhD in 2024 on the North Karanpura coalfield in Jharkhand state.

[3] The Jharkhand case is a 'Scheduled Area' region with special governance mechanisms to protect Adivasi's interests with regard to land and other social issues. The Odisha case is a poor, non-scheduled area with mixed caste settlement and private agricultural and homestead lands contrary to the majority forest land in Jharkhand.

[4] A range of inaccuracies in actual land use and tenure exist from the time of original land and forest settlement by colonial authorities to present day poor and infrequent updates including outright corruption to falsify land records.

became incorporated into the slowly expanding coal economy. Our second case, the Talcher coalfield in Odisha state, is an unusual, and therefore complementary case of coal mining, since it is located on non-indigenous lands. Here, the mines mainly expanded across privately owned agricultural fields owned by caste Hindu land owners who have the official land documents that allow them to demand better compensation.

This chapter starts with a discussion of livelihoods in coal-abundant regions and how we can understand difficult livelihood transitions within environmental governance. Following this are two empirical sections on the agrarian resistance to new coal mining, and the slow enrolment processes that ensure communities depend on coal at the time of mine closure decades later. We end the chapter with a conclusion on the contested trajectories of livelihood change in India with key implications for environmental governance.

Livelihood transitions and the Indian coal sector

Environmental governance is often conceptualised as a framework of policies, rules, and norms that regulate human behaviour in relation to environmental resources (Bennett and Satterfield, 2018). The literature suggests that effective environmental governance involves community-based management of resources, where local communities actively contribute to establishing livelihood strategies and enhanced income generation (Zimmerer, 2015; Johnson, 2019). By promoting informed community engagement which 'puts the last one first' (Chambers, 1983) environmental governance can encourage greater participation in decision-making processes, ultimately helping to develop strategies based on the priorities of the poor themselves. In India, the community forestry programs incorporate multiple objectives, including environmental conservation, livelihood enhancement, and carbon sequestration (Pathak et al., 2021). However, a majority of rural populations in India remain far from the benefits of such governance models, although land and other natural resources continue to remain key for their livelihoods and sustenance. This is particularly the case for mining regions in India which are typically in focus for energy security and national development rather than sustainable livelihood policies.

Fuelling the vast landscape and livelihood changes of central-eastern India are national goals to achieve energy security and economic development, and to a limited extent to meet agreed international climate change targets (Chatterjee, 2020; Dubash et al., 2018). India has committed to reaching net zero far into the future in 2070, and initial, high-level investigations and planning exercises are

underway in government policy circles (Bhushan et al., 2020; Haldar et al., 2023). Frequent coal block auctions to private investors, however, reinforce the overall trajectory that coal mining will continue to expand rather than contract in the near future (Oskarsson et al., 2021). A number of large, open pit coal mines established in the 1990s have, however, become exhausted allowing us to understand livelihood transitions from coal mining. Such an analysis of change may inform the literature of how best to plan for the much needed transition away from coal.

A large body of research has examined the wide-ranging livelihood changes when extractive industries commence operations in rural communities across different socio-political and environmental settings, different types of extractive operations, and using varied governance frameworks. One key perspective of incompatible lifeworlds remains crucial in much of this literature since the seminal article by Godoy (1985) – the clash between remote and indigenous groups facing multinational mining companies in biodiversity 'hotspots' around the world (Ali, 2009; Gilberthorpe & Hilson, 2012). The implications of land and forest loss on livelihoods have often provided focal points for social movements including the possibilities to seek appropriate compensation (Bebbington et al., 2008; Hilson & Banchirigah, 2009; Maconachie & Hilson, 2013). Other research engages with the conditions of environmental management of operating mines (Ali, 2009; Beynon et al., 2000) including studies of mine closure and the future of post-mining landscapes and how these affect different groups of people (Mishra, 2018; Toumbourou et al., 2020). It is clear from this literature that changes proposed by mining go far beyond material changes to landscapes and ways of making a living to affect entire lifeworlds and ways of living as global supply chains encroach on previously often isolated locations.

The widespread changes introduced by large-scale coal mining in agrarian settings in this manner affect entire rural lifeworlds implying a broad spectrum of imposed socio-economic, cultural and environmental-material changes for affected rural groups. Livelihood analysis in its original conception focused on the capabilities, assets and activities required to make a living for relatively independent individuals in isolated rural settings primarily in the Global South, similar to those affected by coal mining in central and eastern India (Chambers and Conway, 1991; Scoones, 1998). Later modifications to this highly popular form of social analysis expanded the individual and relatively insular view of livelihoods to include clearer links to outside forces, primarily that of globalisation and of industrial, natural resource extraction (Scoones, 2015; Natarajan et al., 2022). Livelihoods analysis related to coal mine openings and closures allows us to explore some of the main changes for key rural groups across the different phases of coal mining.

Mining operations have three distinct stages, arrival, expansion and closure,[5] with each stage having its particular implications for rural, mine-side people. At the arrival stage legal principles like the right to land and livelihoods for agricultural and forest-dwelling groups immediately become tested. Adivasis in India have constitutional provisions and land rights legislation intended to ensure they are not separated from their lands. In addition, more recent legislation allows forest claims for individuals and groups. The overall intent is clear – Adivasi land protection is a strong mandate though actual implementation has been far less clear. Non-Adivasis have weaker rights on paper, but typically have the crucial private land titles that identify them as displaced. Related to coal, the Coal Bearing Areas Act of 1957 trumps all other legislation to allow widespread acquisition also of land privately owned by Adivasis (Oskarsson et al., 2019). Cases exist where court cases or protest movements have saved at least some land or forests, but such instances are relatively rare and typically only relate to smaller areas (see e.g., Kumar, 2014). Protests during mine establishment are thus often about job compensation with a widely varying ability among displaced groups to negotiate demands depending on caste, gender, age and ethnicity (Nayak, 2023).

As the mine expands, since the 1980s as open pit rather than underground, vast pits are created accompanied by waste heaps that use up much larger areas of land compared to previous forms of mining. Livelihood changes include relatively well-off farmers losing fertile agricultural fields to mining for scant monetary compensation since their land holdings are not officially recorded, to small-scale cultivators able to secure middle class lifestyles when their land loss is compensated by a permanent public sector coal mining job, to relatively marginal forest dwellers who are not even recorded during displacement since they depend on common lands. In such varied settings livelihood change will take on many different shades of opportunity and marginalisation. For the peoples of the coalfields these changes most often mean an enforced transition from independent but marginal agrarian livelihoods, to informal coal work operating in the shadows of the officially sanctioned economy (Noy, 2022; Nayak, 2023). While an overview estimate has yet to be firmly established, around 300,000 hectares of land have become coal mines, or related waste, transport and similar areas across India's more than 50 coalfields (The Hindu Business Line, 2022). And mandatory forest plantations serve to further increase this footprint.

At the time of mine closure, entire ways of life have in many cases changed dramatically from the initial years of dispossession and compensation packages, to increasing coal sector dependence. Mine closures thus (again) lead to great

[5] For the sake of simplicity we omit the pre-stage of geological surveying and the afterlife of managing closed mines.

uncertainty related to new possibilities. Compared to the initial displacement, a transition away from coal typically has to take place with fewer assets like land to offer up for negotiations around compensation, or as a livelihood fallback in often critically polluted coalfields. Similar to the previous stages of coal mining, closures result in a spectrum of reactions and strategies where the linear and teleological expectation of western examples of a smooth and planned transition (see e.g., Harrahill and Douglas, 2019) where formal workers retrain in new professions, and the mining company pays to ecologically restore the lands, appears limited in addressing on the ground the realities of coal regions such as those in India.

Research on Indian coalfields suggests a need to articulate struggles around livelihoods and household reproduction within the broader framing of climate change and uneven development dominated by the informal economy. Coal struggle groups facing mine closure thus need to build wider solidarities to enable a transition that accounts for this multiplicity (Shah, 2022). Community voices on how to transition to a post-coal future remain silent at the moment while state planning focuses on planting new forests, and enabling renewable energy projects or other privately-owned industrial facilities on the former mining lands.[6] These areas are usually categorised as 'stranded assets' or 'waste lands' and not deemed suitable for agricultural activities. The broader literature on mine closure, however, shows possibilities to environmentally reclaim former coal mine lands for a wide range of purposes (see e.g., Keenan and Holcombe, 2021) and ensure effective governance models targeted at community participation, resource claim-making, and creation of sustainable livelihoods and income generation. While mine-side communities wait to fully comprehend the inevitable end of coal, the national debate in India indicates reuse of the land without capturing community perspectives thereby replicating previous injustices and failures of environmental governance when the mines were first established.

Agrarian resistance at the coal frontier

For both the coalfield cases we study, open pit coal mining of a new and highly mechanised variety commenced in the 1980s and 1990s, and some of these mines are now due to close. The North Karanpura coalfield spans four districts in Jharkhand state, featuring a diverse landscape encompassing dense forests and agricultural lands for a number of distinct indigenous groups. It was initially explored by

[6] Although the changes brought by the coal expansion have been significant in reshaping lives and livelihoods, many other changes have affected rural locations in recent decades marked by a gradual retreat of state functions and an increasingly distressed agricultural economy (Shah et al., 2018).

British geologists in the nineteenth century, but large-scale mining only arrived in the 1980s, and especially in the 1990s based on Australian government support. Currently, the coalfield has been split into 59 planned mines (Central Mine Planning and Design Institute, 2013) over 1,230 km^2. It is expected to expand further through additional mine allocations, exploration, and development, while the first few mines are due to close. Central Coalfields Ltd., a subsidiary of public sector Coal India, owns and operates a majority of the mines. The National Thermal Power Corporation, a public sector electricity company, holds four coal blocks and has recently acquired two more via coal block auctions to serve its thermal power plants. Among the mines already closed is the Piparwar mine, which opened in 1994 with Australian government assistance, is a vital case as one of the first of the new generation of open pit, mechanised mines that set the standard for present expansions across India.[7]

Coal mining in Talcher started in the 1920s during colonial rule. Actual mining including the mines owned by railway companies in Talcher were first under the control of the Central Coalfields, then shifted to the subsidiary South Eastern Coalfields before the formation of the separate Mahanadi Coalfields (MCL) in 1992. MCL currently operates eight open pit and one underground mine in Talcher, and two more open pit mines are planned. The region was primarily an agrarian society before the arrival of coal mines and parts of it still depend on agricultural activities. In 1981, close to 70% of the main workers were cultivators (Directorate of Economics and Statistics, 1995) reducing to around 6% cultivators and 9% agricultural labourers as per Census 2011 data. A total of 126 villages have been affected by coal mines in Talcher. In 2015, MCL had acquired around 3,700 ha of government land and 6,000 ha of private land.[8] More than 5,000 families lost agricultural land, and 7,000 families were displaced and relocated. Fieldwork in Talcher was conducted in two phases between 2015 and 2020.[9]

Our coalfields in this manner reveal complex tapestries of land relationships, rooted in historical processes like *zamindari* arrangements during colonial times where land governance was distributed to local chiefs and agencies across central-eastern India in return for taxes paid to the British colonial rulers (Rothermund and Wadhwa, 1978). The commodification and titling of land thus came to vary across these areas depending on the intentions and capabilities of

[7] Fieldwork for this part of the paper has been carried out as part of repeat PhD fieldwork 2016–2021 and in the research project Coal Conflicts 2014–2020 (Swedish Research Council grant 2013-01965).

[8] Data collected from the MCL office during fieldwork.

[9] This part of the fieldwork was conducted for a MPhil dissertation over four months and included a field survey and semi-structured interviews in four villages affected by coal mines in 2015. Follow-up ethnographic fieldwork for 18 months 2018–2020 was part of PhD research.

the local rulers. These effects remain to the present day as land systems have not been fully homogenised and comprehensive land reform processes have stalled (Deininger et al., 2009). Land ownership therefore at present encompasses diverse categories of privately owned land for individual (typically male) farmers, and lands for common use. A particularly dominant category of land, and especially so in North Karanpura, is forest which is owned by the state government, but in many cases used since generations for farming, grazing or other purposes. Much controversy relates to the type of land title since it is only those with private (agricultural) land titles that receive compensation in terms of money or jobs. A clear majority lack land titles and thus struggle to receive any meaningful compensation beyond meagre payments for lost houses and similar property.

As coal mining was nationalised in the early 1970s some of the displaced in the North Karanpura coalfield for the first time had the chance to gain formal employment in exchange for land. Mining was not a very large industry in the area at the time, however, and most remained within farming and forest livelihoods. Over the years many found themselves relegated to informal labour within the burgeoning mining economy, with a mere handful securing formal employment with CCL.[10] The expansion of outsourcing in coal transportation and mechanised operations introduced uncertainty for these informal workers. This approach prioritised machines for increased productivity and aimed to integrate them through private contract arrangements with CCL. In the latter part of the 1990s, the protesting workers voiced their concerns against diminishing work opportunities in the informal coal sector, but the trend towards mechanisation, and outsourcing to private companies continue to the present day.

The Talcher coalfield was a late entrant to the colonial coal extraction regime given its high transport costs, inferior quality of coal and lack of skilled labour. Truly large open pit coal mines arrived in the 1960s, with widespread socio-economic and ecological implications. Land dispossession and displacement led to mass mobilisation against the mines. Additional open pit mines in the area acquired land after 1985. This incremental acceleration saw strong resistance movements until the end of the 1990s. Caste Hindu and OBC[11] communities strongly resisted and led the movements joined by marginal groups including smallholders from OBC and Dalit communities, and the landless. Multiple protests, blockades of roads and machines, and denying access to villages were among the many tools used by the

[10] CCL, Central Coalfields Limited, is a subsidiary of the public sector giant Coal India which is the main coal mining company in India and the largest coal mining company in the world.

[11] The official category Other Backward Castes is a large group of lower to middle-ranging Hindu castes seen as better off than Dalits, the lowest in the caste hierarchy, but nevertheless in need of affirmative action policies.

community resistance. This resulted in rounds of forced eviction, meetings, arrests of leaders as well as groups.

The resistance to coal mining in Talcher slowly fractured when promises of jobs and infrastructural development were made to some who then stopped their protests. The incremental progress, varied legal proceedings and separate stages of mine expansions meant that village resistance took place at different points in time rather than as a unified coming together of all villages in the area. Resistance transformed into slow acceptance of the arrival of coal mines and, in the early 2000s, marked the beginning of incorporation of communities into negotiations for jobs and monetary compensation rather than seeking a complete halt to the mines.

The policy of Coal India Ltd. provides one highly attractive permanent job per displaced household as compensation for the loss of private land. Ambiguities in documentation often resulted in problems to actually claim the job compensation; and in successful cases often triggered inter and intra family disputes about who in the family should receive the job.[12] This is since only sons above 18 years of age at the time of land acquisition notification were eligible for compensatory employment leading to many being excluded in spite of often years-long, drawn out land acquisition processes including court appeals and other events.[13]

Across our two coalfields were shared experiences of slow and contested incorporation into the coal economy with different groups agitating for improved compensation over extended periods of time often drawing on political party connections and going to court as well as attempting to block activities on the ground. The compensation revolved mainly around land and the possibility to gain formal, and, in the case of Talcher also informal jobs. Some political parties, NGOs and movements have at times been supportive of these demands, at least as long as they did not entail a complete rejection of mining. The mining companies responded mainly via technical planning exercises or in court cases. In this manner relatively egalitarian, agrarian communities were transformed over the course of a few decades. The relatively few who received formal jobs as compensation did better than the previous generation, whereas the majority was forced into highly uncertain informal work in areas undergoing enormous social, cultural and economic transformations along with the dramatic landscape changes implied by large-scale coal extraction.

[12] Nayak (2020) reports that more than 70 percent of households admitted to having inter and intra family conflicts.

[13] The land acquisition can take several years to take effect on the ground after the date of notification. However, notification implies that for example increasing land rates will not be applicable.

Mine closures and coal-based livelihoods

Coal mine closures typically occur a few decades after the mine opened, although this may vary with size of the deposit and the rate of extraction. At closure, the mined out area, processing areas and plants, the waste rock piles (known in mining as overburden), areas for transport and storage infrastructure, as well as office and housing areas all need different kinds of work to ensure they are safe and usable in the future. There is also often social infrastructure like health clinics and schools operated by the companies that may no longer receive the same funding as earlier and therefore will have to close. The closure of the mining pit requires special consideration given its enormous size often spanning several kilometres in width and up to 300-400 metres in depth. The most likely option is for a large part of the pit to become a freshwater lake. The up to 90 metres high waste piles consist of rocks and low concentration coal deposits that need to be stabilised, typically by growing suitable vegetation, and monitored to ensure the water runoff quality is within acceptable limits.[14] While the pit and the waste piles dominate land use in the closed mine, significant areas remain that may be more suitable for new land-based livelihoods.

Mine closure is dictated by economic and technical considerations as the cost of extracting deeper shafts is always higher than the cost for more shallow deposits. For example, the cost of keeping the mining pit dry from water and enabling deeper lying coal deposits to be extracted might be the deciding factor that it is time to close the mine. Or reduced market prices for the mineral can mean that a certain mine is no longer profitable. In many cases in India a mine might not officially be closed at all but rather remain dormant. This is since formal closure implies spending large amounts of money stabilising mine slopes and waste pits, planting trees and landscaping the area. Many mines in India are thus kept in a limbo state between active mining and official closure, potentially waiting for market prices to go up to allow reopening, or at the very least hoping to avoid paying the mine closure expenditures. It is also possible that mine closure only happens once a new purpose for the land has been identified, as for example a solar power park or other industrial venture that can generate income for the mining company. A return of land to the previous owners and users is yet to happen in India in spite of official requirements to do so in some cases, for example for some mines in North Karanpura.

Like coal establishments, mine closures are politicised matters which result in a range of reactions and implications for affected groups. The formal workers

[14] Depending on the chemistry of the waste rocks, special containment facilities may be necessary to ensure polluted water runoff does not spread.

have to date been transferred to another mine within or outside of the coalfield or provided with a pension. The broad group of informal workers, on the other hand, face immediate income insecurity and typically lack any form of social security. Some mine closures therefore see several rounds of resistance movement protests from informal workers including blockades and strikes in front of offices and on the main roads. Over time, a slow acceptance of the closure tends to set in when different factions of the agitating groups receive some form of rehabilitation or other support package, in quite similar ways to when the mines were first established. Unlike at the time of original displacement, informal coal workers have no assets like land to use as a bargaining tool when demanding compensation. Many instead choose to migrate for work to nearby mines. To date, the relatively few mine closures experienced across our two cases did not trigger organised class action among all workers, formal or informal.

Open pit mines are typically planned to operate for at least a few decades, and in some cases for up to 50–60 years, with a legally mandatory, yet frequently not enforced, plan to close the mine and restore the land to other uses in a stepwise manner. The demand for ever larger quantities of electricity generation in many cases meant a need to revise plans not only for more mines, but also for increased output among existing mines thereby shortening their lifespan. For example, the Piparwar mine of the North Karanpura coalfield when established in 1994 was expected to operate until 2029 (Bharat Jan Andolan, 1993). Piparwar, however, closed in 2020 due to a higher than originally planned extraction rate with 14 million tonnes of coal mined annually over approximately 1,120 hectares.

