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The complex interplay of local communities and global initiatives in Peatland management: An ethnography of frictional environmentality

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ABSTRACT

Peatland restoration has become a central strategy in global climate governance, yet its implementation often generates tension between universal environmental goals and local socio-cultural realities. This study examines the complex interplay between global initiatives and local communities in peatland management in Central Kalimantan, Indonesia, through an ethnographic lens. Drawing on the concept of frictional environmentality, it explores how competing rationalities, power relations, and knowledge systems shape the outcomes of the Kalimantan Forest and Climate Partnership (KFCP), a REDD+ pilot project. Using a multi-actor ethnographic approach that integrates environmental anthropology, political ecology, and Foucauldian governmentality, the research reveals that multiple forms of environmentality sovereign, disciplinary, neoliberal, and truth coexist and collide within the same governance arena. While KFCP embodies neoliberal and technocratic environmentalities emphasizing incentive-based conservation and carbon quantification, local Ngaju Dayak communities operate within truth environmentalities rooted in communal cosmologies and subsistence ethics. The resulting friction produces hybrid forms of environmental governance marked by pragmatic adaptation, selective participation, and the reappropriation of external rules to serve local interests. The study concludes that peatland restoration success depends not on imposing global models but on recognizing and negotiating these frictions as productive spaces for dialogue and hybrid governance. By advancing the concept of frictional environmentality, the paper contributes a nuanced understanding of how environmental subjects are formed, contested, and transformed within multi-scalar conservation regimes. This framework highlights the need for biocultural, participatory, and adaptive approaches that align global climate agendas with local ecological and cultural realities.

KEYWORDS: frictional environmentality, peatland governance, governmentality, local knowledge, REDD+

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1. Introduction

This paper will discuss the frictional intersection of local communities and global initiatives in peatland management. Peatlands, although they cover only about 3% of the Earth's land surface, store about one-third of the world's soil carbon and play an important role in regulating the global climate (Tan et al., 2023). In Southeast Asia, particularly Indonesia, peatlands also support high biodiversity and provide an important source of livelihood for millions of rural people (Toumbourou et al., 2024). However, these ecosystems are increasingly threatened by deforestation, drainage, fires, and large-scale land conversion for agriculture, especially oil palm plantations. In response, global environmental initiatives such as the Paris Agreement, REDD+, and the Ramsar Convention have prioritized peatland conservation and restoration as part of a broader climate mitigation agenda (Mursyid et al., 2025). Nevertheless, translating these global commitments into national and local action remains problematic. Studies of multi-level governance reveal that coordination failures, sectoral rivalries, and power asymmetries often hinder the alignment between global objectives and local realities (Alfajri et al., 2025; Atkinson & Alibašić, 2023; Sanudin et al., 2023).

Although the urgency of peatland restoration is globally recognized, its implementation remains highly contested at the local level. Centralized policies, often shaped by scientific and technocratic rationality, often clash with the complex realities of local communities that have historically managed peatlands through customary systems (Astuti, 2020; O'Riordan et al., 2016). These communities, particularly in Southeast Asia, possess generational expertise, rich ecological knowledge, and context-specific land-use practices such as agroforestry and paludiculture, which reflect deep ecological attunement to peatland dynamics (Utami & Salim, 2021; Zulkarnaini et al., 2023), but their contributions are routinely marginalized in national and international planning (Hardiansyah et al., 2022). The imposition of top-down policies especially those that focus narrowly on carbon sequestration can damage local livelihoods and cultural values (Goldstein, 2015; Yunus et al., 2025). Restoration policies often privilege carbon metrics over social welfare, undermining community livelihoods (Girkin et al., 2023; Kamal et al., 2023). In some cases, economic incentives for conservation tend to flow unevenly, with elite capture and weak benefit-sharing mechanisms limiting local empowerment (Wulandari et al., 2025).

Despite increased attention to the social dimensions of peatland governance, a significant research gap remains in understanding the frictional dynamics between local practices and global environmental mandates. Most of the literature focuses on ecological outcomes or policy design, often ignoring the lived experiences, contestation, and adaptations that occur on the ground (Jalilov et al., 2024). In addition, existing governance models often fail to account for power asymmetries and knowledge hierarchies that shape how restoration efforts unfold in practice (Hein et al., 2018). As a result, many well-intentioned initiatives suffer from limited legitimacy, weak participation, and uneven benefits across stakeholder groups (Alfajri et al., 2025; Padfield et al., 2023).

This study aims to examine the complex interactions between local communities and global environmental initiative agencies in the context of peatland management in Central Kalimantan, using the concept of environmentality as the analytical lens. The implementation of REDD+ as a pilot climate change mitigation project run by the Kalimantan Forest and Climate Partnership (KFCP), involving the local Ngaju Dayak community across several villages, served as the focus of this study. Drawing on the Foucauldian perspective on governmentality (Foucault, 1991) and on environmentality as its application in environmental studies (Agrawal, 2005; Fletcher, 2010), this project's implementation of global environmental governance will ideally shape compliant environmental subjects within local communities. Field findings indicate that the complex interplay between local communities and global environmental governance agencies occurs in 'frictional' (Tsing, 2005) atmosphere. Through an ethnographic approach, this study shows how and why this frictional atmosphere, which leads to ineffective program achievements, occurs in peatland management.

The novelty of this study lies in the synthesis of environmental anthropology, political ecology, and governance theory to propose a more inclusive and adaptive framework for peatland restoration. By explaining why frictional environmentality occurs in the complex interactions between global environmental agencies and local communities, the study moves beyond the framing of local vs. global or traditional vs. scientific binaries. Instead, this study contributes to the development of a potential hybrid, multi-scalar governance model that combines diverse forms of knowledge and participation (Puspitaloka et al., 2020; Wall et al., 2023).

This contribution is crucial in the climate change mitigation and adaptation framework, which is not only ecologically effective but also socially equitable.