With the closure of the Piparwar mine, CCL's land reclamation and repurposing plan ignited debate (Deogharia, 2023). Out of the total area of 1,120 hectares, 540 hectares comprised the quarry where the actual mining took place; the remaining land was used for waste disposal, infrastructure and other purposes. Upon closure, CCL established a small ecological park, in the reclaimed area, and planted 2,000 trees as a pilot project. Differing opinions among villagers, activists, and environmentalists arose regarding afforestation and the usefulness or not of the ecological park proposed for the closed mine. Some argued for promoting local plant species to benefit the community in the long run whereas the state forest department prefers plantations run without community participation. Environmentalists criticised the initiatives as insufficient given the size of the coal mines and stressed the need for creating a green belt around the area to protect surrounding communities from pollution (Singh, 2021). Meanwhile coal-dependent workers whether formal or informal, continue to work in the coal sector as nearby coal mines continue to operate.

In Talcher almost all formal workers are from displaced households. However, many displaced in the second generation and younger sons were unable to secure

formal jobs and instead work in coal-based self-employment and contractual jobs. In particular, they have become truck owners, labour contractors for various mining works and the Project Affected People society[15] members transporting coal within the mines. Formal workers may purchase trucks on loan and secure contracts for other male members in their family (sons/brothers/nephews). Several of these insecure jobs can earn decent payments around 450–600 USD per month, often equivalent people with formal jobs. Other smaller businesses like repairs, garment, grocery or tea shops, and motels are also common among the previously displaced, as are contractual jobs in private companies such as drivers, security guards and labour supervisors. The wide range of formal and informal jobs related to coal in present day Talcher is evidence of the slow process of incorporation into coal-based livelihoods.

Although this incorporation into the coal labour market has, perhaps, been adverse for many, it has created strong coal dependencies among the previously agrarian communities. When coal mines close down this labour market becomes endangered as could be seen for the underground coal mines Handidhua and Dera, as well as for the South Balanda open pit mine. While Handidhua and Dera land remains with the MCL in case they would like to restart coal mining, the South Balanda mine was transformed into a plantation. This meant that returning the land to the original owners never became a demand, nor did alternative livelihood activities take place on the lands of South Balanda.

Across our two cases demands for jobs continue to be made years after a mine opened, and those not able to secure a job may use a range of groups and institutions to further their claims. The coal economy across coalfields has to date been remarkably able to over time incorporate large numbers of people, mostly on adverse and informal terms, and often in illegal and dangerous employment alternatives like coal scavenging.[16] And yet it is clear that large numbers of people are able to at least get by due to the malleability of informal spaces and activities. At the time of closure most people not in a formal job, however, find themselves

[15] This is a category of subcontractors hired for internal coal transportation within the mines premises; 7–8 members (young men) from the landowning households can propose to form a society with the coal mining authority. This allows them to operate as coal transporters.

[16] There is also a thriving coal scavenging economy in most mining regions, where men, women and children, frequently from vulnerable Adivasi and Dalit communities gather and sell 50 kg to 100 kg of coal daily and transport this on bicycles and motorbikes (Lahiri-Dutt & Williams, 2005; Nayak, 2020; Noy, 2022). Known as coal cycles (Lahiri-Dutt & Williams, 2005) or coal peddlers (Noy, 2022), these workers usually save some coal for their own consumption and sell the rest to neighbouring towns, motels, brick kilns, smaller factories, and shops. They scavenge coal from mainly shallow village dug mines, abandoned coal mines or from official operating mines, railway tracks and stockyards (Lahiri-Dutt & Williams, 2005, p. 6).

ill-prepared for new changes and struggle to make a new and difficult transition in a landscape ravaged by coal extraction. So far the examples of restored ecological conditions and safe-keeping of pollutants that could open up for agricultural or forest-based alternative livelihoods are very scarce. Most likely people seek new informal jobs at a different mine, or continue to scavenge for coal in the closed mine. At coal closure they lack both the skills (like professional degrees) and the assets (like land) that could have enabled them to take on new jobs other than those within the local coal economy. The pre-existing patterns of power relations (like land ownership, caste, class, gender and ethnicity) among the rural groups further escalated and complicated by formal and informal livelihoods arrangements of coal mines indicate a repetition of the previous failures of environmental governance at mine closure. The most marginalised in the coalfields may end up further impoverished.

Conclusion: Uneasy transitions to and from the coal sector

This chapter contrasted strong resistance to mine openings as well as to mine closures across two coalfields in central-eastern India as Adivasi and caste Hindu groups were confronted by coal mining. It contrasted strong resistance to enforced livelihood change initially when the mines open but also decades later when they close across two coalfields in central-eastern India. Moreover, it highlighted the glaring absence of community involvement in coal governance and livelihood strategies using the lens of livelihood transitions in both the coalfields. In this conclusion we outline four key implications for environmental governance.

Firstly, the multifaceted political reactions, bargaining and contestations to secure livelihoods, challenges faced and tools used by rural populations during livelihood transitions show the outright and often brutal exclusion of rural populations in decision-making processes related to coal. As Adivasi and caste Hindu groups were confronted by coal mining, the broad-based resistance was seen as an indicator of the difficulties communities face when forced to transition away from an established livelihood, whether a ‘traditional’, agrarian livelihood, or one in the informal coal sector. A range of different coalfield groups have over decades attempted to bargain for better compensation jointly via political parties, NGOs and the court system. They have also sought improvements via caste-based associations and family networks. The slow but unrelenting force of the coal energy expansion, along with the expanding economic opportunities of the coal economy compared to neglected agrarian livelihoods have slowly ensured that people shifted to mainly informal coal sector livelihoods.

Secondly, the absence of people-centric environmental governance models over many years has resulted in deep inequality within coalfield populations with far reaching consequences beyond their exclusion from different phases of livelihood transitions. As coal mines were proposed and later commenced, communities leveraged their land holdings, houses and community organisations in long-drawn-out processes with the mining companies and public authorities. Although outcomes were extremely uneven and often required years of protests and extensive negotiations, there were in many cases successful results when groups of people could claim at least some benefits from the vast coal economy. This did not seem to represent justice even to the people directly involved, but at least allowed many to carry on with their lives. We note that at the time of coal closures, household income and living standards had in many cases improved, and yet many of the successful features of the earlier mobilisation are lacking when households no longer own land or have the social cohesion in villages to underpin negotiations with authorities. As noted by Toumbourou et al. (2020), the transition away from coal lacks wider political support as laws do not recognise informal workers' right to compensation or retraining. And communities without vital land holdings struggle to get heard by the mining company and public authorities. In the difficult transitions to and away from coal we note increased precarity for many, and unequal outcomes for the most marginalised at the time of closure.

Thirdly, the livelihood transition dynamics presented in this chapter show the need for context-specific assessments and planning in multiplicities for environmental governance policies and frameworks as the dynamics we see here vary significantly across spatial scales and geographical contexts. Our cases show that informal sector activities frequently vary significantly, and additionally depend on a range of uncertain experiences across seasons, and on market and government interventions that regular people have little ability to affect. Within this highly fluid setting, we do, however, note that also under conditions of inequality and informality, the caste Hindu households, and especially upper caste groups, do much better in their negotiations with the mining company and its various private sector contractors. An improved ability to demand better jobs when displaced at the time of mine opening, later meant a greater ability to invest in education and professional skills development, thereby standing a greater chance to find new employment after mine closure. Meanwhile, the vast majority of informal male and female workers of Adivasi and Dalit backgrounds, struggled to get by in the informal coal economy as the mines expanded, and, later, ended up with no support in securing new livelihoods as they closed. Most likely these informal coal workers need to continue scavenging for coal in uncertain, day to day work, either in the closed mine or in operational mines nearby within the same coalfield without any direct company or government support.

Fourthly and finally, the findings of this chapter call for urgently addressing long-running failures of environmental governance, and moreover, using the opportunity to centralise and reframe the questions of environmental governance in energy transition and mine closure debates. As international and national forums like the annual COP meetings increasingly use terms like just transition and sustainable energy, and in 2023 directly identified the need to reduce fossil fuel use, it is clear that a range of tensions and uncertainties remain in coalfields like those in India (Haldar et al., 2023; Edwards, 2019). From our research it is clear that official statements about India's future net zero status are far from resulting in noticeable mine closures. If anything, further coal mine expansions are to be expected based on recent national government policy. In the actual transitions that we study in this chapter, as mines exhaust economically accessible coal resources, transitions within the coalfields add to the existing dynamics of uneven incorporation into the modern economy thereby contributing to already challenging livelihood circumstances. Environmental governance policies would do well to harness the human energy and ability of millions of informal workers for more productive as well as sustainable outcomes by ensuring their active participation in mine closure and transition plans, rather than just leaving workers struggling to get by in the shadows of a coal economy destined to close down.

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CHAPTER 9

Deciding from Far-Away, Implementing without Local Consent: A Historical Perspective on Environmental Governance of the Bengawan Solo River in East Java

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Abstract

The geographies of environmental governance are constantly shifting and rupturing due to a combination of natural causes and anthropogenic interventions – and usually a combination of the two. Understanding these changes requires a longue durée historical approach, as past interventions continue to shape future dilemmas and decisions. This chapter presents a case study of the downstream Bengawan Solo (Solo River) in East Java, Indonesia, from a historical ecology perspective. The authors seek to identify and understand engineering changes from the nineteenth century to the early twenty-first century in the river mouth of the Bengawan Solo in response to natural and man-made events. We are motivated by the following questions: what evidence and frameworks of knowledge were used for engineering works in the downstream Bengawan Solo over time, and by whom, and what impacts have these engineering interventions had up to the present day – and how might they shape future calculations? By collecting relevant data from written documents, maps, and other related archives to oral history, this study engages with current debates on colonial and postcolonial knowledge production, especially in environmental governance. We argue that the prevailing technical engineering approach, which has sidelined the contributions of local populations and their expertise along the Bengawan Solo River, has its roots in colonial-era water management practices.

Keywords: Bengawan Solo, waterway engineering, colonial legacy, East Java; historical ecology, water infrastructure, place-based knowledge.

Introduction

Flooding has become an annual ritual for residents living in the downstream basin of the Bengawan Solo River – the longest river in Java. Every rainy season, the government issues warnings to communities residing in the river basin. While the floods are common occurrences, their intensity is usually not very severe. However,

there have been exceptional years. In the late 1960s, the river basin saw record and prolonged flooding, submerging hundreds of villages, displacing more than half a million residents, and resulting in the loss of thousands of heads of cattle and other farm animals. In 2007, a major flood submerged several regencies, including Ngawi, Sragen, Cepu, and Bojonegoro. In the same year, an expedition team observed that almost the entire area of the Bengawan Solo River basin had been converted into land with little natural vegetation. Most of the large, indigenous trees had been replaced with food crops such as cassava, corn, and beans. This change in vegetation in the Bengawan Solo River basin was blamed for the turbidity of the river water and its high sedimentation rate. Moreover, the conversion of land without terracing systems has led to a high level of erosion. This situation continued unabated due to a lack of government oversight. Residents had no other choice; they needed land to meet their food needs, so the only remaining option was to cultivate along the banks of the Bengawan Solo.[1] In 2018, floods again inundated large swathes of Bojonegoro and other downstream regencies like Tuban, Lamongan, and Gresik. The floods inundated residential areas, damaged infrastructure, and heavily impacted the agricultural, economic, and social sectors. The inundation of agricultural land led to crop failures, while disrupted road access and public facilities hindered daily activities.[2]

Environmental governance and climate change are frequently discussed without attention to local and regional history, as if present challenges exist in a historical vacuum and adaptation and mitigation measures can simply be transposed onto a landscape like a tabula rasa, free of a complex of ecological, social, cultural, and economic memories. As an example of this, the Indonesian government, through the Balai Besar Wilayah Sungai Bengawan Solo (Bengawan Solo Regional Authority), launched a flood control strategy in 2015 as part of a new master plan (Figure 9.1). The focus of the strategy is on infrastructural measures, including the construction of additional dams and dikes along the river. The Authority claims that this master plan represents the most recent revision of the original plan, which dates from 1974, and explains that they have incorporated current climate change issues, which are expected to worsen in the coming years. Interestingly, the master plan mentions the Solo Valley Public Works as one of the mid-term strategies in flood control. The Authority envisions using the Solo Valley Works area not only as a canal but also to develop it into a highway (Kuncoro, 2020). However, the 2015 master plan does not provide any historical context about the Solo Valley Works project, which the colonial government initiated in the late nineteenth century *(Solovalleiwerken)* as the most ambitious and extensive water

[1] Source: Kompas, April 24, 2007. "Bengawan Solo: Kerusakan Sudah Mulai Terjadi Dari Hulu", by Burhanuddin and FX Laksana Agung Saputra.

[2] Source: Kompas, March 15, 2018. "Sejumlah Wilayah Masih Tergenang", by ACI/IKI (Initials).

Figure 9.1: The Solo Valley Public Works project in the downstream portion of the Bengawan Solo. Source: Balai Besar Bengawan Solo, 2009

management endeavour of its kind. At the time, this project ignited many debates and discussions beyond technical engineering questions, which remain relevant today. Alas, none of these deliberations and their implications feature in any master plans about the Bengawan Solo in post-independence Indonesia.

In this chapter, the authors challenge ahistorical approaches to environmental governance. We seek to better understand environmental change, including flood events, in the downstream portion of the Bengawan Solo River by considering this region as a landscape that carries the physical imprints and scars of centuries of natural and human-induced events. We argue that only by understanding the legacy of the past can we have a basis for better environmental management in the present. This is particularly true in landscapes such as the Bengawan Solo River basin in East Java, which has undergone profound change due to a complex interplay of human decisions and natural events.

Our approach is inspired by the principles of historical ecology. Our definition of historical ecology, borrowed from DeCocq (2022), is the reconstruction of landscapes and ecologies to analyse how past events have impacted present day ecosystem functioning and biodiversity (Decocq, 2022). It is important to understand these landscapes as socio-ecological systems – hybrid systems shaped by the interactions of natural drivers and anthropogenic ones. Such an analysis requires multidisciplinary approaches to capture complex realities, as well as different forms of archives, including both ecological and human ones (Redman et al., 2004).

Objectives and methods

The past events (the "legacy of the past") we are particularly interested to explore are the knowledge, practices, institutions, cultural values and world views that have shaped decision-making and engineering in the downstream Bengawan Solo River socio-ecological system. We believe that understanding ecosystem processes and managing them represents a progression of social-ecological co-evolution, which is based on learning and accumulation of ecological knowledge and understanding in the social memory (Folke, Colding & Berkes, 2003). We chose the downstream section of this river as a spatial focus for the research because most of the river engineering projects since the colonial era, especially those related to the Solo Valley Public Works project, were conducted in this region. Several regencies from that era still exist today, including Ngawi, Bojonegoro, Tuban, Lamongan, and Gresik. However, Sidayu, which was once an independent regency, became a district (kecamatan) in Gresik after Indonesia gained independence. Furthermore, previous studies about the Bengawan Solo have overlooked the abundance of historical materials, particularly those pertaining to flood and irrigation in the downstream region of this river.

In the spirit of historical ecology, there are three guiding questions. How did the socio-ecological system develop into its current state, how does it operate in the present, and how will it change in the future (Redman et al., 2004)? In this chapter, we are principally preoccupied with the first question, which is to some extent a reflection on the second. This leads us to the following specific questions: How was the downstream portion of the Solo River engineered throughout its history, when, and by whom? What principles were used to justify these engineering works? To what extent was "local knowledge" incorporated in these works? And what were some of the ecological, social and economic impacts of these engineering works? Our focus is on observing how society and state used, transformed, and managed the downstream basin of Bengawan Solo in the nineteenth and twentieth centuries. The co-authors are a team of two historians and a social scientist focused on land governance. The archives we consulted are human ones, which we analysed during several periods of fieldwork. Historians have a clear role in examining this period, which spans from pre-colonial intervention to the postcolonial state, by consulting human archives, oral narratives, and news media in various languages, including Javanese, Dutch, and Indonesian.

We define river "engineering" as the anthropogenic modification of rivers, resulting in a significant impact and modification of the river system's hydrogeomorphology, sedimentology, connectivity, and fluxes (Mehner & Tockner, 2022). We use the term "knowledge" to refer to justified true beliefs (Ichikawa & Steup, 2014), reflecting evidence, experiences, memories, and intuitions held by their proponents.

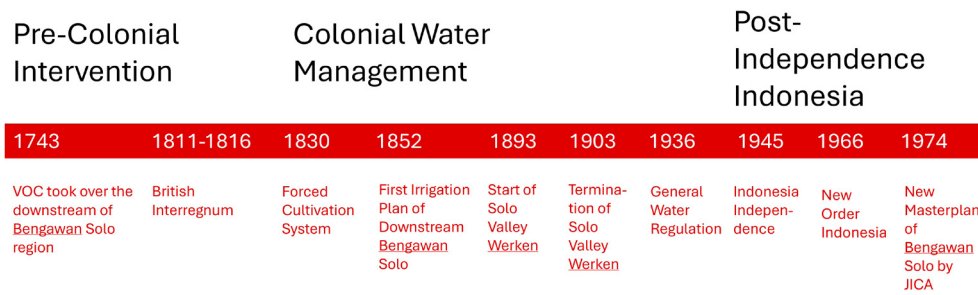

Figure 9.2: Timeline of the history of the downstream Bengawan Solo. Source: the authors

In inquiring about "local knowledge," we are interested to discover whether and how the justified true beliefs of riverine populations along the Solo River, as well as local officials and engineers, have been considered by river engineers from colonial to postcolonial eras. The significance of doing so lies in the assumption that comprehending the past could offer valuable insights into the knowledge that has been silenced and continues to be silenced throughout history (Moon, 2018).

The Bengawan Solo before colonial intervention

There is evidence that humans have long engineered the Bengawan Solo River. During the Majapahit kingdom period (between 1293 and around 1520 AD), Javanese rulers had established several centres for river trade and many of the villages formed around irrigation systems and dikes (*tanggul*) built to channel the flow of the Bengawan Solo River to surrounding rice fields and control flooding. One such area that is still visible today is near the *Petilasan* or Jaka Tingkir tomb. Jaka Tingkir is popularly known in Javanese history and folklore as a Javanese king in the post-Majapahit period. A legend states that forty crocodiles carried Jaka Tingkir across the Bengawan Solo by boat as he travelled from this region to central Java. Across from the *Petilasan* there is a low-lying area that is thought to be a branch of the Bengawan Solo River, which has since dried up.[3]

By the early nineteenth century, local authorities in the downstream Bengawan Solo River basin had acquired a large body of knowledge about water technology and infrastructure. The Mataram dynasty, ruling Java from the Surakarta and Yogyakarta courts, sustained relations with external powers primarily via the Bengawan Solo River. Figure 9.3 illustrates the type of vessels used by royal

[3] Interview with Eko Djarwanto, local historian, Gresik regency (October, 2023).

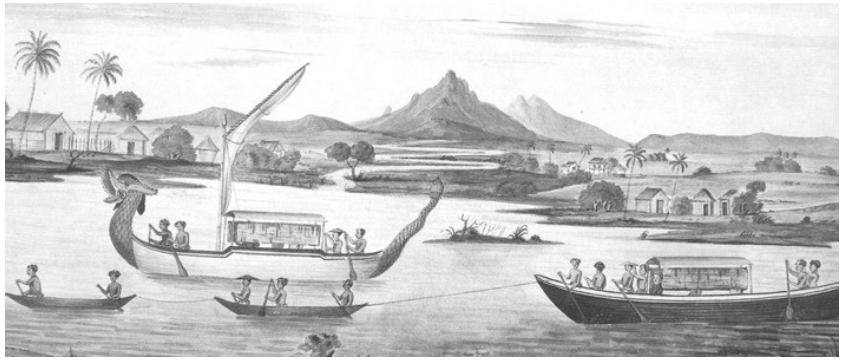

Figure 9.3: Prau Pangluput or royal tax-free barge on the Bengawan Solo near Gresik. Source: The British Library.

families along the river in this period. They often departed Surakarta in December or January during the river's flood stage and returned before the commencement of the dry season in May. Teams of men or buffalo painstakingly towed the huge lighters upstream, requiring a minimum of four months for the return voyage. The downstream transport of pepper, rice, and other bulk commodities required eight days (Carey, 2008).

The Mataram rulers employed the Bengawan Solo for both economic benefit and to maintain their alliances with other monarchs in the archipelago. Susuhunan Pakubuwana IV of Surakarta suggested a Madurese princess as his consort, creating a unique watercraft for his voyage to Madura via the Bengawan Solo. Susuhunan Pakubuwana VII emulated his father's precedent by espousing a Madurese of equivalent status and traversing the same path. The books *Babad Madura* and *Sajarah Sidayu* narrate the Surakarta royal family's expedition to Madura via the river. The Surakarta crew faced various problems, including flooding, throughout their voyage along the river. In this narrative, the author indicated that the villagers utilised boats not only for transportation but also as protection during flood events. They also stayed for several nights in various downstream areas, including Sidayu. The regent of Sidayu, Kanjeng Sepuh, convened all the parties in the city before their crossing of the Madura Strait at Sembayat.[4]

[4] Sajarah Sidayu D Or. 229 ff. 22(b)-23. Den 3 February jl: regent sidajoe dan toean van narsen dateng bedalan metoek soeroewanja sultan sala; jang hendak ambil poetri madura 1. pangeran adipati koesoema joeda 2. ratoe pembajoen dengan pangeran riâ mentaram 3. asst resdt sala dan 4 toemenggoeng. regent sidajoe ada bedahan antar hari seto assar dari sala baroe dateng troes bedjalan meengetan dan regent sidajoe en toean van narsen naek praoe kenting sampe sembajat. (On February 3rd: the regent of Sidajoe and Mr. Van Narsen [Carel van Naerssen, Assistant Resident of Grisse] went to Bedalan to meet the Sultan of Surakarta's envoys, who want to propose the Madurese

The legendary character of Kanjeng Sepuh Sidayu stands out. Kanjeng Sepuh is the popular name of Adipati Suryodiningrat, who reigned as the regent of Sidayu from 1817 to 1856 (Figure 9.4). His family tree traces back to the Cakraningrat dynasty of Madura, which dominated Sidayu during the eighteenth century. He is a descendant of that powerful family. During that period, Sidayu was situated further to the west and adjacent to the Tuban royal district, and it relocated to its current location in the eighteenth century. The location where it had previously been was referred to as Sidayu Lawas or Old Sidayu.[5] Local people of Sidayu nowadays still revere Kanjeng Sepuh for his assistance to the population in times of crisis, such as during times of drought, hunger, and floods. In his capacity as regent, he was responsible for the construction of several water infrastructures, including canals, wells, and irrigation dams. The largest dam he constructed was the Telaga Rambit. With the purpose of storing rainwater, providing irrigation to the rice fields, and preventing further flooding in the city, this dam served a purpose that was comparable to that of a *waduk*. In addition to that, it was also utilised by people as a source of drinking water. In addition, a few old wells, such as Sumur Dhahar and Sumur Ombo in the Sidayu regency, fulfilled the same purpose of supplying drinking water. Due to their location in the coastal region, many of the villages that make up this regency were having trouble locating sources of freshwater. Additionally, Kanjeng Sepuh created a *waduk* in the settlement of Lowayu, which is located on the left bank of the Bengawan Solo River. Prior to the construction of the dam, the villages were regularly confronted with drought during the dry season and flooding during the rainy season. The Waduk Lowayu is also known as Kali Sumpet, which literally translates to "Clogged River." This is because Kanjeng Sepuh constructed the dam by obstructing the Bengawan Solo.

Many of the water infrastructures that Kanjeng Sepuh constructed are still in existence today. There were a few of them that had already been explored by archaeologists, such as Telaga Rambit and the canal network that was connected to the estuary of the Bengawan Solo. Telaga Rambit contains a total area of 20,000 square metres and is shaped like a rectangle. It is possible to gather water from a pier that is located on the southern side. During the dry season, there is never so little water in this dam that it runs out. Presently, the water is still utilised by the residents as a source of drinking water. A portion of the canal network may be

princess. They were 1. Pangeran Adipati Koesoema Joeda, 2. Ratoe Pembajoen with Pangeran Riâ Mentaram. 3. Assistant Resident of Surakarta, and 4. Toemenggoeng. The regent accompanied this Surakarta's envoy from the city to the east on Saturday afternoon. Together with Mr. Van Narsen, the regent travelled by *Kenting* boat to reach Sembajat port).

[5] Source: Ridwan Ahmad. (*Catatan Berdirinya Masjid Jami' Sidayu dan Riwayat Singkat dari R.Adipati Soerjoadiningrat (Kanjeng Sepuh Sidayu),* 1969, Djawatan Penerangan Republik Indonesia (Information Department the Republic of Indonesia).

Figure 9.4: Map of Sidayu city and its surrounding area. The letter W indicates the presence of a Waduk. Source: Topografische Dienst, 1922

found in the village of Srowo, which is situated in the northern region of Sidayu city. There are four canals that are situated in a parallel fashion to one another, and each of them extends in a direction that is west to east. An additional stream that flows in a north-south direction till it enters Bengawan Solo is encountered near the easternmost point of the canal. Boats that transport passengers to and from fishponds frequently make use of one of the canals as a base of operations. There is one canal that serves as a base for boats that are heading out to sea. To irrigate the fishponds in the surrounding area, the water from the other two canals has been dammed.[6]

From the eighteenth century until the middle of the nineteenth century, the regencies of Sidayu, Gresik, and Lamongan were recognised as the most advanced in Java in terms of the management of their water resources. Under the direction of the Controller of Grobogan in Central Java, the native Water Affairs officer of Grobogan, and the head of Sambah, a village located in Grobogan, a committee was

[6] Source: 'Sidayu: Kajian Arkeologi Perkotaan Masa Islam dan Kolonial' *Walennae* 5 (9) 2002: 14–26.

established in the year 1870 with the purpose of carrying out an investigation in the regions of Sidayu, Gresik, and Lamongan, to develop the knowledge necessary to construct water facilities such as *waduks* in their regency. They discovered that a significant number of *waduks* in those regencies had been built by the locals, either by the people or by the officials, prior to the Dutch taking control of them. In general, the dams in Sidayu were the largest, while the dams in Lamongan were the oldest. Those *waduks* often connected to each other and were connected by canals to the Bengawan Solo. These canals were navigable by small vessels for the transportation of goods. One of the most important advantages of the *waduks* was that they were able to store rainwater, which also served as a source of water for irrigation, particularly during periods of protracted drought. Some bigger *waduks* could also minimise the effects of regular floods.[7]

The report mentioned the knowledge about the *waduk* that can be found in various locations in those regions. Local communities generally possessed much expertise about the earthen materials that were utilised in the construction of the waduks. They created a unique substance known as *lemah branjangan,* which is composed of sand and reddish clay soil that has been blended. They used it for the base material of *waduk* beside other materials such as andesite stone. On the *tanah gessik*, smaller *waduks* were crafted. Within these three regions, there was a local official known as a *mata ulu* who was responsible for supervising *waduks* located near one another. The commands were given to this individual, who also received them from the *wedono*. It was the responsibility of *Mata ulu* to be certain that the dikes were maintained in excellent shape and that any necessary minor repairs were carried out. Only under his direct supervision were the activities that involve tapping water allowed to take place. This was done to ensure that there is no unnecessary loss of water (Kroesen, 1871).[8]

Shifts away from local (water) governance

From the start of the Dutch East India Company's rule over extensive areas in Java in the late eighteenth century until the end of Dutch colonial rule over Indonesia, the position of local regents gradually became more dependent on European policy. Some colonial leaders like H.W. Daendels reduced the power of regents to

[7] Source: Kroesen. (1871). Rapport der commissie, belast met een onderzoek omtrent het in de regentschappen Grissee, Sidajoe en Lamongan werkende stelsel van irrigatie door middel van wadoeks en de wenschelijkheid om dat stelsel in de afdeeling Grobogan toe te passen. Tijdschrift voor nijverheid en landbouw in Nederlandsch-Indië 17: 144–158.

[8] Source: Kroesen. (1871). 17: 144–158.

salaried officials. Then, during the British interregnum from 1811 to 1816, Lieutenant Governor General T.S. Raffles continued that policy and created a new position for European officials, i.e., assistant residents, to increase direct contact between the government and people. After the Dutch took over Java again, a policy was introduced in 1820 stating that the Bupati were to be the indigenous leader of a regency and were directly under the command of the European residents rather than the assistant residents and that when it came to things pertaining to the native population, they were the trusted advisors of the assistant residents. As part of their responsibilities, they were given the directive to oversee many aspects of their respective regencies, including agriculture, animal husbandry, health, irrigation, road maintenance, security, and tax collection. A high level of generality was used to define their responsibilities and there was no power distribution among the regents. Their responsibilities became ambiguous (Sutherland, 1979).

By the second half of the nineteenth century, the role of the local authorities and regents in water management had become eclipsed by the colonial government in Java, and particularly by the implementation of the forced cultivation system (*cultuurstelsel*) in 1830 and the role of the Public Works Department, established in 1854. The Department oversaw activities related to public works and performing maintenance on a variety of infrastructure, including bridges, harbour works, canals, and other important structures. Its importance grew in line with the expanding role of the colonial state as engineering works accelerated, notably in the late nineteenth century. Colonial bureaucrats promoted the idea that modern water management could improve local people's welfare while also benefiting private enterprise and the colonial state. Homan van der Heide, assistant engineer for the Directorate General for Public Works and Water Management (*Waterstaat*) in the Netherlands East Indies since 1892, was a key advocate of this perspective. Homan van der Heide suggested that an engineering-centric approach to water management would solidify the Dutch colonial authority's image as a just and benevolent power:

> The hydraulic infrastructure distributed across the entire country, serving as evidence of the deliberate advancement of the economic welfare of the country and its inhabitants, undoubtedly represents the most significant monuments symbolizing Dutch influence in Java. These structures, reminiscent not so much of Turkish but rather Roman legacies, will be remembered as enduring symbols of a prosperous era of domination (Homan van der Heide, 1899).

The Solo Valley Public Works scheme

The downstream Bengawan Solo River in East Java was a prime candidate for an "enlightened" engineering approach as promoted by Homan van der Heide due to the multitude of interests in the region. This area was crucial for irrigation and flood control, and it also had economic importance, particularly along the estuary where commerce vessels frequently navigated to and from Surabaya port. Homan van der Heide advocated for this extensive engineering strategy by integrating irrigation systems and flood mitigation techniques in the valley region. The largest colonial project of this kind was the Solo Valley public works project at the end of the nineteenth century. Van der Heide was one of the prominent advocates of this project, even though the project also enjoyed widespread support among local regents. In 1876, the regents of Sidayu, Gresik, and Lamongan wrote a letter about the planned Solo Valley project. In this letter, they requested that the resident and the government implement this project as soon as possible. They described the fluctuating numbers of yields in Sidayu, Gresik, and Lamongan from 1866 to 1875 because of a lack of good water infrastructure. They had these exact numbers because they had already served as regents of each respective kabupaten for more than a decade. Adipati Suroadiningrat at Sidayu and Adipati Ario Suryowinoto at Gresik reigned for twenty years, while Tumenggung Kromojoyodirono at Lamongan ruled for ten years. These regents were aware that there had already been a plan to prevent regular flooding and to create more irrigation areas in their region since 1852. They could even mention the engineer who was responsible for this plan, A.A.W. Ledeboer. They urged the resident and government to consider these plans:

> If Your Highness Resident grants our wish to continue the 1852 plan, we would like to see more people in every village work easily in their fields and they confidently hope that with the regular irrigation the harvest will be more fruitful. […] It is therefore our hope that the government will grant authorization to have the irrigation canals we intend to construct as soon as possible to obtain increased production of rice.[9]

[9] "Mangka kaloe djadiken kandjeng toewan Resident poenja soeka dengan banjak permintaak kita baik di troesken kerdja sabagaimana di kar 1852 itoe, kapingin terlaloe melijat dessa itoe tambah menambah orang orangnja poenja gampang dan ringan bolihnja kerdja tanah per tanem tanem jang dengan tetepati pengharipanja djalnan dari patinja ajer temtoe dengen brasannja djoega […] Mangka banjak harep negeri poenja idzin dengan sabarapa bolih berdjalanken lantas kerdjanja itoe kali jang kita dapet djadi tambah djoega kaloewarnja padi jang terseboet di atas." [my translation is in the tekst] Source: Tijdschrift van het Koninklijk Instituut van Ingenieurs, Afdeeling Nederlandsch-Indië pp. 31–32.

The Solo Valley public works project was the most ambitious and massive water management project of its kind in the Netherlands East Indies. The initiative to intervene in this waterbody first materialised during the visit of Prins Hendrik de Zeevaarder (Henry the Navigator) in Java in 1837. Due to the shallowness of the waterway, the prince and his group anchored the big war frigate they sailed in the mouth of Bengawan Solo, after which they proceeded to Surabaya by land. After that event, government officials paid much attention to initiating a project to prevent further deterioration of the region,[10] primarily for colonial interests. From the assignment of a special committee to the creation of the Public Works Agency, the colonial authority was actively involved in managing the river. The project's goal also broadened beyond their first idea related to transportation, especially around the Madura Strait. Gradually, they saw the importance of more intensely managing the Bengawan Solo, for irrigation and flood prevention.

Jan Lodewijk Pierson, an engineer from the Public Works Department, officially initiated the mega project of the Solo Valley public works in 1893. The primary objective was to safeguard the harbor of Surabaya by altering the course of the Bengawan Solo River, which carried a significant amount of sediment, towards the north (Figure 9.5). The works project also included the construction of a canal for navigation, supplying drinking water, and implementation of an irrigation scheme. In the official bill the Solo Valley public works project contained several detailed projects. The first was diverting the flow of the Solo River towards Sidayu Lawas and ultimately into the Java Sea achieved by constructing a canal that traverses the northern hills. The second was constructing a weir at Ngluwak with sluices that would elevate the water level by approximately eight metres. The third was constructing a main canal with a minimum length of 165 kilometres. The fourth was creating additional canals with a combined length of 900 kilometres. The fifth priority was establishing a sequence of sluices, siphons, and bridges. Concerning the latter aspect, the Solo Works was the most significant irrigation undertaken by far under the comprehensive 1890 General Irrigation Plan. The weir and the main canal were exceptionally large, surpassing even international standards. The works project exceeded the allocated budget due in part to the exorbitant labour expenses (Ravesteijn, 2018).

Despite much support and optimism, the Solo Valley public works project faced various challenges from the beginning, until it was finally stopped by A.W.F. Idenburg, the Minister of Colonial Affairs, in 1903. During the 1890s, it became abundantly clear that the sums of money that had been set aside for this endeavour were insufficient. The salaries that were offered had attracted the interest of an insufficient number of labourers, which meant that the pay would have to be

[10] Verslag van de Commissie van Advies nopens de werken in de Solovallei (1900).

Figure 9.5: Map of the rerouted Bengawan Solo. Source: Verslag van de Commissie van Advies nopens de werken in de Solovallei, 1900

increased. As a result, the project manager found themselves in a difficult financial situation. After that, in the year 1896, Van Houten, the new Director of the Public Works Department, became skeptical of the project. With the overall cost levels that were budgeted for the various phases of the project, he started to worry that the predicted end sums were, in fact, significantly lower than they should have been. During the final decade of the nineteenth century, this project was subject to several investigations carried out by commissions that were established by the government as well as by engineers, including Homan van der Heide.

The project was only fully revived decades later in post-colonial Indonesia. Although his ideas could not be implemented during his lifetime, van der Heide's reputation nevertheless received much attention beyond the Dutch colony. The king of Siam at that time – King Rama V, also known as King Chulalongkorn – appointed him as advisor to the water management projects there. During six years in that country, van der Heide was responsible for the creation of the Royal Irrigation Department and envisioned several projects. Upon his return to Java, his career reached its peak when the colonial government appointed him as Director of the Public Works Agency *(Dienst Burgerlijke en Openbare Werken)* in the Netherlands East Indies in 1914 (Ten Brummelhuis, 2021).

A colonial assumption of expertise

More debates and discussions about the Solo Valley public works project took place in the metropole than in the periphery. The project even became a specific agenda item during the plenary sessions of the House of Representatives (*Tweede Kamer*) in The Hague several times. Finally, the Minister of Colonial Affairs who also resided in the Netherlands abolished this project. However, there was only limited engagement from residents of the Bengawan Solo region in the planning and decision-making processes. Even though officials, engineers, and almost all stakeholders of the Solo Valley project were keen to improve the welfare of the people in this area, the people were underrepresented in practice. The locals were heard only as a pretext for this project and their misery was only spotlighted during flood disasters.

The fate of the Solo Valley public works project in the late nineteenth century demonstrated that the colonial assumption of their superior hydrological expertise was accompanied by a pattern of structural devaluation of indigenous water-related knowledge and inputs during the colonial era. One stark example of this was the request to the government in 1912 by the regent of Bojonegoro, Adipati Ario Reksokusumo (Figure 9.6), to resume the Solo Valley project, on account of the project's potential to boost local agriculture and economic development for the local population. During the planning phase of the Solo Valley Werken, Reksokusumo recommended establishing a weir at Ngluwak village. He argued that the weir in this location would bring more benefit to people than elsewhere. Several colonial officials, including J.L. Pierson and Van Houten, the previous Director of the Public Works Department, widely recognised Reksokusumo's water management expertise in his region. Despite several debates in the engineering circle, the Public Works Department agreed to construct a weir at Ngluwak. However, to the dismay of Reksokusumo, the new Director of the Public Works Department, J.E. Meijer, roundly rejected the Solo Valley Werken after a visit of only 1–3 days in those regions and without conducting any consultations with local officials and residents.[11] Reksokusumo was powerless to appeal the decision due to the diminished power of regents.

[11] "Sesoedahnja Toewan Ingenieur kadoewa itoe abis commissie, antara boelan Padoeka Kandjeng Toewan de Meijier Directeur B.O.W. djoega dateng di Bodjonegoro melainken 2–3 hari, tempo itoe saia dengar sendiri perkataanja, banjak pekerdjaan Solo-Vallei jang ditjela saperti: apa goenaja itoe hoofdjanal terlaloe besar, […] Pada waktoe itoe saia dan banjak ambtenaar-ambtenaar Olanda sama tida mengerti tjelaannja Kandjeng Toewan Directeur B.O.W. jang begitoe, olih karena paprik-saannja 1–3 hari sadja bisa mentjela pakerdjaan besar." ("After the two official engineers committee visited Bojonegoro, then came His Highness de Meijier, the new Director of the B.O.W. (Public Work Department) and stayed only 2–3 days. I heard by myself his statements, especially criticisms of the

Figure 9.6: Portrait of Adipati Ario Reksokusumo, circa 1925. Source: KITLV 159099[12]

Colonial officials, engineers, and politicians engaged in the Solo Valley public works project believed that their ideas were superior to the current and previous water management in that area, as the quote from Homan van der Heide (previous section) illustrates. This kind of belief was prevalent among the European powers in line with the expansion of colonialism in Asia and Africa in the nineteenth century. Numerous writers in that era associated the progress of European colonisation with

Solo Valley project, such as: what is the function of the main canal, is that too big? […] At that time, all the Dutch officials and I could not understand the Director of the B.O.W. 's criticism because he only stayed for 1–3 days. How come he could denounce all the previous works?") Source: Reksokoesoemo, A. 'Dari hal pekerdjaän Solovallei' *Tijdschrift voor het Binnenlandsch Bestuur* 43:303–321.