In an era when climate change is increasingly apparent due to extensive environmental degradation, including in peatland ecosystems, various mitigation and adaptation strategies are being implemented through global initiatives that involve local communities at the site level. In this context, both global initiatives and local communities play crucial, interconnected roles, but their interaction is often complex and sometimes challenging. Local communities hold essential knowledge and stewardship roles, while global initiatives provide policy frameworks, funding, and technical expertise. However, despite the need for synergy, poor coordination, sectoral egoism, and power struggles between governance levels often hinder collaboration, reducing the effectiveness of global initiatives at the local level. Furthermore, top-down interventions without genuine local involvement can lead to resistance or ineffective outcomes (Lees et al., 2023) . Therefore, local livelihoods and traditional practices need to be integrated with global conservation goals to prevent conflict and promote sustainability. This study aims to understand local-global dynamics through the theoretical frameworks of governance (Foucauldian perspective) and friction (Tsing, 2005).

The idea of environmentality as an approach to environmental governance is rooted in Foucault's thought about governmentality. Foucault conceptualizes governmentality as the historically specific "art of government" through which populations are rendered knowable and manageable via assemblages of knowledge, institutions, and techniques (such as statistics, policing, and security) that shape conduct at a distance (Foucault, 1991). Then, building directly on Foucault, Luke argues that contemporary environmentalism often operates as green governmentality networks of expert knowledges (ecology, resource economics), metrics (carrying capacity, carbon), and managerial techniques that re-code nature and subjects for administrative optimization (Luke, 1999). Earlier, Luke used environmentality to describe how eco-knowledge and geo-power co-produce environmentally responsible subjects while legitimating technocratic management of environments and populations (Luke, 1995). Across both terms, Luke stresses how environmental discourse can naturalize authority, extend managerial control, and reframe citizens as 'environmentalized subjectivity' or eco-managerial subjects.

Environmentality can also be understood as the formation of environmental subjects through everyday government techniques characterized by intimate governance and collectively formed regulatory communities (Agrawal, 2005). Fletcher distinguishes multiple, coexisting "environmentalities" (sovereign, disciplinary, neoliberal, and truth) that variously mobilize law and force, surveillance and norms, markets and incentives, and expert claims to reshape conduct toward conservation (Fletcher, 2010, 2017). This pluralization clarifies why conservation regimes combine fines and patrols with participatory monitoring, payments for ecosystem services, and scientific certification each of which creates distinct subjectivities and power effects. Fletcher enhances understanding of environmentality, which is not always uniform, by emphasizing the diversity of governmental logics operating simultaneously, providing a framework for hybrid, contested conservation arenas. Fletcher (2010) categorizes environmentalities into four distinct forms, namely sovereign, disciplinary, neoliberal, and truth environmentalities. Each category reflects a different rationality and mechanism through which environmental governance operates. Sovereign environmentalities emphasize state authority and coercive regulation, while disciplinary environmentalities seek to shape environmental subjects through moral education and internalized norms. Neoliberal environmentalities employ market-based instruments and external incentive structures, whereas truth environmentalities are grounded in universal claims about nature and ecological preservation rooted in specific cosmologies (see Table 1).

Tabel 1: Fletcher's category of environmentalities

	Sovereign Environmentality	Disciplinary Environmentality	Neoliberal Environmentality	Truth Environmentality
Core governance principle	state authority and enforcement of rules	moral education and internalized norms	external incentive structures	universal truths about nature, life, or spirituality
Mechanism	coercive control	creation of environmental subjects	market logic	deep ecology, indigenous cosmologies
Aim	fortress conservation models	environmental ethics and voluntary stewardship	commodifying nature and aligning with economic growth	preserve nature

Tsing's concept of friction in the dynamics of local-global relations is an important analytical tool used in this study. Friction is widely applied in political ecology, development, and environmental governance to explain why global agendas (e.g., REDD+, biodiversity offsets, CSR) lead to uneven, contested outcomes and how local actors adopt, resist, or reshape these agendas in practice. The encounter between local communities and global environmental initiatives often creates friction: the "awkward, unequal, and unstable qualities of interconnection across difference" (Tsing, 2005). Global projects move not by smooth diffusion but through sticky, situated encounters among actors, knowledges, and materials. In the context of peatland management, this friction manifests as conflicting rationalities: global environmentalism grounded in technocratic, carbon-focused frameworks versus local knowledge systems rooted in lived experience and traditional stewardship. The reviewed literature advances a nuanced understanding of the encounters between local and global actors as sites of both contestation and creativity. Recent literature identifies four primary sources of friction in peatland governance: (1) value and knowledge clashes, (2) legitimacy and trust issues, (3) hybrid governance negotiations, and (4) socio-economic trade-offs (Freeman et al., 2022; Lees et al., 2023; Mishra et al., 2021; O'Riordan et al., 2016)

Classical ethnographic approaches are no longer sufficient for studying current environmental issues, such as climate change mitigation and adaptation, as well as social-environmental conflicts involving diverse actors across different arenas and scales (local, regional, global). A combination of a multi-actor ethnographic approach with political ecology, referred to as "political ecology as ethnography" (Little, 2007), is an alternative ethnographic approach used in this study. The goal of this ethnography is not just to identify "the community," but to map the relationships among heterogeneous social and biophysical actors (such as state agencies, firms, NGOs, scientists, communities, and "natural") across different sites and levels of interaction, demonstrating how power operates through these interactions.

2. Data and methods

This research uses a qualitative design grounded in ethnographic principles (Fetterman, 2010; Spradley, 1980) to capture life experiences, local knowledge systems, and socio-political dynamics that shape peatland and forest governance. An ethnographic approach was chosen to explore how local communities view, negotiate, and respond to external conservation interventions, particularly in contexts where global environmental mandates intersect with traditional land use practices. More specifically, this study used a multi-actor ethnography approach, given that the REDD+ implementation project, the focus of the study, involves many actors, including project staff and facilitators, local community members, NGO activists, and local government officials.