[12] https://digitalcollections.universiteitleiden.nl/view/item/828608).

the victory of science and reason over the prevalent superstition and ignorance in the non-industrialised world. Advocates of imperialistic expansion contended that the destitute masses of Asia had little prospect of ameliorating their circumstances without the aid of western scientific and technological advances. The European colonisers' belief in their superiority in terms of inventiveness, organisation, and knowledge of natural processes served as a justification for their exclusive control over leadership and administrative positions in colonised nations (Adas, 1989).

When it came to irrigation, too, the Dutch engineers were proud of the technical superiority of scientific water management systems that they brought to the Netherlands Indies. They believe that the most advanced indigenous technology of water management was primitive, outdated, and inferior compared to their approach. In a handbook for engineering students at Delft, J.E. De Meijier states that,

> In general, the so-called indigenous dams that can be seen in Java are only helpful during the eastern monsoon. In the mountains, these dams often consist of stones that are coarsely heaped on top of one another. If there is a considerable stream during the dry season, which causes the loose stones to roll away, then the stones are stacked on top of each other in bamboo wickerwork baskets that are either upright or horizontal (De Meijier, 1891).

This kind of indigenous dam could be found in the Solo Valley region, especially in Lamongan and Gresik. De Meijer, as director of the Public Work Agency, mentioned that at least 12 dams there were referred to as *waduks*, which he considered to be small-scale and imperfect constructions that mainly served to drain excess water and to irrigate the fields (De Meijer, 1891). A similar perspective appeared as late as 1940 in a publication by an official engineer, W.A. van der Meulen, who pointed out the "significant flaws of the indigenous irrigation systems." According to van der Meulen, a weir made of local materials is typically not durable enough to endure the force of major floods, leading to frequent damage or complete destruction of the structure. Moreover, the distribution channel at the dam has an open outlet, allowing a large amount of water to enter during a flood, causing damage to the canal. If the distributing canal needs to cross a significant stream, van der Meulen believed the native population was unable to do so artificially (van der Meulen, 1940). The building of a comprehensive irrigation system based on technological principles did not begin until the 1880s. Proponents of a colonial engineering approach highlighted a lack of inventive abilities as the barrier holding the Javanese back. Their critiques were based on the contention that the Javanese had never needed to innovate since achieving a decent existence had always been simple – a matter of gathering the abundance around them (Moon, 2007).

This kind of colonial attitude toward local water infrastructure existed not only in Java. On the Indian sub-continent for instance, the British also perceived

themselves as the legitimate rulers due to their "superior knowledge" over the native people (Gilmartin, 1995). The power of the technological ideology of dominance also can be seen in the British colonial approach to flood control. Since the middle of the nineteenth century, there had been the development of a generation of specialists who emphasised universal engineering principles. They were trained engineers, almost all of them went to the same college, and officials in British India gained cultural dominance, thereby providing the problem frame that determined the direction of flood control (Weil, 2006).

In the Netherlands East Indies, similar training programs were at the heart of the prevailing engineering approach. Within the Public Works Department, all engineers followed a mandatory training program. Engineering students from the Technical School in Delft were able to join the engineering corps of the Netherlands East Indies, and they received the official status of engineer (De Jong & Ravesteijn, 2004). Over time, this department gradually expanded its sphere of influence, which resulted in growing conflicts with European regional officers, such as residents, and a reduction in the authority of local officers, particularly regents. Because of this development, local knowledge was gradually also omitted and even forgotten.

In summary, the Dutch colonial intervention involved not only the construction of water control systems but also the establishment of institutions and organisations responsible for managing specific aspects of water resources and systems. The 1936 General Water Regulation was the most important colonial water management regulation. This regulation recognised several basic principles in water management. First, the state owns and manages water, a top-down approach illustrated by the case of Reksokusumo. Second, decision-making processes regarding water further distanced themselves from water users. The debates about the Solo Valley public works mostly took place in the Netherlands or in Batavia. This centralised water management policy would continue in post-independence Indonesia.

Discontinuities and continuities of colonial water management in post-independence Indonesia

Para insinyur, betapa baiknya akan kemungkinan membuat kesalahan,
Tanpa disengaja lupa, bahwa sungai dapat mengalami pengendapan
Sementara para pengatur irigasi juga sering melupakan
Bahwa air deras yang mengalir ke tanah memungkinkan timbulnya genangan
Tentu saja ada keuntungan-keuntungan yang dapat diperhitungkan,
Namun ada tendensi bahwa itu masuk ke dalam saku si kaya untuk disimpan,
Sementara biaya-biaya cenderung menjadi beban si miskin kebanyakan,
Namun analisis untung-rugi hampir selalu dapat dipastikan

Membenarkan pembangunan bangunan beton kuat faktanya,
Sementara Kebenaran Ekologi berada dalam abstrak
—Mochtar Lubis, Suatu Balada Tentang Kesadaran Ekologi (1993)
Engineers, how good would it be to make a mistake?
Unintentionally forgetting that rivers can experience silting.
Meanwhile, irrigation regulators also often forget
That heavy water flowing to the ground makes puddles possible.
Of course, some advantages can be taken into account,
But there is a tendency for it to go into the pockets of the rich to keep,
While costs tend to be the burden of most of the poor,
But the cost-benefit analysis is almost always certain.
Justify the construction of concrete solid buildings in fact,
While Ecological Truth is in the abstract.
—Mochtar Lubis, A Ballad About Ecological Awareness (1993)

The heavy engineering approach and reservoir-building policies of the New Order (*Orde Baru*) period from 1966–1998 attracted criticism for their negative social and ecological effects, which included socio-economic upheaval for displaced residents and biodiversity loss. This was reflected by a foreword to the publication in Indonesian of an international book, "The Social and Environmental Effects of Large Dams," penned by Indonesian journalist Mochtar Lubis in 1993, entitled "Ballad About Ecological Awareness" (reproduced in part above). This form of protest was remarkable for being so overt, despite the censorship in place at the time.

The histories and anecdotes depicted in this chapter about the different approaches over time to managing the downstream Bengawan Solo River are inadequate as evidence to answer the large questions about this socio-ecological system posed in the introduction, i.e., how did the river basin develop into its current state, and what if any are the links to the present? Causal patterns are difficult to establish, and to more fully address these questions in a historical ecology frame the authors would have to consult ecological archives in addition to human ones. Nevertheless, based on this scattered evidence, the authors tentatively conclude that a historical ecology lens shows us that there are continuities and discontinuities in knowledge about, and practices and approaches to, the river basin.

To start with a discontinuity: the role of the river in people's lives has changed dramatically during the past one hundred years. With the development of land-based transportation infrastructure during the colonial era, Java's two main rivers, the Bengawan Solo and the Brantas, ceased to be transport arteries and centres of river-based trade for local communities. According to Howard Dick, the significance of the Brantas River's navigability diminished after 1878 due to the rapid establishment of a railway system along the Brantas Valley, which connected

Madiun and Surakarta in interior Java. Subsequently, individuals and goods such as sugar could be transported by train to the expansive warehouses located along the riverfront in Surabaya, and then transferred onto lighters for conveyance to ships stationed in the roadstead (Dick, 2022). A similar situation occurred in the Bengawan Solo Valley at around the same time. The concession for the construction and operation of a steam tramway between Gundih in Central Java and Surabaya was granted to the *Nederlandsch-Indische Spoorweg Maatschappij* in 1897. The colonial government assigned this company to build a railway from Gundih to Surabaya to transport agricultural products and clothing materials as well as imported goods for inland areas that entered through the port of Surabaya. Before that time, transportation still relied on boats from and to Surabaya via the Bengawan Solo. The railway company subsequently built train stations in every district where the main commodities such as sugar, rice, and others were produced or distributed. Land transport, especially railways and asphalt roads, became preferable to river transport, and gradually people ceased to use the river anymore except for crossing at points where bridges were not yet built – the so-called *tambangan*, where a man operates a boat or a raft drawn by a rope to cross the river from one side to another.

A major continuity is the degradation of the river basin, with flooding as a major consequence. Then as now, major flood events occasionally disrupt the lives of communities in the Bengawan Solo River basin. And as before, flooding is not a purely "natural" disaster, as environmental geographers are keen to point out, in every phase and aspect of a disaster – causes, vulnerability, preparedness, results and response; the contours of disaster reflect a social calculus (Smith, 2006). Moreover, whereas early flooding in the river basin was exacerbated by settlement patterns, land use change, and environmental destruction, the same is true of the present. The teak forests in the Wonogiri mountains that protect the water catchment area of the Bengawan Solo River were exploited on a large scale during the Japanese occupation, and in the 1950s and 1960s farmers' organisations such as the Barisan Tani Indonesia also cleared these forests for smallholder plantations in the Java region. As a result, the amount of mud deposits or sedimentation that flows increases, resulting in a reduction in the volume of the river flow so that when it rains, the river loses its ability to carry water downstream and the water overflows everywhere.[13] The tendency of the colonial Public Works Department to build embankments only with compacted soil, without reinforcement, also exacerbates the breakage of flood defences up to the present day.[14]

[13] Source: Kompas, 28–29 March 1966. "Bandjir Besar yang Melanda Kota Bengawan", by J. Widodo.

[14] Source: Kompas, 30 March 1966. "Bandjir Besar yang Melanda Kota Bengawan Bagian 3", by J. Widodo.

Ongoing deforestation in the river basin area represents a continuity across centuries. Deforestation causes water discharge and erosion to occur more frequently, and the absence of forests accelerates sedimentation, which in turn reduces the capacity of the Bengawan Solo River to hold water when it rains. Population growth in the Bengawan Solo River Basin was rapid between the 1960s and 1970s.[15] This population growth makes forest land conversion increasingly frequent. As a result, the forest cover area in the Bengawan Solo River basin is only 18%, whereas the total forest cover in the Bengawan Solo River basin area ideally is around 50%.[16] The Bengawan Solo watershed forest, including natural forests, swamps, and bushes, is experiencing rapid decline, according to data from the Ministry of Environment between 2000–2007. Residential and plantation areas are increasing in the area. As an illustration, natural forests in the Bengawan Solo basin in 2000 were still recorded at 34,910 hectares, but the area decreased drastically to 23,888 hectares in 2007. Residential areas increased rapidly from 270,268 hectares in 2000 to 367,484 hectares in 2007. The area of gardens in the Bengawan Solo river basin also increased rapidly, from 342,799 hectares in 2000 to 413,671 hectares in 2007. Open land in the Bengawan Solo River basin that was not planted increased very rapidly in 2000; the amount was only 15,745 hectares, increasing to 70,158 hectares in 2007. The increase in residential space in the Bengawan Solo River basin has significantly reduced swamp areas. In 2000, there were 3,212 hectares of swamp, but in 2007, the swamp area disappeared entirely from the Bengawan Solo River basin. The area of shrubs is also thought to have decreased due to changes in function to residential areas. In 2000, the area of shrubs was 63,095 hectares, and in 2007 only 13,897 hectares remained.[17] Records of the Ministry of Environment show that the replacement of hardwood plant species also caused damage to the Bengawan Solo River basin area. Hardwood plant species such as teak, pine, and cemara are essential in maintaining soil and water conservation from the dangers of erosion. However, many of these plants are cut down for the community's economic interests, both legally and illegally. The hardwood trees are replaced with seasonal food crops such as bananas, corn, and cassava. In terms of ecological functions, these seasonal food crop species cannot conserve the soil's hydrological function.[18] Deforestation in upstream areas also has an impact on drought that affects agricultural areas. Meanwhile, agricultural areas in the upstream area of

[15] Source: Hatin Sudarja, Head of the Directorate of Reforestation and Land Rehabilitation, Directorate General of Forestry, interviewed by Kompas journalist in May 1971.

[16] Source: Kompas, 5 May 1967 and Kompas, 5 May 1971. "Hutan di Lereng-Lereng Gunung Daerah Bengawan Sala Tinggal 18 pct Padahal Idealnya 50%", by Lt (Initial).

[17] Kompas, 25 Januari 2008, "Bangsa yang Abai dan Pelupa", by AIK, IRN and Ken.

[18] Kompas, "Bangsa yang Abai dan Pelupa".

the Bengawan Solo are not fertile due to the top layer of soil containing much fertile soil dissolving when heavy rain occurs, thus leaving land that is infertile and difficult to plant.

Another major continuity is the infrastructure-led response to flood disasters. After the proclamation of independence, efforts to overcome the annual floods that inundated areas along the Bengawan Solo River became more intense during the New Order period, triggered particularly by major flooding in 1966, 1967 and 1968. And as during the colonial era, with the focus on the Solo Valley project, planning revolved around infrastructure works, including repair and removal of damaged and dangerous embankments, the raising of embankments, and the building of five major reservoirs. Some replanting of forests was also undertaken.[19] As in the colonial period, many of the embankments constructed suffered structural damage due to lack of routine maintenance and due to illegal construction on top of, or around, the embankments.[20] Construction of the reservoirs was undertaken by a Japanese company (Nippon Koei), which estimated that the reservoirs would irrigate 250,000 hectares of rice fields and produce 250,000 kWh of electricity. The company projected that the increase in rice yields due to good irrigation and the proceeds from electricity sales would generate profits of around US$ 62 million over one year, so that the costs of building the five large reservoirs would be recouped within five years.[21] In 1975, the government relocated 60,000 people from 42 villages to make way for the construction of an additional 88-square km reservoir across 6 sub-districts.[22] Perhaps the most eye-catching continuity was the finalisation of the Solo Valley public works project itself during the New Order regime – a project initiated during the colonial period.

[19] Source: Kompas, 5 May 1968. "Bandjir Lamongan Bersifat Routine: Bagaimana Menghindarinya", by ANT (initial).

[20] Source: Kompas, 4 March 1971. "Menjelusur Tanggul Melilit Bukit: Perisai Pelindung Kota Bengawan", by Roestam Afandi.

[21] Source: Kompas: 3 November 1976. "Sepanjang Musim, Bengawan Sala Membahayakan", by Julius Pour.

[22] Source: Kompas, 19 August 1975. "Rp 18 Milyard Untuk Memindahkan Pendudukan Wonogiri", by ME (initial).

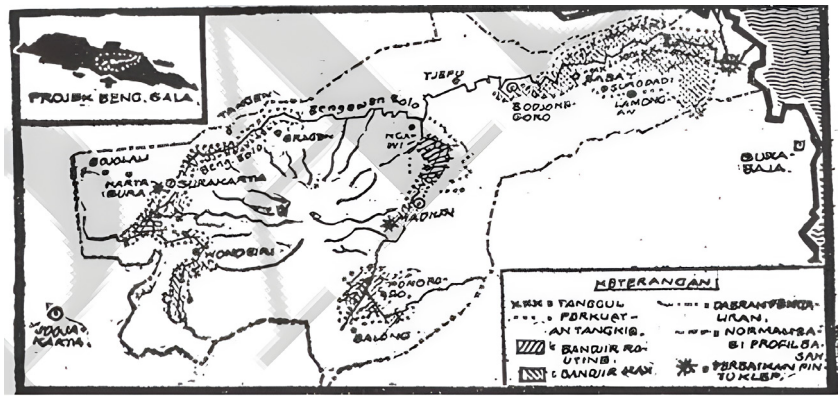

Figure 9.7: Map of the Benggala Project Work Plan. Source: Kompas, 1971[23]

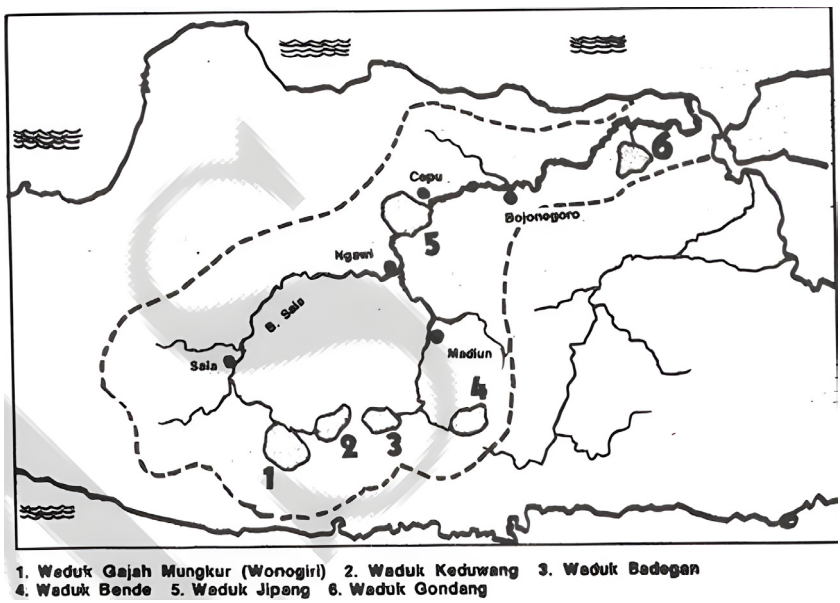

Figure 9.8: Map showing the location of large reservoirs built to overcome flooding of the Bengawan Solo River in Central and East Java[24]

[23] Source: Kompas, 4 March 1971. "Menjelusur Tanggul Melilit Bukit: Perisai Pelindung Kota Bengawan", by Roestam Afandi. The Benggala project is a flood prevention initiative dating from the 1970s, focused on the tributaries of the Bengawan Solo.

[24] Source: Kompas, 7 January 1976. "Waduk Serbaguna 'Gajah Mungkur' Wonogiri Sudah Mulai Digarap", by Drs. Pramudito.

Concluding reflections

We end with a tantalising question inquiring about another form of continuity: are we able to learn from the practices and memories of the past? Several works on environmental history in Java, particularly on the Bengawan Solo and Brantas rivers, emphasise the importance of pre-colonial knowledge for current water management.[25] One recent book published by the Ministry of Education and Culture (Nastiti, 2020) gives an explanation about the role of a Javanese ruler from the eleventh century named Airlangga, who created sophisticated water infrastructure in the downstream Bengawan Solo River to prevent flooding. The Ministry hopes that residents, especially in Lamongan in the downstream region, could follow the example of the king by employing local knowledge or "local wisdom" to develop their region.[26] In another example, the Brantas River Agency (*Balai Besar Wilayah Sungai Brantas*) acknowledges the importance of pre-colonial water infrastructures built by Javanese rulers since the tenth century. The inference is that there is an ancient heritage of water management in East Java that constitutes a form of local wisdom that remains relevant in the present day.

Ironically, the authorities' appeals to local wisdom are occurring at a time when water management practices, planning and decision-making for the river basin take place far away from local communities. As this chapter has tried to show, the distance between local communities and the river has also widened because of infrastructure developments, as the Bengawan Solo cannot be used for transportation anymore. Thus, vernacular knowledge about river boat transportation during flood events, for example, is now perceived as irrelevant rather than as a valuable example of local adaptation. Further research will need to discover whether current references to local wisdom merely constitute a form of nostalgia, i.e., an emotional state that longs to preserve or recover something of the past that is fondly remembered (Howell, Kitson & Clowney, 2019), or whether they can represent a meaningful call for action towards better environmental governance. We cannot adequately answer this question here, but our study shows that, at the very least, there is value in tracing current water management approaches, policies and regulations back to their origins during the precolonial and colonial eras. Doing so informs us that the act of silencing local aspirations, which originated

[25] Sources: "Sistem Pertanian Majapahit dan Sumbangannya pada Kemakmuran Negara", *Janus* 1 (2) 2023: 156–170. and "Banjir Sungai Brantas Masa Raja Airlangga abad XI Berdasarkan Prasasti Kamalagyan 1037 M", *Avatara* 3 (1) 2015: 50-57.