Fieldwork was conducted in seven villages in the peatland area of Kapuas Regency, Central Kalimantan Province, Indonesia. These village communities were part of the Ngaju Dayak ethnic group, which was actively involved in traditional ecological practices and was proximate to the sites targeted by the REDD+ programme run by the Kalimantan Forest and Climate Partnership (KFCP). Data collection relies heavily on participant observations, in-depth interviews, and focused group discussions with diverse stakeholders, including local leaders, youth, women, farmers, project facilitators and staff, local government officials, and NGO activists. The aim was to capture a broad spectrum of perspectives on ecological knowledge, governance structures, and livelihood challenges.

Data analysis was performed using thematic coding guided by frameworks from political ecology and environmentality (Agrawal, 2005; Fletcher, 2010; Tsing, 2005). Key themes were identified through iterative reading and coding of transcripts, field notes, and policy documents. These themes included local perceptions of the REDD+ project implemented in their environment, indigenous governance models, power asymmetries, and adaptive strategies in response to external regulations. Analytical triangulation was achieved by cross-referencing interview data with documentary evidence and academic literature on indigenous knowledge and environmental governance.

This ethnographic methodology enabled a nuanced, ground-up understanding of the tensions and negotiations at the intersection of indigenous worldviews and global environmental governance. Rather than treating local communities as passive recipients of policy and regulations, the approach foregrounds their agency, cultural logics, and resistance strategies, offering critical insights into more inclusive, context-sensitive environmental governance.

3. Results

3.1. KFCP's REDD+ Project: The connection between local communities and global initiatives

Field research was carried out in the peatland area of Kapuas Regency, which in 1995 was opened by the Government of Indonesia (Presidential Decree No. 82 of 1995 concerning the Development of Peatlands for Food Crop Agriculture in Central Kalimantan), covering an area of more than one million hectares, or widely known as the "Million Hectares Peatland Development Project", or what in foreign literature was known as the Mega Rice Project (MRP). This project was carried out in the production forest area, previously controlled by logging companies (HPH), which covers 715,945 ha. The project work began by excavating horizontal and vertical canals (main, primary, secondary, tertiary, and quaternary) totaling 4,618 km in five area blocks. A dry season accompanied by the El Niño climate phenomenon in 1997-1998 caused severe burning in the area, and the project was halted when President Suharto fell from power during the 1998 reform movement. Throughout the early days of the reform until 2010, the area became a frontier subject to extractive exploitation by various parties for plantation, logging, and other economic activities, and experienced repeated fires. The failed project was later cynically dubbed by residents as the "million disaster project", the "land of a million misery", or "planned disaster".

Most of the population inhabiting the area are the Dayak Ngaju people, an indigenous group, and a small number of Banjarese and Javanese migrants. Most of the population is Muslim, while the rest are diverse Christian/Catholic, and Kaharingan beliefs. They live from various uses of peatland areas, such as rotational swidden farming, fishing, hunting, collecting gemor bark and rattan, and logging. The settlements are located on the banks of the Kapuas River, generally at the mouths of the tributaries; their farmland stretches over an area of mineral soil about 2-5 km from the riverbank to the shallow peat area, while extractive activities are generally carried out in deep peat areas. Each family has a mixed livelihood, the intensity of which varies significantly with the seasons.

It is noteworthy that the repeated forest and peatland fires in Indonesia, especially in the dry seasons accompanied by the El Nino phenomenon, for two decades (1990-2000s) have invited widespread concern in the international world due to their adverse impacts: increased greenhouse gas emissions, haze that disrupts transportation (land, sea and air) within the country and neighboring countries, health problems, biodiversity loss, etc. Meanwhile, peatland rehabilitation efforts have only developed since the mid-2000s, whereas previously, there were only incidental fire controls. Considering that some peatland areas in Kapuas are orangutan habitats, BOSF (Borneo Orangutan Survival Foundation) has been involved in the area since 2006 in habitat rehabilitation programs, including fire management activities. In the period 2006-2008, a consortium called Central Kalimantan Peatland Project (CKPP), consisting of six institutions (BOSF, WWF, CARE International, Wetland International, CIMTROP University of Palangkaraya, and the Provincial Government of Central Kalimantan), also carried out projects in the Ex-MRP area, with funding support from the Netherlands Government. Among the several projects carried out by CKPP were the formation of 25 fire brigades (Regu Pemadam Kebakaran), regular satellite monitoring of hotspots for fire mitigation, and the construction of canal blocking for peatland rewetting.

Meanwhile, during 2010-2014, the Kalimantan Forest and Climate Partnership (KFCP) was present in the Ex-MRP area, implementing a carbon-emissions reduction scheme through the pilot demonstration project Reducing Emissions from Deforestation and Forest Degradation (REDD+). The project covers an area of 120,000 hectares of peatland in parts of Blocks A and E. KFCP was formed in collaboration with the governments of Indonesia and Australia through the IAFCP (Indonesia-Australia Forest Carbon Partnership), costing AUD65 million until the end of the project in 2014 (from the total of AUD200 million Australian government commitment). The REDD+ demonstration project was projected as a strategy to address climate change issues after the 2012 Kyoto protocol, with four primary targets: reduced deforestation and peat forest degradation; GHG emission monitoring and estimation programs were established and connected to INCAS; practical and effective incentive payment mechanisms for REDD can be demonstrated; management/technical capabilities and REDD readiness at all levels from provinces to villages. To achieve the first target, three main activities were carried out, namely: (i) rewetting peatland through the construction of canal blocking, (ii) reforestation through re-establishing tree cover in severely damaged peat areas; and (iii) introducing livelihood interventions, by providing incentives that enable local residents to adopt new agricultural techniques that did

not have to use fires on peatlands and did not rely on logging activities.

The REDD+ project involves many stakeholders, including international donors (the Australian and Netherlands governments), the Indonesian government (the Ministry of Forestry and BAPPENAS), local governments (provinces and districts), local communities in the project area, and implementation service providers (research institutions, businesses, and NGOs). KFCP also builds partnerships with institutions such as CARE, BOSF, Deltares, University of Palangkaraya, Remote Sensing Solutions GmbH, and World Agroforestry Centre. KFCP employed dozens of personnel (staff and facilitators), most of whom have backgrounds in conservation NGOs and possess expertise and familiarity with globally recognized scientific jargon and terminology related to environmental issues, conservation, climate change, carbon sinks, carbon incentives, and greenhouse gas emissions. The six fields of field activities carried out include peatland reforestation, canal blocking, hydrological monitoring, fire monitoring, community engagement, and livelihood development. The project's target was to protect 70,000 hectares of peat swamp forest, re-wetting 200,000 hectares of drained peatland, and plant 100 million trees. KFCP builds partnerships with village governments through Village Agreements; it also establishes implementation and supervisory teams in the village with democratically elected personnel, which are projected to be the forerunners of REDD+ institutions in the village after the project ends. Throughout the project, KFCP organizes capacity-building activities for local residents involved in the project through workshops, training, comparative studies, and village meetings.

The implementation of the REDD+ initiative in the Ex-MRP peatland area serves as an arena for local communities, specifically the Ngaju Dayak people, to engage with global agencies represented by KFCP. This encounter exemplifies the interplay between the 'particular' and the 'universal,' as articulated by Tsing (2005), and illustrates a local-global connection. The local community was not new to this connection, as they had previously encountered concepts of global environmental governance through the CKPP project. KFCP formulates innovative concepts, strategies, and frameworks for peatland management, grounded in scientific principles and aimed at mitigating climate change, a global priority. Meanwhile, local communities have relied on their traditional ecological knowledge for generations to live in peatland areas that are being degraded due to repeated fires.

In line with Foucault's governmentality, it is reasonable to anticipate that the REDD+ project will result in "environmentalized subjectivity" (Luke, 1995) among the Ngaju Dayak community, the target group of the new regulatory regime implemented by KFCP, given the asymmetrical and contrasting power relationship. The study's findings indicate that the local communities engaged in the project actively participate in the new peatland management arrangements; yet, they have not fundamentally transformed into compliant environmental subjects. They participate actively and "go hand in hand with the project," but with different goals. The relations formed within the Ngaju Dayak community as project participants were characteristically relevant to what Tsing (2005) called 'friction'. Therefore, peatland governance through the REDD+ scheme run by KFCP has resulted in a cultural phenomenon I named 'frictional environmentality'. The following sections will present a more detailed description of the phenomenon.

3.2. Frictional Environmentality

The main stakeholders of the peat restoration project held in the Ex-MRP peatland area in 2010-2014 were KFCP and local communities in seven villages. In addition, local governments (provinces and districts) play an important role, especially in fire management and the development of alternative livelihoods. In contrast to NGO activists who were members of the KFCP working team, some local NGO activists (Yayasan Petak Danum, Yayasan Tahanjung Tarung, WALHI, and their national networks) also conducted a counter-campaign against the REDD+ project implemented by KFCP.

All those parties carried out the roles and responsibilities of "peatland restoration" in different environmentality nuances. KFCP runs REDD+ projects based on neoliberal environmentalism, with governance through external incentive structures rather than moral or disciplinary control, using market-based mechanisms, and achieves conservation by commodifying nature and aligning it with economic growth. In the context of peatland fire management, the government operates under two categories of environmentality: disciplinary and sovereign. On the one hand, it governs through moral education and internalized norms of environmental responsibility; on the other hand, it also emphasizes state authority and rule enforcement. Conversely, local

NGO activists who oppose REDD+ projects were more likely to echo truth environmentality by prioritizing governance justified by appeals to universal truths about nature, life, and spirituality. They also campaign for nature conservation as an ethical obligation and strengthen indigenous ecological philosophies. Thus, the peatland management in the area involves multiple coexisting environmentalities (Fletcher, 2010).

The diversity of environmentalities in peatland management had placed local communities in a situation Tsing (2005) described as "awkward, unequal, and unstable qualities of interconnection across difference". They seem to have lost their orientation in choosing or following the environmental governance model run by external parties or so-called "extralocal determinants" (Dove, 2011) . They tend to be strategic in their approach, choosing pragmatic ways to achieve more tangible benefits rather than waiting for the assumed unrealistic expectations the project promises. I use the term "frictional environmentality" to describe the cultural phenomenon that emerges from the interaction between local communities and global initiative agencies within the realm of environmental governance, marked by a myopic perspective and pragmatic actions that prioritize easily attainable outcomes and immediate benefits. The following section presents examples of these cultural phenomena.

The prohibition on burning during agricultural land clearing is explicit in many government regulations at the national, provincial, and district levels; these regulations include a ban accompanied by criminal penalties or fines. The enforcement of this regulation is a manifestation of 'sovereign environmentality' that is usually echoed by the government when the dry season arrives. For swidden farmers in the Ex-MRP area, this ban poses a dilemma, as illustrated by the expression of an informant in the village of Mantangai Hulu:

> "Suppose I have a field, I have to burn the field, but because there is a rule prohibiting burning, I am afraid of burning. According to the rules, I had to report to the village government, but I was afraid to report. Those who have fields must report to the village head before burning. I want to report, but I am afraid because of the rule. I'm scared of burning, but I want to have a field. Try to imagine what it will be like. I thought, burn it and run away. If I burn away, people cannot catch me, but the burning is uncontrollable as a result." [Pa Sad]

With the prohibition on burning during land clearing stipulated in Central Kalimantan regional regulations, the government also has an obligation to provide agricultural alternatives to land clearing without burning (Pembukaan Lahan Tanpa Bakar/PLTB). However, in reality, the method was never realized through government programs. Consequently, the regulatory outcome (the ban on burning) was reflected in a figure that was scary for villagers, which made them, on the one hand, afraid of violating the rules, but, on the other hand, actually get around the threat of legal sanctions by committing violations. Conversely, the government, as a regulator, wants citizens to comply with legal norms, yet the government apparatus fails to fulfill its obligation to guide them in doing so. Cases of "burn and run" were a common practice among villagers in the project area, as a manifestation of frictional environmentality.