[26] Source: *Kisah Airlangga*. Pusat Penelitian Arkeologi Nasional Kementerian Pendidikan dan Kebudayaan.

with technical engineering and governance approaches in the colonial period, continues to the present day in the downstream Bengawan Solo area.

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CHAPTER 10

Water Diplomacy and Transboundary Water Governance in the Lower Mekong Basin: Towards Inclusivity?

Oliver Hensengerth

Abstract

This contribution explores the opportunities for participatory water diplomacy in transboundary river basins. The focus falls on the role of international basin organisations to provide multi-track and multi-scale frameworks for cooperation, bringing diverse stakeholders into a common space in the context of large dam construction. Drawing on literature in the fields of international water law, water diplomacy, and the governance of transboundary commons, the contribution uses the Mekong River Commission as a case study to explore the capacity of international basin organisations to contribute to inclusive decision-making and the peaceful development of transboundary water resources. Whilst the Mekong River Commission has made significant strides to build multi-stakeholder consultations into its structure, the primacy of state sovereignty and a clear distinction between regional and national decision-making processes leaves little room for the public to actively contest hydropower projects at a regional level. International law could provide important guidelines to make decision-making more inclusive by fostering the participation of marginalised and project-affected people.

Keywords: international water law, water diplomacy, transboundary rivers, international river basin organisations, Mekong River Commission

Introduction

According to the International Renewable Energy Agency, hydropower generates 65% of renewable energy and 16% of all electricity globally. It is now the largest source of renewable energy worldwide. To keep the rise in global temperatures to 1.5 degrees Celsius and to meet the goals of the Paris Agreement on Climate Change, installed hydropower capacity will need to double by 2050 (International Renewable Energy Agency, 2023: 8, 11, 19). This doubling of hydropower capacity raises the spectre of inter-state conflicts and the displacement of significant numbers of local populations. Already, over 70% of the dams under construction or

in the planning stage are on transboundary rivers (Llamosas and Sovacool, 2021). This brings into focus the need for inclusive transboundary governance and an increasing role of water diplomacy to exploit the hydropower potential not only peacefully between states but also for the benefit of local populations.

This requires the design of inclusive, multi-level transboundary institutions. The need for inclusive institutions was cogently made by the World Commission on Dams in its 2000 report in the wake of rising, and at times violent, conflicts over large hydropower dams. These conflicts drew together local and global indigenous rights, human rights and environmental activists (for a background on the World Commission of Dams see Schulz and Adams, 2019; Schulz and Adams, 2023). The commission aimed at developing a framework for decision-making that would consider the rights of marginalised and vulnerable populations throughout the project cycle, including in the early stages of planning. The commission report argued that whilst dams have made significant contributions to human development, "an unacceptable and often unnecessary price has been paid to secure those benefits, especially in social and environmental terms, by people displaced, by communities downstream, by taxpayers and by the natural environment" (World Commission on Dams 2000: xxviii).

This contribution explores opportunities for participatory decision-making in transboundary river basins. It does so by drawing on three sets of literature: international water law, particularly the development of provisions for public participation; water diplomacy with a focus on the role of non-state actors (Farnum, 2018); and recent conceptual developments on the governance of transboundary commons, which highlights the networks and power relationships inherent in water resources development (Miller et al., 2020a).

The focus falls on the role of international river basin organisations to facilitate inclusion. The case study is the Mekong River Commission (MRC), specifically the Procedures for Notification, Prior Consultation and Agreement (PNPCA), which are part of the MRC's water diplomacy framework (Kittikhoun and Staubli, 2018). PNPCA sets out a process through which member states aim to reach agreement on the construction of large hydropower dams on the Mekong mainstem. While PNPCA requires public participation, a clear distinction between regional and national processes leaves little room for the public to actively contest hydropower projects at a regional level. This leads to the emergence of counter publics, which provides a parallel, more inclusive way of engaging marginalised populations (Yong, 2022; Varkkey, 2022).

The contribution proceeds as follows: it first discusses transboundary water diplomacy, pointing to the primacy of the state versus marginalised populations. It then describes provisions for public participation in international water law and sets out the case for a participatory water diplomacy. Next, the contribution evaluates these dynamics using the case of hydropower decision-making in the MRC.

Water diplomacy in transboundary river basins

Diplomacy, and by extension water diplomacy, has hitherto been the domain of states. Increasingly, however, actors other than states are becoming part of the process. This is formally recognised through the development of multi-track diplomacy and acknowledges that creating peaceful and sustainable water use is a complex process that goes beyond what governments alone can achieve (McDonald, 2003). It also pays tribute to the role that individual citizens, non-governmental organisations (NGOs), community-based organisations and other civil society institutions have been playing in making and implementing rules for water use at local and national levels and increasingly at international levels (Bruch, 2001; 2003). Many conceptualisations of (water) diplomacy refer to state-to-state transactions as Track 1, exchanges between non-state actors as Track 2, mixed engagements as Track 1.5, and people-to-people diplomacy as Track 3 (Sehring et al., 2022: 218; Barua, 2018: 61). Perhaps the most diversified conceptualisation is by Diamond and McDonald (1996), who identify nine tracks. Here we adopt the widespread use of Tracks 1, 1.5, 2 and 3. Some scholars contend that "official, Track 1 diplomacy tends to be more effective than informal tracks because of incentives, funding, intelligence and logistical resources at its disposal" (Mirumachi 2020: 88). Others argue that Track 2 diplomacy is more tied to sustainable peace as it goes beyond state interests and includes wider societal interests (Farnum, 2018: 450). But questions remain as to what extent these multiple tracks are integrated, and to what extent they are beset by power relations that lead to an emphasis on Track 1 interactions.

There are many definitions of water diplomacy, with some more closely related to solving water-related problems and others addressing goals beyond the water sector in relation to contributing to regional peace and security (Hussein et al., 2023; Sehring et al., 2022; Farnum, 2018). I adopt the definition by Keskinen et al. (2021). The authors conceptualise water diplomacy as encompassing five aspects: political, preventive, integrative, cooperative, and technical. While the political aspect addresses the political nature of transboundary water cooperation, the technical aspect emphasises knowledge co-production and information sharing such as of hydrological cycles or the joint production of outputs such as scenarios and risk assessments. The other three aspects highlight the mechanisms and processes of diplomacy. The inclusion of technical aspects in this conceptualisation is especially useful here as it helps understand how innovative ideas such as joint impact monitoring but also activities such as information exchange and data collection can inform water diplomacy and are not just the domain of technical experts (for this point see also Sehring et al., 2022: 2015–16). This conceptualisation links well to Hussein et al.'s (2023: 5) attempt to operationalise the concept of water diplomacy. The authors argue that it requires an agreement on data and its interpretation;

effective governance structures to implement and maintain agreements; public participation to "increase trust in joint bodies and agreements" and to prevent the "reinforcement of inequality"; third-party involvement to facilitate cooperation; and the need for an "in-depth understanding of the environmental costs and benefits." We shall later see that these elements are part and parcel of the MRC's water diplomacy framework.

The domains of public participation and third-party involvement imply that water diplomacy should be both multi-level and multi-track and encompass communal, intrastate, and international levels to include a broad range of actors (Grech-Madin et al., 2018: 100, 102; Susskind, 2013; Susskind and Islam, 2012). Indeed, effective water governance, particularly under the framework of integrated water resources management, has long been assumed to go hand in hand with multi-stakeholder platforms that represent different interests, although the effectiveness of this has been debated (Warner, 2005). Transboundary environmental governance has explicitly recognised the innovative role that non-state actors can play in complex political environments (Barnes-Dabban et al., 2018). More specifically, the literature on transboundary environmental commons has emphasised the role that hybrid state and non-state networks are already playing in the governance of resources held in common beyond the confines of national boundaries (Miller et al., 2020a; Miller et al., 2020b). Against this backdrop, arguments for water diplomacy to be multi-track recognise that peaceful exploitation of transboundary resources requires inclusivity. But how can this be operationalised?

International water law and participation

Schmeier (2021) argues that principles of international water law provide "a framework for cooperation and contributing to lawmaking, which makes them important tools of international relations and water diplomacy" (p. 173). Key principles of international water law consist of the duty to cooperate, equitable and reasonable utilisation, and to do no significant harm to other basin states. They are laid down in the 1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) and the 1997 United Nations Convention on the Law of the Non-navigational Uses of International Watercourses (Watercourses Convention). Although the Water Convention is under the purview of UNECE, it is open for global access. However, no Mekong country has signed it. The Watercourses Convention applies globally. Of the Mekong countries, only Vietnam has signed it.

The principles contained in these conventions do not have 'normatively determined' (Schmeier, 2021: 174) character whereby non-compliant states are sought to

be punished; instead, their role is to guide state behaviour, contributing to a peaceful and cooperative use of shared water resources. This 'interactional' (p. 175) role makes these norms important tools for water diplomacy, providing normative and procedural guidance. Yet, in order for these norms to structure interactions, they need to be rooted in institutional structures. Schmeier et al. (2018) argue that international river basin organisations provide an institutional anchor for water diplomacy as such organisations are themselves the result of diplomatic efforts by states to facilitate peaceful cooperation over their shared water resources. They may therefore provide a platform that can be used to avoid or mitigate conflicts and disagreements.

Both conventions focus on the role of nation-states and only a few provisions deal with the rights of the public. The Water Convention requires states to make information publicly available and free of charge, regarding "the conditions of transboundary waters, measures taken or planned to be taken to prevent, control and reduce transboundary impact, and the effectiveness of those measures" (Article 16). The Watercourses Convention provides in Article 32 that affected people have the right to seek judicial redress in another state unless states "have agreed otherwise for the protection of the interests of persons, natural or juridical, who have suffered or are under a serious threat of suffering significant transboundary harm." Regarding public participation, although the Watercourses Convention "implies that States should use public participation procedures in a domestic context, it does not recognise that there is a requirement in the international context" (Woodhouse, 2003: 150).

There are, however, important guidelines and regional conventions that can help bridge the international-domestic divide. The 1991 UNECE Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) contains basic provisions for public participation in a transboundary context. These are further developed in the 1998 UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention). Human rights concerns have also entered considerations for the governance of international rivers. The Berlin Rules, developed by the International Law Association as an update to the 1966 Helsinki Rules, reflect a 'new paradigm' (Dellapenna, 2006) in that they integrate international human rights law, environmental law, humanitarian law, as well as the provisions of the Watercourses Convention "into a coherent whole based on a recognized set of legal principles" (Dellapenna 2006: 9). Chapter II, Article 4 sets out a general right of affected persons to participate in decision-making. This is unpacked in subsequent chapters: Chapter IV deals with the rights of individuals regarding: access to water (Article 17), public participation and access to information (Article 18), education (Article 19), protection of indigenous and other vulnerable groups (Article 20), and the right of displaced people to receive compensation (Article 21). Chapter VI,

Article 30 stipulates the rights of people to participate in environmental impact assessments (EIAs) in other states where the impact originates. Chapter XII, Articles 69–71 sets out legal remedies and includes access to justice in other states.

This shift towards human rights is important: The World Commission on Dams brought this issue to worldwide attention in an attempt to develop guidelines that protect the rights of all affected people, and "particularly indigenous and tribal peoples, women and other vulnerable groups" (p. xxxiv). Where indigenous and tribal people are concerned, decisions must be guided by their "free, prior and informed consent" (p. xxxiv). The commission's report aligns with the concept of environmental justice, which integrates distributional, recognitional and procedural justice (Schlosberg, 2007). In doing so, it calls for a fair distribution of benefits and disbenefits, recognition of the rights of vulnerable populations, and a voice of these populations in decision-making processes. Responses to the report varied across different stakeholders with anti-dam activists demanding its full implementation and states such as India and China rejecting its conclusions. Other responses were pragmatic, trying to address some of its recommendations in an effort to make hydropower dams more environmentally and socially sustainable. A prominent development in this regard was the emergence of an industry standard in the form of the International Hydropower Association's Hydropower Sustainability Assessment Protocol. Whilst today there is much debate and public awareness of the negative impacts of dams, it is debatable to what extent the report had real impact with respect to making dam development more participatory. Indeed, many of the issues and debates that the report highlighted in 2000 are still prominent today (see the detailed analysis of the commission's impact by Schulz and Adams, 2019).

Participatory water diplomacy

How can participation, and in particular human rights concerns, be built into water diplomacy? Questions abound to what extent participatory principles can be incorporated into water diplomacy and, if attempted, to what extent this is effective and can challenge power asymmetries (Klimes et al., 2019: 1368; Grech-Madin et al., 2018). This is particularly the case when considering flows of hydropower finance and who has the power to decide access and allocation of water resources (Mirumachi, 2020). Civil society actors are often seen as supplementary to state action (Susskind and Islam, 2012; Barnes-Dabban et al., 2018) rather than an intrinsic part. Farnum's (2018) take on water diplomacy is important here: she advanced the role of local non-profit organisations and the role of local knowledge in water-based peacebuilding efforts. She argues that water diplomacy can be built around civil society groups and indigenous communities, who engage across Tracks 1.5, 2 and 3

(pp. 450–451). This moves the notion of water diplomacy away from an essentially state-centric effort in which non-state actors are relegated to supplementary roles, to centring the contributions of local actors to engage in water diplomacy beyond the state or as merely dependent on the state.

Writing in 1999, Milich and Varady argued that transboundary river governance has historically been dominated by four conceptual paradigms: technical/scientific; regulatory/standard-driven; closed to actors other than top-level diplomats; and top-down (Milich and Varady, 1999: 261). Little to no room was given to public participation in the creation or implementation of transboundary agreements, including NGOs, community-based organisations, or other actors speaking for local interests. National interests dominated local needs and sidelined cultural, economic, social, or public health consequences (p. 285–286). The authors therefore called for a new model of transboundary governance that "combines local needs with general concepts of multinational environmental security" (p. 286). Where water diplomacy is to address regional water concerns, therefore, participation of those who hold critical knowledge about water management is important: this includes governments, NGOs, and the water users themselves (Jansky et al., 2005: 4; Troell et al., 2005: 53–54).

Troell et al. (2005) present transboundary EIAs as a potential tool to build public participation into a transboundary governance regime. When undertaken by international river basin organisations, participation can be embedded into all levels of governance where the organisation is involved (Troell et al., 2005: 57). Impediments to public participation in transboundary impact assessments include a lack of a legal framework, institutional capacity, a lack of resources, or a lack of political will. Discussion of technical aspects might also dominate concerns over public participation where governments undervalue the role of the public. Where disputes occur, river basin organisations can play a mediating role (Troell et al., 2005: 73). This raises the importance of such organisations as diplomatic venues beyond state-to-state interactions, namely to coordinate a multi-scale and multi-track process. The Espoo Convention, together with the Aarhus Convention, could have model character here in improving practice beyond the UNECE regional remit. Where basin states have concluded formal transboundary EIAs, this might require them to grant populations of foreign states access to domestic legal systems. As a result, non-binding frameworks are often used that fail to formalise public participation but, on the other hand, allow dialogue and consensus-building where states are still developing agreed norms for transboundary impact assessments (Troell et al. 2005: 72). The MRC's recently published transboundary impact assessment guidelines might well fall into this category.

However, even where non-state actors are included, this inclusion can often be selective, skewed towards those who are seen as cooperative, thus perpetuating power imbalances and further marginalising those most impacted (Eichert, 2014).

Participatory processes can also be manipulated and subject to elite capture and co-optation (Wong, 2016). Exclusionary processes and tokenistic involvement of civil society and project-affected people have led to widespread protests against planned dams across continental Southeast Asia – in the Mekong basin and beyond (Kirchherr et al., 2017; Hensengerth, 2017; Chheat, 2022; Fung, 2023). This opens up new arenas of resistance, potentially contributing to instability and conflictive development processes but also allowing new and innovative forms of protest, resistance, and participation. The next section discusses these issues in the context of the Lower Mekong basin.

The MRC as a platform for water diplomacy: multi-track and multi-scale?

The first dam on the Lower Mekong mainstem, Xayaburi, became operational in Laos in 2019. A second dam in Laos, Don Sahong, began operation in 2020. Laos is planning a further seven dams on the mainstream. Cambodia, meanwhile, shelved its two planned mainstream dams – Sambor and Stung Treng – in 2020, a move that was confirmed by the new prime minister Hun Manet in 2023 (Strangio, 2023). Nevertheless, reports surfaced in 2022 that the Ministry of Mines and Energy had approved a request by Royal Group to conduct a feasibility study for a dam in Stung Treng province (Flynn and Pry, 2022).

Large dams on the Mekong mainstem and its tributaries have been criticised for their severe and irreversible impact on the livelihoods of riparian communities, food security, and the regional ecology. Xayaburi, for example, displaced 2100 villagers but its impact – combined with more dams in the construction stage – is far more wide-reaching, directly affecting agriculture and fisheries and threatening regional food security (Olson and Morton, 2018; Bussi et al., 2021). In a 2018 tradeoff analysis of thirty tributary dams and eleven mainstem dams – including the nine Lao and two Cambodian dams – Intralawan et al. (2018: 27) argued that "the forecast loss of capture fisheries, sediment/nutrients and social mitigation costs […] are greater than the benefits from electricity generation, improved irrigation and flood control." Impacts will be felt especially in Cambodia and Vietnam, making the distribution of benefits and impacts across the basin uneven. Baird and Hogan (2023) pointed to the risk of extirpation, extinction, and functional extinction of important fish species. Soukhaphon et al. (2021) argued that while EIAs are now completed for individual dams, impacts may affect communities up to 1000 kilometres downstream. This scale, and the cumulative impacts of all dams in operation or in the planning and construction stages, are not typically considered.

The body tasked with coordinating the sustainable development of the Lower Mekong basin is the MRC. The MRC can be understood as an instrument of water

diplomacy. As an intergovernmental organisation, it provides an institutional setting through which the four member states implement the legal norms underpinning the 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin (Mekong Agreement): the duty to cooperate, equitable and reasonable utilisation (Article 5), and no significant harm (Article 7).

Former CEO Anoulak Kittikhoun, in a joint paper with Denise Michèle Staubli argued that the MRC's water diplomacy framework consists of several components: it has technical cooperation at its core, including data and information collection and sharing, monitoring and forecasting, state of the basin reporting, studies and assessments, and technical guidelines. This supports three further dimensions of MRC's diplomatic framework: the *legal* dimension includes the Mekong Agreement and the Five Procedures: PNPCA; Procedures for Data and Information Exchange and Sharing; Procedures for Water Use Monitoring; Procedures for Maintenance of Flow on the Mainstream; and Procedures for Water Quality. The *institutional* dimension includes the Council, the Joint Committee, the Secretariat, the National Mekong Committees, expert groups, stakeholders, and partners. The *strategic* dimension incorporates strategies and plans such as the Basin Development Strategy (Kittikhoun and Staubli, 2018). This definition of water diplomacy goes well with the definitions adopted for this contribution and which include political, preventive, integrative, cooperative, and technical aspects (Keskinen et al., 2021; Hussein et al., 2023). Reflecting on the nature of the PNPCA itself, former MRC CEO An Pich Hadta noted:

> The PNPCA process has shifted from a technical discussion on whether the proposed hydropower project is 'transparent' to greater 'transparency' in the way that the PC [prior consultation] and post PC processes are implemented. This reflects a shift from technical to water diplomacy solutions (Hadta, 2020: no pagination).

These post-PC processes comprise, as we will see later, a Joint Action Plan and a pilot Joint Environmental Monitoring programme. PNPCA contains several distinct processes: dams on tributaries only require notification and do not have a public participation component. Only dams on the mainstem require both notification and prior consultation between states, as well as public participation, all facilitated by the MRC. It is this part that is of interest here. A brochure of the PNPCA explicitly presents it as a tool for water diplomacy: it is designed to "support regional cooperation on water use" and includes regional and national consultations with "public and interested parties" (MRC, 2016: 3–4). It is, however, not a process that decides on whether or not projects should be built.