"We don't break the canal block, we just make the creek": strategizing in the peatland rehabilitation program Canal reclamation was a core activity in the REDD+ project, an effort to re-wetting peatlands damaged by repeated fires. The canals were created in 1996 for the MRP project. However, after the project was halted, locals turned them into a vital transportation route into the peatlands for various extractive economic activities. KFCP mobilized public support to build blocking canals, providing compensation money for owners of tatas (traditional canals) that will be closed. Instead of seeing the canal's closure as part of saving the peat's future, some residents see it as an obstacle to their access to peatlands. There were cases where residents dug small ditches on the construction side of the canal block, so that small boats (Ces or Kelotok) could still cross. They did not damage the block canal; instead, they built a creek next to it. This strategy was not a form of resistance because, in fact, they support the KFCP program, but rather reflects the phenomenon of frictional environmentality.

Villagers' participation in the REDD+ project implementation was relatively high, with an estimated 75% or more of households in each village involved. Villagers are involved in providing tree seedlings (nursery), planting trees (re-establishing tree cover), constructing dams/block canals, providing transportation services (small boats) in peat areas, participating in hydrological and fire monitoring teams, and so on. By engaging in

project work, they earn cash income, gain increased insight, and develop capabilities. Nevertheless, they tend to be skeptical of the long-term revenue prospects of the promised carbon incentives. Some people even find it difficult to understand the idea of carbon emissions, carbon incentives, and various scientific terms related to REDD+. Therefore, rather than thinking about something distant and absurd, they pragmatically measure their participation in the project with short-term cash income, as illustrated in the following narrative of two members of the implementation team in Katunjung village:

> [Are the people planting trees because they expect the money to be earned later from carbon incentives?] "…Related to that issue, the villagers did not think too far; they just looked at the wages. They did not think about that [carbon incentive]. Later, whether the tree planted wants to grow or not, it was not a concern for them". (Pa' Roy)

> [Do the villagers understand what they were doing in the nursery and tree planting as programmed by KFCP?] "They know it, that was why I always tell them 'you have to take care of these seeds, do not let the money (wages) be taken, but the plants are left alone'. ' ... The land we plant is vacant, sleepy land, so if this plant [replanting] survives, the benefits will not be for KFCP but for us as well. '... if this KFCP ends, they will all leave, they will not take our land'. I emphasized this to them because there are still many residents who think and even accuse that KFCP comes to control our land.". (Bu Juw).

This example demonstrates that the incentive plan provided by KFCP, in the form of wage payments to project participants, is perceived as a mere short-term advantage and lacks a comprehensive understanding of the long-term 'investment' associated with the REDD+ initiative. The locals' understanding of the incentive structure does not align with the project manager's conception of 'neoliberal environmentality.'

Efforts to reforest degraded peatlands, through the REDD+ project, are supported by all project stakeholders, including the local Ngaju Dayak community. Reforestation plots have been established in five villages as a pilot for KFCP's target of planting 100 million trees. The project implementers mobilized village support to carry out endemic tree planting activities in peat areas. They assumed that the involvement of villagers would also be effective in the maintenance phase until the trees grew larger. The carbon incentive scheme (neoliberal environmentality) is expected to bind villagers' commitment to maintain forest 'planting' on peatland, which they will achieve once the peatlands have been 'greened' again.

However, the assumption that local communities will commit to maintaining the 'reforestation' trees on peatlands is not in line with indigenous cosmologies and the Ngaju Dayak people's conception of peatland tenure. They distinguish the system of control over mineral land (petak pamatang) from peat land (petak galeget), where the former is conceived as a privately owned resource, while the latter is considered communal property. All forest trees growing on peatlands are considered communal property and can be freely accessed by everyone. Meanwhile, trees or plants that grow in mineral soil are conceptualized as private property. This indigenous conception can be seen as a form of 'truth environmentality' of the Ngaju Dayak community, which is not in line with the 'neoliberal environmentality' rationality of the KFCP. Consequently, when major fires broke out again in 2014 and 2015, local residents participating in the REDD+ project allowed their reforestation plants to be engulfed in flames, while focusing on maintaining their rubber plants and preventing the fire from spreading to them, which were growing in mineral soils.

The relationship between local communities and KFCP projects has been dynamic throughout REDD+ implementation. Changes in project disclosure occur at both the individual and collective levels, some of which are contradictory. It is based on a myopic perspective and pragmatic behavior, which stand out as characteristics of frictional environmentality in the arena of Ex-MRP peatland management. The relationship between local communities and KFCP projects has been dynamic throughout the REDD+ implementation. Changes in project disclosure occurred at both the individual and collective levels, some of which were contradictory. These dynamics reflect frictional forms of environmentalities characterized by pragmatic behavior and shifting interests in the Ex-MRP peatland management area. The following Table 2 presents examples of field findings illustrating these changes. The following table 2 presents some examples of field findings.

Table 2. Examples of Individual and Collective Behavioral Shifts during REDD+ Implementation

Individual/ Collective	Before	After
Local NGOs	- Opposing KFCP's REDD+ project with a negative campaign to marginalize local people's rights to resources	- Become a KFCP collaborator in the livelihood development program of KFCP project participant villages.
Pa Rah	- Active in the KFCP hydrological monitoring team, which often visits the remote peatland area	- Return to logging work and use his experience for the benefit of the new economy
Pa An	- Active in KFCP as a village forest manager/reforestation project	- Entangled in an illegal fishing case after not being active at KFCP
Pa Lin	- Very critical of KFCP and being a challenger to the village program	- Become a guiding team in the KFCP livelihood program
Pa Sug	- As a very active KFCP collaborator in many activities	- Turning out to be provocative and critical of KFCP
Pa Met	- Critical of KFCP and likes to provoke residents to oppose the project	- Become a KFCP collaborator in livelihood development programs
Collective	- Supporting KFCP retention funds to be used in improving village facilities	- Encourage KFCP retention funds to be distributed equally to residents in the form of cash

This study identifies several factors that contribute to the growth of a cultural phenomenon known as 'frictional environmentality' in the context of local community encounters and global initiatives in peatland management in Ex-MRP. First, the historical trajectory of local communities with agencies or extralocal determinants, where the latter prioritizes the commercialization of the region's rich natural resources. Second, for almost three generations, the Dayak Ngaju community has been a "host" to extra-local forces that exploit its natural resources, but it has never legally ruled over them. The state defines peatland areas as state forests, ignoring the indigenous rights of local communities. Third, the dominant encounter of the local community with the extractive world of natural resources from the precolonial period through the new order period to the reform era has nurtured and honed the local population into a pragmatic approach.

4. Discussion

The findings from the Central Kalimantan case reveal that the encounter between local communities and global environmental initiatives produces what this study terms frictional environmentality a condition in which multiple environmental rationalities, knowledge systems, and power regimes coexist, interact, and conflict in complex ways. This frictional process does not simply reflect resistance or compliance but represents an ongoing negotiation of subjectivities, values, and livelihoods within multi-scalar governance arrangements

Hybridization of Environmental Rationalities

As the ethnography demonstrates, the KFCP's REDD+ project in Kapuas Regency embodies neoliberal environmentality a governance logic emphasizing incentive-based mechanisms, quantifiable outcomes, and the commodification of nature (Fletcher, 2010; Luke, 1999). In contrast, local actors, especially the Ngaju Dayak people, operate within truth environmentalities, rooted in traditional ecological knowledge, indigenous cosmologies, and communal property norms that view peatlands as living entities shared among local community members (O'Riordan et al., 2016; Utami & Salim, 2021). These ontological differences create friction in how environmental value is defined and acted upon.

For instance, the villagers' perception that "trees in peatland belong to everyone" contradicts REDD+'s individual incentive logic. This divergence demonstrates that market-oriented conservation can erode communal ethics yet also catalyze new hybrid rationalities that combine traditional reciprocity with material pragmatism (Astuti, 2020; Freeman et al., 2022). Thus, frictional environmentality does not represent a total failure of

global initiatives but a transformative process through which new, context-specific environmental subjectivities emerge (Agrawal, 2005).

Friction and the Limits of Governmentality

From a Foucauldian perspective, governmentality assumes that governance operates through technologies of knowledge and subject formation, seeking to produce compliant "environmental subjects" (Foucault, 1991; Agrawal, 2005). However, the KFCP case illustrates that the governmentalization of the environment remains partial and unstable. While the project sought to discipline villagers through rules, training, workshops, and payment schemes, participants selectively internalized these mechanisms to maximize short-term benefits rather than adopt the intended long-term conservation ethos.

This finding resonates with Luke's (1995) concept of green governmentality, which critiques how environmental governance expands managerial control while masking asymmetrical power. However, in the field, such control is continuously subverted through everyday strategies—"burn and run" practices, canal diversions, and selective engagement—indicating that power circulates through friction rather than domination (Tsing, 2005). Frictional environmentality thus reveals the fragility of top-down subject formation, where local actors reinterpret disciplinary and neoliberal interventions through pragmatic reasoning shaped by historical marginalization and material precarity (Hein et al., 2018; Wulandari et al., 2025).

Historical Trajectories and Pragmatic Agency

The persistence of pragmatic strategies among the Ngaju Dayak cannot be understood solely as cultural resistance; it reflects a historically conditioned habitus shaped by decades of extractive interventions from colonial forestry to Suharto's Mega Rice Project. These long-term experiences of dispossession and broken promises have cultivated a strategic pragmatism, where villagers engage instrumentally with projects without internalizing their ideological goals (Goldstein, 2015).

This finding supports political ecology perspectives that stress how local responses to environmental governance are mediated by structural inequalities, histories of state control, and fluctuating access to resources (Mishra et al., 2021; Alfajri et al., 2025). Frictional environmentality, in this sense, becomes a socio-historical product rather than a momentary behavioral anomaly. It marks a cultural adaptation to the uncertainty and instability of external interventions, highlighting the limits of governance that fails to address power asymmetries and livelihood dependencies (Padfield et al., 2023).

Towards Adaptive and Biocultural Governance

Despite these tensions, the coexistence of multiple environmentalities also offers an opportunity for hybrid governance innovation. Integrating biocultural perspectives where ecological stewardship is inseparable from cultural identity can foster more inclusive and legitimate restoration frameworks (Wall et al., 2023). The friction between neoliberal and indigenous rationalities may generate productive hybridities when institutions recognize local values as co-equal forms of knowledge rather than obstacles to modernization (Puspitaloka et al., 2024; Toumbourou et al., 2024).

An adaptive governance approach would involve participatory mapping, locally driven monitoring, and flexible benefit-sharing mechanisms aligned with communal land tenure systems. This corresponds with recent scholarship calling for multi-actor, multi-scalar coordination that bridges scientific, bureaucratic, and indigenous knowledge systems (Lees et al., 2023; Jalilov et al., 2024). Such arrangements are essential to move beyond carbon-centric restoration toward socially embedded forms of climate governance that respect ecological diversity and local autonomy.

Rethinking Frictional Environmentality

The concept of frictional environmentality expands Fletcher's (2017) framework by emphasizing how coexisting governmentalities do not merely overlap but interact through culturally specific practices and historical memory. In the Central Kalimantan case, friction emerges as both a symptom of governance failure and a source of creative negotiation, revealing the deeply human dimension of environmental politics.