The status of public participation in PNPCA

PNPCA requires the submission of environmental and social impact assessments and resettlement plans by governments proposing mainstream projects. These, however, are governed by national laws and are therefore under the purview of national governments who work with project developers. Although in all cases national laws now require a certain degree of public participation, implementation of this is uneven (Wayakone et al., 2012; Xia, 2020; Clarke et al., 2021; Kantamaturapoj et al., 2023). In the case of the Pak Beng EIA, for example, Suhardiman and Geheb found during research with project-affected communities that they were unaware of the EIA having taken place and that they were unaware of their right to being consulted (Suhardiman and Geheb, 2022: 325). The Transboundary Environmental and Social Impact Assessment & Cumulative Impact Assessment, carried out by Kunming Engineering Corporation, lists public involvement and international best practice guidelines, notably the Hydropower Sustainability Assessment Protocol and the World Commission on Dams report. However, a review commissioned by International Rivers, found that "[n]o consultation occurred between the potentially impacted communities and the EIA consultants and no studies or assessments have been included to demonstrate that the potential impacts of the Pak Beng Project have been assessed in Cambodia or Vietnam" (International Rivers, no date: p. 24). These deficiencies "cannot be cured by the current consultation being undertaken through the MRC process" (p. 25). Similarly, the review found for the Social Impact Assessment, the Resettlement Action Plan, the Social Management and Monitoring Plan, and the Ethnic Group Development Plan that indigenous communities will face assimilation pressures as resettlement support is available in Lao language only (p. 16). With regard to gender, the review found that data is not disaggregated by gender and that the "proposed mitigation measures are unlikely to address issues related to difference in social and economic well being, as well as cultural context" (p. 18). These processes are also under the remit of the national government, not the MRC. There is, therefore, a clear distinction between the decision-making authority of national governments and the deliberative character of the MRC process.

During PNCPA, the MRC Secretariat organises regional stakeholder meetings, and the National Mekong Committees organise national stakeholder meetings. PNPCA has received significant attention since it was first activated in 2010 when the Lao government submitted the Xayaburi project documentation to the MRC Secretariat. This was followed in 2013 by Laos's notification to build Don Sahong. During the Xayaburi PNPCA, national consultations were held in Cambodia, Laos and Vietnam; but there were no regional consultations. For Don Sahong, one regional consultation took place, while national consultations were held in Cambodia, Vietnam and Thailand. The formal involvement of the public, therefore,

focussed initially on the national context while opportunities for a regional, transboundary process were only emerging.

In both cases, PNPCA ended without agreement between the four member states, with Laos pressing ahead with construction despite opposition from Cambodia and Vietnam. Public opposition was also significant, with international and regional NGOs, community-based organisations and local communities putting up sustained protests. In the Xayaburi case, this included protests led by Buddhist monks and regional organisations such as TERRA, Save the Mekong, and the Network of Thai People in Eight Mekong Provinces (for details see Hensengerth, 2015). In the case of Don Sahong, public opposition materialised in a loose coalition by the Viet Nam Rivers Network, Save the Mekong, WWF Cambodia, the Fisheries Action Coalition Team, the Representatives of River Coalitions in Cambodia and Tonle Sap and Mekong Communities, Fauna and Flora International, and Oxfam. Internationally recognised academics such as Philip Hirsch also weighed in with their expertise (MRC, no date; WWF, 2015; Hirsch, 2013; Chiang Rai Times, 2014).

While the mainstem dams thus illustrate the emergence of regional, transboundary protests, they also signify the networks between state and private corporate interests that are coalescing around the exploitation of hydropower resources. Xayaburi's project owner, the Xayaburi Power Company, lists as shareholders a consortium consisting of CK Power, which is part of CH. Karnchang Group (42.5%), Electricité du Laos (20%), Natee Synergy (25%), and Electricity Generating Public Company Limited (EGCO, 12.5%).[1] In the case of Don Sahong, the Don Sahong Power Company is a joint venture between Malaysia's Mega First and IJM Corporation (WWF, 2014: 2–3). These developments give weight to Miller et al.'s (2020b) argument that transboundary environmental commoning is characterised by "networked political relationships" (p. 298) that include state, private and societal actors and by the power relations between them. These transboundary commons are "highly politicised spaces, within which collective resource rights and benefits are continually contested, negotiated and by no means assured" (Miller et al., 2020a: 186).

Reform of the PNPCA: towards better inter-state relations or better public participation?

The experience of the first two PNCPAs ending without agreement between MRC member states as well as the lack of significant regional public consultations resulted in a still ongoing reform process and recommended, inter alia: a clear road map; improved regional stakeholder engagement including releasing information

[1] https://www.ckpower.co.th/en/projects/hydro-power/58/xayaburi-hydroelectric-power-plant/, accessed 26 June 2024.

in a more timely manner, and convening two information-sharing workshops with one taking place early in the process; and clearer post-PNPCA engagement to monitor impact (MRC, 2018: 18–20). The main vehicle for post-PNPCA monitoring would become the Joint Action Plan, for the first time implemented during the Pak Beng PNCPA. A pilot Joint Environmental Monitoring Programme was inaugurated to monitor the impacts of Xayaburi and Don Sahong. A new regional consultation mechanism, the Regional Stakeholder Forum, launched in 2017 as part of the Pak Beng PNPCA.

Participation in hydropower decision-making: The case of the Pak Beng dam

Pak Beng is developed by Datang (Lao) Pak Beng Hydropower, of which Thailand's Gulf Energy holds 49% and China Datang Overseas Investment 51% (Kaohoon International, 2023). Laos submitted the Pak Beng project to the MRC Secretariat in November 2013. This triggered the third PNCPA process, held between December 2016 and June 2017. During the process, regional and national stakeholder views were more clearly built into the reporting structure of the MRC (see Pak Benk PNPCA Roadmap in MRC, 2017b: 13). According to this roadmap, national consultations should inform national positions, and regional consultations should inform the Secretariat's technical review reports (MRC, 2017a: 5). Both should be considered at Joint Committee level.

During the PNPCA two National Information Sharing/Consultation Meetings were held in Cambodia, four in Thailand, and two in Vietnam. Regional Information Sharing/Consultation Meetings took place in February 2017 and May 2017. Regional consultations were attended by member countries, private developers, academics, NGOs, and media organisations (MRC, 2017a, 2017b). The Pak Beng Joint Action Plan mentions that "NGOs, implementing partners, civil society organizations, research institutions, academics, individuals and other interested groups will be kept informed of progress with the implementation of the JAP [Joint Action Plan] through the MRC's regular engagements" (MRC, 2019: no pagination).

Despite enhanced regional engagements, Yong (2022) argued that the PNPCA led to different environmental publics: one official public was convened through the PNCPA, with the national consultations under the purview of the National Mekong Committees. Although quality and range differed somewhat by country, national consultations were constrained in the participation of affected communities. Furthermore, the official consultations were "segmented within a Westphalian framework of nation states" (p. 297). They were also often held in central government buildings and hotels (p. 297) and used highly technical language. This official public ceased to exist when the PNCPA ended.

In contrast, a transboundary counter public was convened through the Save the Mekong Coalition, which took a rights-based approach based on the principle of free, prior and informed consent. Events took place in villages, were held in local languages with translators, used familiar places such as village temples as sites for debate, and included "non-human and cultural elements of life" (p. 301). Such cultural and non-human elements are of relevance to local associations with rivers and often form a part of indigenous cosmologies. They are generally difficult to consider in compensation and resettlement negotiations, thus highlighting issues of cultural survival (Donahue and Johnston, 1998). This is what Troell et al. (2005: 73) referred to as 'parallel public participation' where dissatisfied citizens and organisations hold alternative public participation sessions and may also resort to legal recourse. Varkkey (2022) argued that such publics can provide alternative venues and 'fill policy gaps' (p. 348).

Towards better transboundary participation?

Since the end of the Pak Beng process, the MRC has further improved its guidelines. In 2023, the MRC published an update of its 2009 Preliminary Design Guidance for Proposed Mainstream Dams in the Lower Mekong Basin. This update now requires the engagement of directly affected communities "in all phases of the projects [sic!] development and operation in a participatory manner," and to "[e]nhance existing, or create new, transboundary cooperative mechanisms as needed (e.g. to implement support mechanisms for transboundary riparian communities), […] such as through national, bilateral, regional and MRC-related frameworks" (MRC, 2023b: 126).

Also in 2023, the MRC released its Guidelines for Transboundary Environmental Impact Assessment in the Lower Mekong River Basin. For public participation, the guidelines note that national EIA consultations should be held in accordance with national laws (MRC, 2023a: 15). These national consultations are supported by the National Mekong Committees (p. 39). Regional consultations are conducted following the rules of the PNPCA (p. 29).

Discussion: Multi-track diplomacy and rights-based approaches to transboundary water governance. Integrating participatory mechanisms into water diplomacy

Miller et al. (2020a, 2020b) argued that transboundary environmental commons are created through partnerships between state, private and societal actors sitting across different scales – local, regional and global. In a similar vein, Philip Hirsch argued that we need to expand our understanding of the notion of transboundary

to not only refer to the physical resource of the river itself, but to include the multifarious networks of state and private actors, including companies, academics, or civil society organisations that attempt to influence the ways in which rivers are governed (Hirsch, 2020). The actor configurations, the power relations between them, and their interests determine the shape that these commons take, from commodification and resource capture by powerful interests, to new forms of marginalisation, or efforts to create more inclusive institutions that take into account place-based knowledge.

Where international river basin organisations like the MRC are tasked with the governing of transboundary resources, such organisations may be ideally placed to draw different stakeholders across scale into a shared space. PNPCA aims to make water use more equitable and reasonable. It is a process through which member states deliberate on their respective hydropower programmes. It has also expanded the space for societal actors including project-affected people to share concerns. It is, however, fundamentally a process that "privileges state imperatives at the expense of riparian communities" (Yong, 2022: 298). The cross-scalar networks that developed around the governance of transboundary waters tend to be rival and have clear power asymmetries: state-corporate networks are geared towards achieving state-led development goals underpinned by the capturing and the commodification of water resources, whereas networks emphasising human rights and local knowledge systems are only given tightly controlled access to decision-making. The actor networks coalescing around resource capture and commodification of natural resources are visible in the cases described above: private and state-corporate interests from Laos, Thailand, Malaysia and China are prominent in the development and the privatisation of water and energy sources, further marginalising the original local water users. PNPCA is at the centre of these rival networks and interests to determine the future of the Lower Mekong basin.

This highlights the difficulties in making water diplomacy more participatory. International river basin organisations may become focal points of diplomatic efforts for a fair and transparent development of shared water resources. However, who should be involved and what the mechanisms should be is contested. Where the public is excluded or participation is tokenistic, counter publics may emerge, rendering diplomatic efforts to establish peaceful water exploitation futile as significant local resistance is to be expected where policy makers ignore local needs, including livelihoods and cultural questions.

International water law can have an important model character here, and a recent checklist provides a comprehensive guide for stakeholders to assess which laws, rules and norms are applicable to hydropower projects on transboundary rivers (Adjei et al., 2023). Dellapenna (2006) argued that the Berlin Rules ushered in a 'new paradigm' in international water law by incorporating international human

rights and environmental law and thereby making a consistent case for public participation. Kinna and Rieu-Clarke (2017) have argued that the Mekong Agreement can be strengthened in its substantive and procedural provisions if member states followed Vietnam in joining the Watercourses Convention and if all members would also join the Water Convention. The authors make a case for the complementarity of both conventions and set out in detail how this could improve the Mekong Agreement. With respect to public participation, the authors argue that access to justice, especially to foreign courts, as set out in the Watercourses Convention (and repeated in the Berlin Rules) would benefit from consideration given that legal remedies for private citizens are absent from the Mekong Agreement (Kinna and Rieu-Clarke, 2017: 52 and 58).

Other legal instruments and guidelines could serve as models of how to improve practice. The World Commission on Dams report provides best practice guidelines of how to include vulnerable populations into decision-making. The Berlin Rules contain articles on public participation and the rights of indigenous people. The Espoo Convention sets out basic guidelines for public participation in transboundary EIAs, including release of information and creating an environment in which the states provide the public with the opportunity of making comments and objecting to proposed projects. Article 7 of the Espoo Convention also refers to post-project analysis. Some of this seems compatible with the reformed PNPCA, such as earlier and more frequent consultations, the transboundary EIA guidelines, and post-project monitoring via the Joint Action Plan, and the Joint Environmental Monitoring pilot. However, a key problem remains the 'scalar disconnect' (Suhardiman et al., 2012) between the national and the regional level and the quality of national EIAs.

For the Lower Mekong, the reforms in the MRC and the implementation of the Pak Benk PNPCA clearly show improvements since Xayaburi and Don Sahong. Stakeholder involvement plans are more clearly articulated, and consultations are held at different stages of the PNPCA. It is also clearer how comments should feed into official documentation, although it is not clear to what extent public comments actually influence deliberations at Joint Committee level. Yet, despite improvements at both regional and national levels, the process is still far removed from the everyday lives of affected communities. Indeed, it has been argued that in many contexts, and especially so in authoritarian contexts, public consultations may be held so that decision-makers can gain legitimacy, but that they are designed in a way that the public has no influence on decision-making (Zhao, 2010). Since Pak Beng, PNPCA has continued to be highly contested as Laos submitted documentation for Pak Lay, Luang Prabang and Sanakham. All these dams are going ahead despite opposition from researchers and communities. Therefore, while the process has improved in procedural ways, it has fundamentally not allowed communities to have a meaningful say in decision-making.

Conclusion

The history of resistance to hydropower is long and ongoing: it not only includes the Lower Mekong basin and wider continental Southeast Asia, but also other parts of the world such as the sustained indigenous resistance to the development of the Amazonian rainforest. In the latter case, the Belo Monte dam in Brazil was a symbol of resistance against the Brazilian state for many years (Jaichand and Sampaio, 2013; Bratman, 2015). Violence can be a prominent feature, as the assassination of the indigenous anti-dam activist Berta Cáceres in Honduras in 2016 showed (Lakhani, 2021). This highlights the need to be attentive to human rights concerns while making decisions about water use.

In the Mekong region and elsewhere, hydropower projects on transboundary rivers tend to be seen as national projects by national governments, even though their impact goes far beyond national borders. This is not only because of the transboundary impacts but also due to the networks of people and organisations involved. As an intergovernmental organisation, the MRC has no independent capacity to act and is reliant on member states valuing its existence and continuing to refer to its processes. As a consequence, "diplomacy, negotiation, and persuasion are the main tools at its disposal" (Rieu-Clarke and Gooch, 2009; 2017 cited in Kinna and Rieu-Clarke, 2017: 31).

PNPCA can improve projects to an extent, and it can add post-project monitoring. However, the role of the public appears negligible: in national processes, the quality of EIAs are often problematic. And at regional level, PNPCA can only make recommendations for improving projects that have already been approved under domestic law. International law can have important guideline character here. Kinna and Rieu-Clarke (2017) recommended that MRC members join Vietnam in signing up to the Watercourses Convention, and that all states should become members of the Water Convention. Other legal instruments such as the Espoo Convention, or best practice guidelines like the World Commission on Dams report could help with embedding public participation not only in earlier stages of dam development but throughout the lifecycle of a project. The implementation of Joint Action Plans and future Joint Environmental Monitoring exercises will have important roles here.

Recognising marginalised communities as bearers of knowledge is crucial for creating inclusive water governance that recognises the multiple values attached to water. Some authors have identified transboundary EIAs as possible entry points for public participation in processes and structures of water diplomacy. This is already featuring in the latest developments in the MRC, with the 2023 transboundary EIA guidelines. Yet, the 'scalar disconnect' identified by Suhardiman et al. (2012) in the Lower Mekong basin removes a crucial part of decision-making from the

purview of the MRC. The distinction between regional and national engagement processes leaves little room for the public to actively contest hydropower projects at a regional level.

To date, water diplomacy is exclusive rather than inclusive. Although it recognises several tracks and the role of the public, there is still emphasis on the role and the interest of the state. Yet, Farnum (2018) showed how water diplomacy can be built around non-state actors who can operate across multiple tracks of water diplomacy. Where water diplomacy is coordinated by international river basin organisations, inclusiveness and openness of the institutional design is important to make full use of the opportunities of multi-track diplomacy. Klimes et al. (2019: 1368) therefore call for a 'big tent' approach to water diplomacy that recognises the importance of those most affected to actively engage in decision-making.

In taking this research further, the debates on water diplomacy in international river basins would benefit from cross-fertilisation with the disciplines of international law and transboundary environmental governance. How can developments in multi-track diplomacy help understand the rise and growing importance of non-state actors in international river basins? How can international legal provisions guide the design of mechanisms for public participation, taking into account the historical, cultural and political context? Ultimately, answers to these questions should be sought together with local, project affected communities to build these open and sustainable institutions that Milich and Varady (1999) called for over two decades ago.

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CHAPTER 11

Karen Indigenous Approaches to Environmental Governance: Integrating Knowledge, Culture, and Political Agency

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Abstract

This chapter looks at Karen indigenous approaches to environmental governance, embedded in cultural ceremonies, rituals, and practices of the Karen animist belief system. It presents place-based knowledge systems, cultural continuum, and agency shaping as key praxis to moving beyond human-nature distinction in environmental governance. Building on the concept of environmentalism of the poor, it shows the centrality of Karen communities' customary rights system (*Kaw*) in the shaping of territories of life, and how the latter are embedded in Karen communities' life philosophy and cultural practices, contextualised in rotational farming practices. Challenging dominant narratives that tend to present rotational farming as detrimental to environmental conservation and forest protection, the chapter argues that rotational farming practices form an integral part of the Karen's indigenous approach to environmental governance, cultural preservation, and sustainable livelihoods.

Keywords: customary rights systems, place-based knowledge systems, rotational farming, environmental governance, Myanmar

Introduction

This chapter unpacks key foundations of the Karen indigenous approach to environmental governance centred on livelihood (re)making, cultural performances and rituals, and the shaping of political agency. It shows how place-based knowledge, cultural continuum, and agency intersect in environmental governance. We discuss and analyse how such an approach integrates forest conservation, livelihood improvement, and cultural preservation, contextualised in rotational farming practices. Rotational farming – also sometimes called shifting cultivation – has often been viewed as detrimental to environmental conservation and forest protection (Rahman et al., 2017; Styger et al., 2007; Schuck et al., 2002) leading to

various governments' policies and programmes to move upland communities so that the forest can be conserved. Scholars have shown how these policies manifested in state territorialisation strategies, often targeting ethnic minorities living in the remote uplands of various countries in Southeast Asia (Lestrelin, 2011; 2010; Suhardiman et al., 2019; Tappe, 2010; Vandergeest, 2003; Vandergeest and Peluso, 1995). They have also shown and demonstrated that the underlying goal of resettlement has been to increase state control over rebellious and mobile upland communities, by making them more visible and culturally integrated into the national development project (Baird and Shoemaker, 2007; 2005; Evrard and Goudineau, 2004).