Rather than perceiving friction as a barrier to policy implementation, it should be understood as an

indicator of plural environmental subjectivities in motion where the success of restoration depends less on compliance and more on the mutual translation of knowledge, values, and goals between local and global actors. Recognizing and institutionalizing this friction, rather than suppressing it, could enable more reflexive and democratic forms of environmental governance that align global ambitions with local realities.

5. Conclusions

This study has demonstrated that peatland governance in Indonesia particularly under REDD+ implementation represents a dense field of interaction where global environmental rationalities meet, contest, and hybridize with local life worlds. Through ethnographic engagement with the Ngaju Dayak community and their encounters with the Kalimantan Forest and Climate Partnership (KFCP), the research conceptualized this intersection as frictional environmentality a condition in which competing governmentalities and knowledge systems create both tension and transformation in environmental governance. Three significant insights emerge from this analysis: First, environmental subject formation under global conservation regimes remains fragmented and unstable. Despite the REDD+ project's attempts to instill neoliberal forms of stewardship through incentive-based participation, local actors engage selectively and pragmatically, guided more by livelihood needs and cultural norms than by technocratic rationalities (Agrawal, 2005; Fletcher, 2010; Luke, 1999). The Dayak community's adaptive responses such as modifying canal-blocking rules or reinterpreting fire bans illustrate how state and market forms of environmentality are localized, negotiated, and sometimes subverted.

Second, friction reveals the limits of top-down environmental governance. The circulation of power and knowledge across scales is not smooth but mediated by historical memory, social inequality, and institutional asymmetry (Tsing, 2005; Astuti, 2020). Instead of producing compliant "environmental subjects," global interventions often generate ambivalent outcomes simultaneous collaboration and resistance that reflect deeply embedded local experiences of marginalization and ecological dependence (Hein et al., 2018; Goldstein, 2015). Recognizing this friction is therefore essential to understanding why technically sound projects may falter socially and politically. Third, the study points toward the need for adaptive, biocultural, and hybrid governance models that move beyond the binaries of local vs. global, traditional vs. modern, or science vs. culture. Successful peatland restoration requires governance arrangements that acknowledge the legitimacy of indigenous cosmologies, enable participatory decision-making, and integrate multiple epistemologies of care and stewardship (Wall et al., 2023; Toumbourou et al., 2024). Rather than erasing friction, policymakers should embrace it as a generative space for dialogue, negotiation, and co-learning.

This ethnography contributes to the growing interdisciplinary understanding of environmental governance as a contested and relational process. The concept of frictional environmentality highlights how the outcomes of global initiatives are co-produced by local actors who reinterpret external policies through their own cultural logic, economic strategies, and ecological sensibilities. In doing so, it repositions local communities not as passive recipients of global interventions but as co-authors of environmental futures.

References

Agrawal, A. (2005). Environmentality: Community, intimate government, and the making of environmental subjects in Kumaon, India. *Current Anthropology*, *46*(2), 161–190. https://doi.org/10.1086/427122.

Alfajri, A., Varkkey, H., O'reilly, P., & Hamzah, T. A. A. T. (2025). Multilevel Peatland Governance: Exploring the Policy Impact among Local Actors in Shaping Peatland Policy Intervention in Indonesia. *Forest and Society*, *9*(1), 186–215. https://doi.org/10.24259/fs.v9i1.36612.

Astuti, R. (2020). Fixing flammable Forest: The scalar politics of peatland governance and restoration in Indonesia. *Asia Pacific Viewpoint*, *61*, 283–300. https://doi.org/10.1111/apv.12267.

Atkinson, C. L., & Alibašić, H. (2023). Prospects for Governance and Climate Change Resilience in Peatland Management in Indonesia. *Sustainability (Switzerland)*, *15*(3). https://doi.org/10.3390/su15031839.

Dove, M. R. (2011). "Introduction: Changing Ways of Thinking about the Relations Between and Environment"Society and . In *Beyond the Sacred Forest, Comlicating Conservation in Southeast Asia* . Duke University Press.

Fletcher, R. (2010). Neoliberal environmentality: Towards a poststructuralist political ecology of the conservation debate. *Conservation and Society*, *8*(3), 171–181. https://doi.org/10.4103/0972-4923.73806.

Fletcher, R. (2017). Environmentality unbound: Multiple governmentalities in environmental politics. In *Geoforum* (Vol. 85, pp. 311–315). Elsevier Ltd. https://doi.org/10.1016/j.geoforum.2017.06.009.

Freeman, B., Evans, C., Musarika, S., Morrison, R., Newman, T., Page, S., Wiggs, G., Bell, N., Styles, D., Wen, Y., Chadwick, D., & Jones, D. (2022). Responsible agriculture must adapt to the wetland character of mid-latitude peatlands. *Global Change Biology*, *28*, 3795–3811. https://doi.org/10.1111/gcb.16152.

Girkin, N., Burgess, P., Cole, L., Cooper, H., Coronado, E. H., Davidson, S., Hannam, J., Harris, J., Holman, I., McCloskey, C., McKeown, M., Milner, A., Page, S., Smith, J., & Young, D. (2023). The three-peat challenge: business as usual, responsible agriculture, and conservation and restoration as management trajectories in global peatlands. *Carbon Management*, *14*. https://doi.org/10.1080/17583004.2023.2275578.

Goldstein, J. E. (2015). Knowing the subterranean: Land grabbing, oil palm, and divergent expertise in Indonesia's peat soil. *Environment and Planning A*, *48*(4), 754–770. https://doi.org/10.1177/0308518X15599787.