For centuries, upland communities in Southeast Asia have had to adjust their rotational farming practices, both in an ad-hoc manner (e.g., through inter-household arrangements in plot redistribution) and institutionally (e.g., through evolution of customary land tenure systems), while responding to changing socio-ecological factors (e.g., soil fertility and suitability, available labour force, large-scale land concession) (Suhardiman et al., 2022; Suhardiman and Scurrah, 2021; Rasmussen and Lund, 2018; Laungaramsri, 2012; Glassman, 2006). States have historically employed protected areas to assert control over indigenous peoples' territories, thereby weakening their governing capacity and limiting access to resources. As a response to encroachment by various forms of state territorialisation, indigenous peoples globally are establishing their own protected areas to safeguard ancestral lands and affirm their self-determination (Bond and Dorsey, 2011; Dorsey, 2007; Alcorn and Royo, 1999). This trend is exemplified by indigenous environmental governance efforts in the Salween Peace Park (SPP) within Kawthoolei, an autonomous region of the Karen in Myanmar. This chapter looks at how various forms of knowledge and institutional arrangements are shaped by, as well as embedded within, rotational farming systems in upland Karen communities in Mutraw District, Salween Peace Park, where communities farm amidst violent armed conflict and political oppression from the Burmese Army (Boutry et al., 2017; Suhardiman et al., 2017; Buchanan et al., 2013; Callahan, 2003). This chapter builds on existing scholarship on Kaw systems and focuses on how the cultural norms relating to rotational farming practices are embedded within *Kaw,* as one of the key foundations for Karen people's survival, cultural preservation, political self-determination, and environmental governance (Kyed, 2020).

The *Kaw* system affirms Karen communities' access to their ancestral lands. Unlike individual land titles and ownership, the *Kaw* governance system does not stand in isolation from wider natural resource governance. Rather, it integrates and maintains the related ecosystem, reflecting the way Karen indigenous communities relate to their environment. The *Kaw* system can be understood in multiple ways; as a management and governing system, an institutional unit, a social framework,

and/or as spiritual and physical territory, depending on context. It is both a physical area and a social institution for land and natural resource governance. It is a complex communal arrangement that integrates indigenous ecological knowledge, protected wildlife areas, rotational farming fields, and peaceful conflict resolution mechanisms.

Stated more concretely, a community's *Kaw* territory comprises the lands, water, and other natural resources within specific ancestral domains. Perceived and conceptualised as 'territories of life', a *Kaw* territory may contain several different types of forest and land uses. Organisationally, *Kaw* units are connected to each other, which, combined, belong to a specific *Kaw* community. While each *Kaw* is unique, informed by its own specific context and history, they do not function in isolation from one another. It is not uncommon to find different groups of local communities belonging to multiple *Kaw* working together and adapting rules, belief systems, conservation, and natural resource practices. As a spiritual territory as much as a geographical space, the *Kaw* serves as a repository of Karen's indigenous peoples' belief systems and reflects their cultural and political identity.

The chapter shows the centrality of *Kaw* governing systems in allowing local communities to shape their territories of life as an integral part of environmental governance (Beunen et al., 2020; de Castro et al., 2016; Boelens, 2015), within and beyond state spaces (Allen, 1999; Brenner, 1999; Massey, 1999). Building on the concept of environmentalism of the poor (Martinez-Alier, 2002), we argue that the rotational farming system is foundational for Karen community life philosophy and their cultural continuum, as well as informing their political aspirations. Following the Burmese Army's political oppression, Karen communities struggle to preserve and reproduce their place-based knowledge systems, cultural ceremonies, and rituals. While communities were forced to abandon their cultural performances and rituals due to military oppression, they continued to practice rotational farming for their survival. Here, rotational farming serves not only as a livelihood 'strategy', but also as a cultural bridge that connects past knowledge embedded in cultural norms and values encoded in ceremonies and rituals with present challenges such as displacement due to violent armed conflict and climate change.

The authors of this chapter conducted in-depth case study research (Yin, 1994) in Kawthoolei, Karen State, Myanmar in January and February 2024. Our research focused on local communities in the Salween Peace Park, Mutraw District, an area that the Karen National Union (KNU) controls. The findings of this research are therefore limited to the SPP and should not be extended to Karen areas controlled by the central Myanmar state or mixed control areas (Woods, 2011). This research looks at people in the upland areas of Mutraw and how they have practiced their rotational farming, the ceremonies and rituals related to this practice, and how these, in turn, related to water, land, and forest conservation, both in the past and

at present. To understand how local communities applied their place-based knowledge systems in the context of rotational farming in the past, we conducted a series of in-depth interviews with village elders, while applying oral history methods such as poems, folktales, and storytelling. To understand local communities' strategies to cope with present challenges, we also conducted a series of focus group discussions with village elders, youth groups, women groups, and the Salween Peace Park committee members.

From environmentalism of the poor to shaping territories of life

What does environmental governance entail in relation to people's livelihoods and how are these relations embedded in wider socio-economic, cultural, and political landscapes? These questions bring us to Martinez-Alier's groundbreaking concept of environmentalism of the poor developed in 2002 and revisited twelve years later (Anguelovski and Martinez-Alier, 2014; Martinez-Alier, 2002). The environmentalism of the poor is distinct from the so-called 'cult of wilderness' or the love of pristine nature and the 'gospel of eco-efficiency' as socio-economic and technical prescriptions on how to use nature wisely and sustainably, through its emphasis on people and communities who have direct interest in the environment they live in, sometimes for generations.

At present, the environmentalism of the poor often focuses on the conflicts that arise between communities protecting their land and natural resources, and the aims and interests of corporations and developmentalist states that seek to extract such resources, often at the expense of the poor and most marginalised (Martinez-Alier et al., 2014; Sikor and Newell, 2014). The same applies to international conservation organisations' interest in establishing protected areas and national parks in areas where local communities and indigenous people have resided for generations (Dowie, 2009; Sodikoff, 2007). These struggles for justice position the environment within a broader context of socio-economic and political landscapes. In this way, they address a bigger issue surrounding rights-based natural resource governance materialised in environmental justice movements that focus on political rights and cultural preservation (Escobar, 2008). Such movements view people's livelihoods, culture and identity as integral to environmental governance. As stated in Anguelovski and Martinez-Alier (2014: 168): "Today, environmental movements assert common values related to place, identity, and culture."

In the case of the Salween Peace Park, Karen leaders had long aspired to create a Karen-managed protected area in Mutraw District. However, it was not until the preliminary ceasefire in 2012 provided a period of relative stability that the residents of Mutraw could start bringing this vision to life. The establishment of the Salween

Peace Park is recent (2018) but it stands on the foundation of years of community conservation work. This work included strengthening community forests, designating wildlife sanctuaries, and documenting Karen customary *Kaw* territories, all of which are recognised under KNU policy. The SPP embodies a Karen approach to peace, environmental governance, and self-determination. This chapter presents place-based knowledge, culture, and agency as key to understanding grassroots forces shaping Karen's indigenous approach to environmental governance within the SPP. Earlier research in for example India and Latin America has shown how poor and marginalised communities manage the environment sustainably because they rely directly on the land and its natural resources (Davey, 2009; Guha, 2000). Our case study of the SPP illustrates how environmental justice movements are embedded in Karen communities' ability to defend their right to place through the shaping of territories of life. In the context of the Salween Peace Park, territories of life refer to communities' access to their ancestral lands, both agricultural lands in the context of rotational farming as well as sacred and protected forests and watersheds. Here, place-based knowledge, culture, and political agency serve as key building blocks in Karen's indigenous approach to environmental governance. It shows how Karen communities' knowledge systems are embedded in Karen society's cultural ceremonies and rituals, contextualised in rotational farming practices. Similarly, it shows how political agency manifested in the formation of the Salween Peace Park is still rooted in Karen communities' customary rights systems (*Kaw*), practiced widely in the SPP (with varying levels of intactness) today. The *Kaw* system integrates and synergises environment-livelihood and human-nature relations. It does not view such relations as distinct or that they must be brought together in such a way to forge win-win outcomes. On the contrary, the *Kaw* system views environment, cultural continuum including spiritual practices, and people's livelihoods as intertwined and integrally connected. This integration is most apparent in rotational farming practices, rooted in a place-based knowledge system embedded in cultural ceremonies, rituals that perceive and position human-nature-spiritual relations as intertwined. Here, rotational farming practices go hand in hand with forest and wildlife protection. Environmental governance becomes a holistic, multidirectional polycentric approach that integrates and connects rather than isolates and divides. In the context of the *Kaw* system, environmental justice movements demand not only recognition and participation of local communities in decision making processes in environmental governance (Schlosberg, 2007), but also promote people's rights to place and territory as an integral part of their life.

The chapter contributes to current research and discourse on environmental governance in two ways. First, it illustrates how place-based knowledge systems embedded in inter-generational understanding embedded in cultural practices, and political agency intersect as praxis for holistic and locally nested environmental

governance. It draws on the *Kaw* system of environmental governance as a key institutional foundation, based on Karen knowledge and experience. The chapter demonstrates how oral traditions like poems, folktales and storytelling serve as cultural and knowledge containers to disseminate and transfer place-based knowledge and cultural norms and values across generations and geographies.

Second, it shows the importance of upland rotational farming practices as an integral part of environmental governance. Rotational farming practices play a crucial role in preserving cultural norms and values and place-based knowledge systems. The chapter highlights how these farming practices are central to the preservation and reproduction of the Karen's life philosophy of Ma Doh Ma Kha, or reciprocity. By linking the *Kaw* system closely with rotational farming, the chapter underscores the integrated nature of environmental governance among the Karen, where agricultural practices are intertwined with cultural and ecological stewardship.

In section 3, we organise our empirical research findings while focusing on the *Kaw* system as respectively a governing system, knowledge system, and cultural arena. In sections 4 and 5, we show how the Karen's life philosophy of *madha makha* has shaped the establishment of the Salween Peace Park as a response to, and mode of resistance against, state territorialisation and political oppression. Throughout these sections, rotational farming serves as a thread that connects the indigenous knowledge system, cultural practices, and political agency, drawing on oral histories and key informant interviews. We asked key stakeholders to describe the *Kaw* based on their knowledge, experience, and explain how it functioned now and in the past. Despite the Burmese Army's military offensive that started in 1975 with its Four Cuts Strategy, and continues today (Falise, 2010; Duffield, 2008; Delang 2000; Smith, 1999), a few *Kaw* located in very remote areas unreachable by the Burmese military remain intact. Notwithstanding its survival in these areas, the *Kaw* system has come under pressure as a result of the Burmese Army's offensive. We end the chapter with a discussion of the Salween Peace Park, and how this has contributed to local communities' ability to reclaim their *Kaw*.

Kaw governing system: A Karen indigenous approach to environmental governance

This section illustrates and analyses the close connections between villagers and their lands and how such connections are rooted in their culture and historical origins. Land connects people with their cultural roots, hence the notion of ancestral lands in Karen communities' vocabulary. Land serves as a medium that integrates people livelihoods within the context of rotational farming with the shaping of

their cultural norms and values, embedded in the *Kaw* governing systems. *Kaw* is a governing system, an institution, a cultural arena, but most importantly an embodiment of Karen communities' knowledge system that has evolved and been forced to evolve amidst displacement and political oppression as well as in relation to climate change. We illustrate how the *Kaw* governing system serves as one of the key foundations of Karen's indigenous approach to environmental governance, while referring to its: (1) polycentric decision-making structure and processes; (2) ability to integrate human-non-human-environment relations; and (3) embeddedness in cultural performances, ceremonies, and rituals.

Kaw as a governance system: Polycentric decision-making structure and processes

Geographically, a *Kaw* comprises a village or multiple villages belonging to the same line of kinship. In upland areas, most villagers will practice rotational farming *Kaw* within their *Kaw* boundaries. Institutionally, the *Kaw* is led by a head (*Kaw Ko*) and vice head (*Kaw Kha*). Both are responsible for managing villagers within the *Kaw*, covering issues ranging from rotational farming practices, wildlife hunting, youth engagement, village defence, to arranging weddings, funerals, and resolving conflicts on domestic affairs. Organisationally, each *Kaw* comprises people with various roles such as a council of elders, manager of the hunt, youth leader, defence group, judges, and arbitrators as well as groups of herbalists, seers (shamans), and craftsmen and women. Apart from the positions of head and vice head, which are inherited from father to son or mother to daughter, *Kaw* organisational structure is centred on a division of roles and responsibilities, taken, and carried out by villagers with their different expertise and abilities. Here, the *Kaw* organisational structure and decision-making processes are in line with polycentric governing structure and approaches. Leadership roles within *Kaw* are nested and based on circular multiple lines of communication instead of being centralised or directed following hierarchical relations. Figure 11.1 provides an overview of the polycentric nature of the *Kaw* governing system.

Kaw leaders practice environmental governance indirectly by organising villagers' social and ritual activities, which subsequently mirror the seasonal agricultural cycle. The polycentric characteristics of the *Kaw* governance system build on the egalitarian nature of Karen communities' livelihood strategies, contextualised in their rotational farming practices. In the context of rotational farming, the *Kaw* leader has equal status with all other villagers because villagers conduct rotational farming activities collectively by supporting each other (see section 4 for more elaborate explanation and analysis). Rotational farming enables villagers to communicate with the *Kaw* leader as equals and creates access to decision-making processes to all villagers as they can always approach the *Kaw* leader when needed.

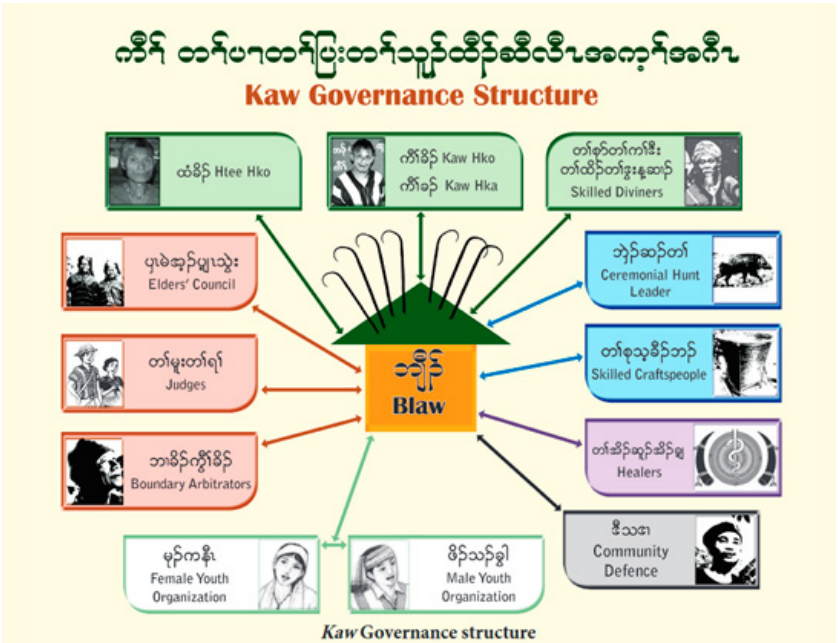

Figure 11.1: Kaw governing system. Source: Authors' compilation

It also shows the nested and interconnectedness between *Kaw* governing structure and villagers' day-to-day life activities. Within the *Kaw* structure, a leader is part of the villagers' life, as contextualised in rotational farming activities.

This polycentric decision-making structure and approach is most apparent from the tube-roots analogy shared by one of the village elders we interviewed. Referring to the parts of the tube roots visible on the ground and those hidden underground, he said:

> On the top, the tube root is small but at the bottom [hidden underground] it is big. The first represents the head and vice head of the Kaw. The latter represents the many areas and aspects the Kaw is about, both organisationally and culturally, and the many people working together to make things work. True leadership is about connecting to the people and the wider society, even when the latter is not always feasible organisationally. (Interview, January 2023).

The positioning of the *Blaw* (long house) as a central physical embodiment of *Kaw* organisational structure also reveals the polycentric element in *Kaw* decision making. Traditionally, each *Kaw* has a *Blaw* which can be used for various purposes.

Unlike in modern institutions where each organisational unit has its own physical space to gather, meet, and discuss, in *Kaw* structure, all organisational units (e.g., youth group, herbalists group, council of elders, judges and arbitrators, the *Kaw* leader and vice leader) meet in their *Blaw*. Here, the *Blaw* becomes a physical and spiritual (in the case of wedding ceremonies and funeral) space and arena for decision-making (in the case of council of elders), knowledge (re)production (school and training centre), and cultural practices and manifestations (guests house). The *Blaw* integrates all organisational units within the *Kaw* governing structure, but it does not force or oblige such integration, but rather in line with the needs of each organisational unit and the needs of the community at any given time. Similarly, the centrality of *Blaw* does not imply one organisational unit (manager of the hunt) to be more important than others (youth group or council of elders) as all have access to the *Blaw* for their respective purposes. In this way, the *Blaw* serves as power equalizer within the *Kaw* governing structure. The *Kaw* leader and vice leader are officially and culturally in charge of the overall management of the *Kaw*, but the positioning of the *Blaw* as the central meeting place transforms the governing system from hierarchical to polycentric. The *Blaw*'s polycentric decision-making element is also in line with its implied unifying role within the *Kaw* governing structure.

Kaw as knowledge system: Integrating human-nature relations in the context of rotational farming

Karen communities' knowledge systems are intertwined in rituals, cultural practices including through oral traditions in poems, folktales, and storytelling rooted in the close interconnections between human, non-human, and environment relations. In this sub-section, we classify the knowledge systems into three distinct categories: (1) place-based knowledge related to natural indicators; (2) the role of the seer as the physical, cultural, and spiritual embodiment of the knowledge system; and (3) the role of oral traditions incorporated in poems, folktales, and storytelling as knowledge container and medium for inter-generational knowledge transfer.

Throughout the rotational farming cycle, seasonal blooming of flowers and other plants serve as natural indicators to determine what activities need to be done to ensure a good rice harvest. For example, to know whether the soil has regenerated and is ready to be cultivated again, villagers will look at natural indicators such as the presence of blooming flowers, specific plant species (e.g., ginger and galangals, spike mosses) and other tree species. When climate change shifted the timing of the blooming of certain flowers and plants, the rotational farming planting schedule

automatically adjusted to this shift. This shows how these natural indicators enable local communities to adapt, without having to change their existing knowledge systems.

In the context of a rapidly changing climate, local communities read the signs from flowers, insects, and other animals that indicate the arrival of floods, droughts, storms, and pest outbreaks. For example, if a specific bamboo species blooms, this means that people must prepare for the coming of floods and associated landslides. If red ants' nests are built higher on the tree branches, this means that floods might come. If red ants' nests are built lower, this means that there will be strong winds, but no floods. Other animals and insects also indicate pest outbreaks, and farmers store food in anticipation. Communities do not rely on single species as indicators but employ multiple indicators often context specific. In one specific locality it is an insect or a tree, in another a particular moss or a mark left by an insect on the rock. Villagers share this knowledge. Travellers also play an important role in spreading and connecting the different information and indicators between *Kaw*. A key element in the knowledge system is Karen communities' ability to read these natural signs and indicators. Communities become, in effect, an integral part of the environment and natural world.

The seer, or local shaman resembles an embodiment of culturally and place-based knowledge that only s/he has access to and understands. A seer determines whether the selected plot for rotational farming is suitable and will bring good rice production. S/he does this by tasting a sample of soil brought back by villagers. If the seer deems the land suitable, villagers proceed with clearing the land and other preparations. If not, then another plot is sought. The seer marks the start of the planting seasons with ritual offerings. Here, the seer's knowledge is culturally represented and integrated through the offerings and translated to villagers' rotational farming practices.

Culturally, Karen communities perceive the seer as a knowledgeable person who can foresee future events. The seer can predict but not change the predicted outcome. This highlights not only how knowledge (to foresee the future) is hidden beneath the symbolic cultural and ritual performance, but also the role of the seer as the guardian of such knowledge. The seer is not just a knowledgeable person, but also a knowledge container who forms an integral part of the knowledge system rooted in the cultural and ritual performance of Karen communities.

Sometimes, the seer approves the sample of soil but if farmers see animals 'committing suicide' in the area surrounding the plots, they will not select the plot. For example, hornbills and slow loris can 'commit suicide' by respectively biting their tongues and hanging themselves in tree branches. Such animal behaviour means a poor harvest, even the loss of a family member. Villagers perceive the selected plot not only as a source of livelihood, but also as a key element that

creates and maintains harmony in human and non-human relations, part of the bigger microcosmos of living things.

Oral traditions incorporated in poems, folktales, and storytelling serve as containers to disseminate and transfer relevant knowledge. For example, old poems and oral traditions mention various indicators for good plots for rotational farming, the so-called 'letomo', such as two pioneer plant species: *p'da* (*Macaranga denticulatta*) and *p'daw* (*Trema orientale*). *P'da* grows quickly and covers the soil. *P'da* grows quickly and covers the soil. *P'daw* emerges later but becomes a bigger and stronger plant, benefitting the soil's ability to regenerate. These poems record knowledge and help it to be passed through generations. While rotational farming knowledge is also passed from parents to their children through farming together, the incorporation of this knowledge in the poems reveals the role of the latter as a cultural container of the knowledge system. For outsiders, this might seem scattered across poems, rituals, and cultural practices. For Karen communities, these farming practices, ritual practices, and knowledge containers are of a piece. The poems provide a guide for rotational farming. Ridges are to be avoided because these are corridors for the spirits to pass. Wetlands should be left uncleared as these are areas where the spirit of water (*nathee*) dwells. Such advice resonates with scientific explanations. Clearing the plot for rotational farming on ridges is physically hard and the burning of the land difficult to control. Burning in the vicinity of water sources will pollute the water. The knowledge contained in Hta is maintained through participating in the taboos stipulated in the Hta, which are typically recited at significant events and ceremonies. Therefore, the practices are carried out even if people do not know all the knowledge within the Hta.

Kaw as a cultural arena: Ceremonies, rituals, and oral traditions

Throughout the different stages in rotational farming practices, villagers hold a series of cultural ceremonies and rituals to seek protection and show their gratitude to the spirits of land, water, and rice plants. The *Thet Ku* ritual is usually held in June/July by the *Kaw* leader and vice leader to seek the blessing of land and water gods to protect villagers' rice cultivation from possible harms (e.g., droughts, pest outbreak, floods) and ensure a good harvest. In the *Thet Ku* ritual, human, soil/land and rice production are positioned as one interconnected holistic entity. The boundary between human and nature becomes blurred, even disappears, and the close interlinkages show how one cannot exist without the other.

Another important ceremony held in conjunction with *Thet Ku* is *Hto Bee Gha*, or the ritual to pay respect to the rice spirits. *Hto Bee Gha* takes the form of the Asian fairy bluebird, a fruit eating migratory bird which arrives in the area in May, when villagers start rice planting. The bird departs in October, after the harvest. Villagers

held ceremonies for *Hto Bee Gha* twice, prior to and after the harvest. With the first ceremony, villagers invite *Hto Bee Gha* to bless and guard their rice cultivation. The ceremony is led by the local seer. In general, birds are often considered as pests that eat and destroy rice plants. Karen communities selected the Asian fairy bluebird as representative of *Hto Bee Gha* because of the bird's biological characteristics and its seasonal migratory nature that coincides with their rice planting cycle. This reveals how Karen communities' knowledge system combines and makes use of biological/ecological knowledge and rituals embedded in oral traditions (e.g., story telling).

After the harvest, villagers store their rice in the rice barn. They also build the house for *Hto Bee Gha* underneath the rice barn, equipped with a stair. Karen communities' knowledge systems are built on empathy with other animals and living beings, perceiving the *Hto Bee Gha* as human too, in the way they respond and behave. *Hto Bee Gha* could fly to enter the house but here the bird behaves like a human. Villagers cook the first meal (rice, yam, taro) from the harvest and offer it to the *Hto Bee Gha*. Later, they open one of the bamboo roofs of their rice barn, to let *Hto Bee Gha* leave. They wish the bird goodbye and tell her to look for a black tree stump next cultivation year so that it can return to their rice fields. Both the *Kaw* leader and seer play an important role in leading these ceremonies and rituals. They bind villagers as a collective society practicing rotational farming together, helping to maintain biodiversity and protecting the land.

The *Kaw* system as the key foundation for collective action: contextualising reciprocity in rotational farming

Central to rotational farming practices within the *Kaw* governing system is the Karen philosophy of *madha makha* or 'I help you and you help me', which serves as the cultural foundation for reciprocity. Villagers practice rotational farming collectively, relying on one another. For example, all villagers within the same village or *Kaw* system will help villager 1 with clearing the land and then they move to help villager 2, and so on. They divide themselves into work groups and divide tasks accordingly. Group composition, however, is not fixed but changes depending on plot location and condition. Villagers also work together in constructing the fire breaks in preparation for burning their fields, all fine-tuned with the respective group's planting schedules. The first group to start planting will also commence land preparation, fire break construction, and burning first, with support from other groups. The demand of rotational farming requires such group labour and the reciprocal relations that arise, communicating and coordinating within and between groups to ensure work is equitable and efficient.

The centrality of rotational farming as a key foundation for collective action is also apparent from oral traditions incorporated in old poems and storytelling. According to old poems, women and men would walk happily together while searching for suitable plots for their next rice cultivation. They wore nice clothes and their traditional necklaces (*pebi* and *petho*) which are considered valuable accessories. They also represent men's and women's love for each other. It describes the activity to select a plot for rotational farming as very exciting and happy. Here, rotational farming is not at all pictured as something that needs to be eradicated because it is unproductive, or that villagers are marginalised in rotational farming because they are poor, while also keeping them poor. On the contrary, rotational farming is a key foundation for Karen communities' cultural practices, its societal value reflected in the wearing of beautiful clothes and treasured necklaces. The poem serves as a tool to transmit this message across generations. When villagers do rotational farming, they are neighbours: "This is my land and that is your land. Sometimes your tree fell into my land, and my tree fell into your land. Today I come to help you with clearing out of your field. Tomorrow, you help me with clearing out of my field. Our lands are related" (villager reciting the poem about rotational farming, January 2024).

Sometimes, villagers find a good plot of land that is too big for the family to manage. The villager then invites neighbours to join and form a group to cultivate the land together. Each farmer in this group has to bring a soil sample to the seer for approval. If one of the farmers in the group does not get approval, the whole group has to search for new plots of land and start the process anew. This is because mixing the burning between ready-to-be-cultivated plots and plots that still need to regenerate is not advisable as the burning mixes soil nutrients, resulting in less soil fertility for other plots. This brings to light how the selection of plots for rotational farming is applied with long term productivity in mind. It also highlights the collective foundation ingrained in rotational farming systems. Farmers conduct rotational farming in a group, within their village and *Kaw*. Here, rotational farming is more than just farmers' strategy to secure food, but a cultural foundation that represents and sustains the Karen's cultural norms and values.

The verse on rotational farming also speaks about *luko* or the drying period for trees and plants after cutting. It tells of someone who is lazy and does not pay attention to the drying period coming. It is the time for drying, but if a farmer is still cutting trees and branches, they will be late for burning. With the rainy season approaching, this is a problem for all. Unlike the earlier verses which provide information about what to do, this verse urges communities to pay attention to collective timeliness which might otherwise affect the entire rotational farming schedule. Such poems convey messages for multiple different purposes, sharing information,

giving warnings, and providing guidance. *Chicha* is the ceremony for harvesting time. Villagers use animal horn trumpets to call everyone to come and help with harvesting, one rice plot after another, while changing the composition of people who will work on these plots daily. In the past, this was the time of the year when young men and women courted. Young men cut the rice plants and young women bundled and tied them. They worked together in a pair and used the opportunity to get to know each other. *Chicha* connected villagers far and near, a venue for informal network building among villagers within and across the *Kaw*. In the next section, we discuss how the *Kaw* was and is under attack by the Burmese Army's military offensives and how Karen communities have resisted this oppression, including through the recent establishment of the Salween Peace Park.

Current state of the *Kaw* systems: resilience emerging from political oppression

Displacement, Kaw disappearance, and erosion of Karen indigenous culture and identity

The first attempt by the (then) Burmese military to attack the *Kaw* dates from 1975 when the Burmese Army implemented its Four Cuts strategy. They attacked villagers, burned their villages, forcing inhabitants to either flee the area or take refuge in nearby forests (Jolliffe, 2013; South, 2011; Grundy-Warr and Yin, 2002). Almost all of our focus group discussants in Kawthoolei had lost their *Kaw* through displacement from the mid-1970s to the early 2000s. Facing an existential crisis, many villagers converted to Christianity. Once villagers became Christian, they were not allowed to perform cultural ceremonies and rituals. The seer and *Kaw* leaders lost their roles as spiritual and cultural leaders. When the *Kaw* is lost, the *Blaw* is also lost. Local communities not only disintegrated in cultural terms, they also lost access to land to ensure the (re)production of their place-based knowledge. Knowledge (re)production processes were sucked into a vacuum, where the knowledge remained intact but was disembodied from the context that gave it meaning, leaving it at best dormant, and at worst extinguished.

When villagers were displaced and forced to join other *Kaw* to continue their rotational farming practices, displaced communities lost their decision-making authority in the host communities' *Kaw*. They lost their rights to conduct rituals and connections with their ancestral spirits. When animists lost their *Kaw*, they could not practice the rituals for rotational farming anymore. Hence, more and more Karen transitioned to become Christian because they lost their cultural foundations. Once Karen communities were displaced, disconnected from their *Kaw*, the knowledge system could not be preserved or reproduced because its ties

with the cultural and belief systems were severed. Not a single knowledge system can be preserved effectively without the application of the relevant knowledge. In the case of Karen communities, however, non-application almost automatically means disappearance because much of the relevant knowledge is not written or documented but passed through generations through oral traditions and rotational farming practices. The poems do not exist in written form but in memories of people who learned them from their parents and grandparents. Here, rotational farming becomes the context and arena to connect what remains from the existing knowledge system with cultural and belief systems. Rotational farming becomes one of the key foundations for the preservation and recognition of Karen communities' knowledge, cultural and belief systems. But to maintain these cultural and belief systems, communities must reclaim their *Kaw*.

Following the loss of the *Kaw*, the seer and village and *Kaw* spiritual leaders can no longer perform the rituals and offerings. This is because they are no longer connected to the spirits of the land and water of their ancestors rooted in the *Kaw*. This illustrates how the loss of the *Kaw* leads to a systematic loss of knowledge, cultural and belief systems. *Kaw* spiritual leaders may still practice their knowledge of rotational farming and other matters, but they no longer have the authority and responsibility to perform the rituals at village level. Trying to respond to this systematic loss, villagers ask Christian priests to bless their rotational farming activities.

Rotational farming is one of the few knowledge systems that remains, largely intact, following the breakdown of the *Kaw* governing structure. Rotational farming becomes one of the key foundations that preserves Karen communities' knowledge systems as well as a potential entry point to revitalise Karen communities' cultural and belief systems. But the loss of spiritual authority and the ability to perform rituals and ceremonies at village level breaks down the scope for collective action. With the loss of *Kaw*, all the spiritual aspects to protect forest and land are also lost. When the spiritual part is lost, people do not have to follow customary rules. One village elder said:

> As a former seer, I have a lot of knowledge about herbs to help with childbirth. After I converted to Christianity, I cannot apply this knowledge openly and directly because the Christian belief prohibits this. However, if the situation is critical, I will do it regardless of everything, because the most important thing to do is to save life. No religion will prohibit someone saving life (Interview, January 2024).

This shows how political oppression and displacement have broken the seer's role and standing in the local community's knowledge system. The seer's ability to rise above it in this context shows hope for possible preservation of the knowledge

system, working in the gaps that may emerge between different knowledge systems at times of crisis.

To become a seer, one must memorise the knowledge of one's teacher. As regards gaining a reputation as a seer, this only accrues over time as villagers come to respect a seer's advice. As a seer, one must follow strict rules and observe taboos to sustain one's power. Everyone can be a seer, but only a few come to be regarded as true seers with real power recognised by others. This is not based on kinship or on recognition through any organisational structure or institution. This also explains why seers' knowledge is at risk under conditions of political oppression – they are not protected by any organisation or institution, or even by the *Kaw*. In such conditions, the independence and autonomous characteristics of the knowledge system do not fare well. Both the Burmese Army and Christian priests have the effect, in different ways, of marginalising the Karen communities' belief systems. This, in turn, marginalises, erodes and undermines the existing knowledge systems as practices become dislocated from the cultural and belief systems of the *Kaw* system. Knowledge, culture and belief systems support each other through the praxis of rotational farming. When this integration is broken, while knowledge may be maintained its meaning is lost. At present, the knowledge systems are scattered, with the loss of *Kaw* and other cultural practices. Political oppression and armed conflict have forced knowledge systems to evolve to focus on survival. In the absence of governing structures and rooted cultural connections, rotational farming becomes focused on the need to survive at all costs.

Salween Peace Park: grassroots perspectives shaping territories of life

The SPP is a manifestation and formalisation of a Karen indigenous-led landscape scale approach to water, land, and environmental governance and cultural preservation. The SPP based its work on the recognition of *Kaw* territories. In fact, the SPP Charter clearly empowers *kaw* and village-based governance:

> Each village, group of villages, Kaw or administrative unit, as freely determined by the members of those communities, shall be responsible for establishing and implementing rules and regulations, which include customary and/or community codes of conduct, to govern and manage the use of natural resources in their bounded area of ownership or socially legitimate tenure. (Salween Peace Park Steering Committee, 2018, article 52).

Central to the work is the role of local communities, KNU, and CSOs in demarcating and registering the *Kaw*, while revitalising community-led *Kaw* governance (KESAN, 2019). The establishment of the SPP followed a meeting of 300 local Karen leaders in May 2016. Key to gaining community support for the SPP was the message

that the park's main aim was to recognise *Kaw* customary environmental governance. Within the SPP, with support from civil society organisations like KESAN, and also from KNU authorities, local communities have been mapping and registering their customary land boundaries, thus presenting their *Kaw* territories as formally registered land. Such grassroots counter mapping constitutes the foundation for environmental governance in the Salween Peace Park, an assertion of Karen communities' inherent rights and responsibilities that flow from their relationship with their land and the more-than-human and ancestral spirits of the land (Paul et al., 2021). The SPP is driven by three main principles: (1) peace and self-determination; (2) environmental integrity; and (3) cultural survival. In line with these principles, the SPP incorporates grassroots forces embedded in their ancestral land territories and *Kaw* customary governing systems as an integral part of its organisational structure. Following the establishment of the Salween Peace Park (SPP), rotational farming has come to serve as a key foundation for achieving Karen's political aspiration for self-determination (Bright et al., forthcoming).

Located in an area where armed conflict continues, the park is meant to provide space for sustainable rural livelihoods, environmental protection, wildlife conservation, and the needed resources for post-conflict recovery. The formation of the SPP reveals the third element in the praxis: political agency, in the Karen's indigenous approach to environmental governance.

Institutionally, the park is managed by a General Assembly as its governing body, within which community representatives hold the majority and are elected every three years through popular vote. Through the General Assembly, the SPP incorporates more than 100 *Kaw* systems within its borders to holistically govern the area and ensure sustainable livelihoods and environmental conservation. Besides local community representation, civil society organisations and KNU representatives are also part of the Assembly. This hybrid governance structure and bottom-up approach allows larger landscape scale decisions taken by the General Assembly to remain flexible and adaptable while ensuring that grassroots aims and techniques are not lost in macro level planning. It also ensures local communities' ownership of the General Assembly's decision-making, leading to effective implementation at ground level by the SPP's various *Kaw* communities. Furthermore, this approach allows the SPP to further build upon local community sustainable water and land governance.

One village elder explained:

> SPP progresses our culture and the wider environment. It is a form of recognition of Karen culture and its displaced people. Before SPP, local communities felt their cultural values were fading because Kaw leaders were displaced and sometimes migrated to a third country. SPP made a big change. We now start revitalising our culture and have received recognition from the international communities (interview, January 2024).

Before SPP, local communities often felt their culture was useless because of the discrimination they encountered. As one village elder said: "When you are displaced you must go to another Kaw and your spiritual leaders cannot practice the ritual ceremonies anymore. When you cannot practice your ceremonies, your cultural values and norms disintegrate, and we lose our strength as community" (interview, January 2024). This shows how the SPP has contributed not only to improving local communities' livelihoods but also reviving their cultural values and restoring their dignity.

Knowledge transfer to younger generations is key for the preservation of *Kaw* and Karen cultures. Driven by security reasons due to decades of armed conflict, many youths have migrated elsewhere and no longer engage in farming activities. Hence, they do not have the knowledge of *Kaw* like other youth who stayed at the SPP. While those who live in SPP also send their children to border areas for safety and to study, local communities who stay in SPP have a closer connection with nature and environment than those who have migrated. This illustrates how political oppression and displacement resulted not only in cultural disintegration, but also disruption in knowledge (re)production processes. As part of the SPP program, local communities have developed new school curricula to revitalise Karen culture (e.g., folktales, storytelling, artefacts discussions). This curriculum is open to everyone who wants to learn about it. Based on this initiative, Karen communities envision the idea of revitalising their *Blaw*.

Conclusion

Environmental governance is intertwined in human-nonhuman-environment relations embedded in cultural identities manifested in ceremonies and rituals, contextualised – in this chapter – in rotational farming practices. Here, rotational farming is more than just an agriculture cycle, but also a life cycle with strong cultural elements embedded in the rituals and belief systems of Karen communities. It serves as an embodiment of Karen communities' knowledge, cultural and belief systems. The knowledge systems embedded in place-based knowledge about soil, plants, animals, topography, and climate (e.g., wind, floods) are translated into spiritual performances (e.g., rituals) and transferred and reproduced through cultural practices.

This knowledge-culture-ritual praxis, contextualised in rotational farming practices, resembles the indigenous conceptualisation of relationality (Gram-Hanssen et al., 2021) centred on the practice of Kaw governing systems within and beyond the context of environmental governance. The *Kaw* system serves as the institutional foundation for Karen communities' knowledge system, cultural

performances, and rituals. Here, *Kaw* leaders together with other units within the *Kaw* organisational structure ensure knowledge (re)production processes through the presentation of the *Kaw* governing system as part of a cultural continuum. Oral traditions like poems, folktales, and storytelling serve as containers to disseminate and transfer knowledge and cultural norms and values across generations and geographies. Linking this with the current debates on decolonisation and indigenous movements (Deranger et al., 2022; Chaudhary et al., 2021; Boelens, 2015; Bond and Dorsey, 2011), our case study reveals how environmental governance is entangled with conflicts, political oppression, and practices of injustices, and at the same time also with local communities' resilience to remake livelihood and preserve their cultural roots and connections.

The formation of the SPP as a response to the Burmese Army's military oppression is a form of political agency in the Karen's approach to environmental governance. Viewing scale as a socio-political construct (Swyngedouw, 2004; 1997; Glassman, 2002; Massey, 2000), it shows how Karen communities, civil society organisations, and other state actors create spaces for decision making, negotiating not only to contest state territorialisation strategies but also to take part in grassroots and global environmental justice movements. The rotational farming system and practices serve as one of the key institutional and cultural foundations for the establishment of the SPP and its organisational functioning. This is most apparent from the centrality of collective action in the rotational farming system. In line with Karen's life philosophy of *madha makha*, rotational farming practices preserve and reproduce the notion of reciprocity as highly recognised cultural norms and values within a village, a *Kaw* governing system, and the SPP as territories of life.

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