Hardiansyah, G., Yusro, F., Mariani, Y., Roslinda, E., Kusrini, N., Diba, F., Oktoriana, S., Pranoto, D. Y. B., Ekawati, S., Prasetyo, B. D., Charity, D., Wanjaya, A. H., & Nurdwiansyah, D. (2022). A study of sustainable peat cultivation implemented by the community of Tumbang Nusa Village, Central Kalimantan. In S. Sabiham, S. Page, L. Melling, H. Behling, S. Funakawa, D. Kidd, S. null, G. Z. Anshari, & S. null (Eds.), *IOP Conference Series: Earth and Environmental Science* (Vol. 1025, Issue 1). Institute of Physics. https://doi.org/10.1088/1755-1315/1025/1/012005.

Hein, J., Faust, H., Kunz, Y., & Mardiana, R. (2018). The Transnationalisation of Competing State Projects: Carbon Offsetting and Development in Sumatra's Coastal Peat Swamps. *Antipode*, *50*(4), 953–975. https://doi.org/10.1111/anti.12381.

Jalilov, S.-M., Lestari, S., Winarno, B., Yuwati, T. W., Sakuntaladewi, N., & Mendham, D. (2024). Why is tropical peatland conservation so challenging? Findings from a livelihood assessment in Sumatra, Indonesia. *Mires and Peat*, *30*. https://doi.org/10.19189/MaP.2022.OMB.Sc.1985391.

Kamal, M., Utomo, M., Hakim, M., Qurbani, I., & Ikram, A. D. (2023). Peatland Management Based on Local Wisdom Through Rural Governance Improvement and Agroindustry. *International Journal of Environmental, Sustainability, and Social Science*. https://doi.org/10.38142/ijesss.v4i3.486.

Lees, K. J., Carmenta, R., Condliffe, I., Gray, A., Marquis, L., & Lenton, T. M. (2023). Protecting peatlands requires understanding stakeholder perceptions and relational values: A case study of peatlands in the Yorkshire Dales. *Ambio*, *52*(7), 1282–1296. https://doi.org/10.1007/s13280-023-01850-3.

Little, P. E. (2007). Political ecology as ethnography: a theoretical and methodological guide. *Horizontes Antropologicos*, *3*.

Luke, T. W. (1995). On Environmentality: Geo-Power and Eco-Knowledge in the Discourses of Contemporary Environmentalism. *Cultural Critique*, *31*, 57. https://doi.org/10.2307/1354445.

Luke, T. W. (1999). "Environmentality as green governmentality." In E. (ed) Darier (Ed.), *Discourse of the Environment*. (pp. 121–151). Blackwell.

Mishra, S., Page, S., Cobb, A., Lee, J., Jovani-Sancho, A., Sjögersten, S., Jaya, A., Aswandi, & Wardle, D. (2021). Degradation of Southeast Asian tropical peatlands and integrated strategies for their better management and restoration. *Journal of Applied Ecology*. https://doi.org/10.1111/1365-2664.13905.

Mursyid, H., Ramadhan, R., Irawan, A., Sadono, R., Susila Putra, E. T., & Suryanto, P. (2025). A global development and dynamics of peatland restoration: a bibliometric analysis. *Ecological Indicators*, *177*. https://doi.org/10.1016/j.ecolind.2025.113724.

O'Riordan, M., McDonagh, J., & Mahon, M. (2016). Local knowledge and environmentality in legitimacy discourses on Irish peatlands regulation. *Land Use Policy*, *59*, 423–433. https://doi.org/10.1016/j.landusepol.2016.07.036.

Padfield, R., Varkkey, H., Manzo, K., & Ganesan, V. (2023). Time bomb or gold mine? Policy, sustainability and media representations of tropical peatlands in Malaysia. *Land Use Policy*, *131*. https://doi.org/10.1016/j.landusepol.2023.106628.

Sanudin, Fauziyah, E., Widyaningsih, T., Harianja, A., & Widiyanto, A. (2023). Role of actors in promoting sustainable peatland management in Kubu Raya Regency, West Kalimantan, Indonesia. *Open Agriculture*, *8*. https://doi.org/10.1515/opag-2022-0198.

Tan, Z. D., Sutikno, S., Carrasco, L. R., & Taylor, D. (2023). Local community representations of tropical peatlands and implications for restoration in Riau, Indonesia. *Restoration Ecology*, *31*(5). https://doi.org/10.1111/rec.13900.

Toumbourou, T. D., Lestari, S., Yuwati, T. W., Treby, S., Winarno, B., Rachmanadi, D., Idrus, N. I., Sakuntaladewi, N., Budiningsih, K., Grover, S. P. P., & Rawluk, A. (2024). Principles for equitable and resilient tropical peatland restoration in Central Kalimantan, Indonesia. *Restoration Ecology*, *32*(7). https://doi.org/10.1111/rec.14221.

Tsing, A. L. (2005). *Friction, am ethnography of global connection* . Princeton University Press.

Utami, W., & Salim, M. (2021). *Local Wisdom as a peatland management strategy of land fire mitigation in Meranti regency, Indonesia*. https://consensus.app/papers/local-wisdom-as-a-peatland-management-strategy-of-land-fire-salim-utami/54d2a75e4f2b5da18a5fd52dae1bb29f/.

Wulandari, C., Iswandaru, D., Mora, A. M., Novita, E. R., Sirait, S., Dessy, A., & Novriyanti, N. (2025). Assessing the Role of Social Networks in Sustainable Post-Fire Peatland Management. *Journal of Human, Earth, and Future*. https://doi.org/10.28991/hef-2025-06-01-06.

Yunus, M., Pagdee, A., & Baral, H. (2025). Local Livelihoods and Determinants of Peatland Protection in Indonesia. *Trees, Forests and People*, *19*. https://doi.org/10.1016/j.tfp.2025.100800

Zulkarnaini, Z., Sujianto, S., & Wawan, W. (2023). STRENGTHENING COMMUNITY SOCIAL CAPITAL IN PEATLAND MANAGEMENT. *Sosiohumaniora*. https://doi.org/10.24198/sosiohumaniora.v25i1.36963.