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Environmental Governance and Land Inequality under Palm Oil Expansion in Indonesia

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Abstract

Palm oil expansion in Indonesia is a major driver of environmental change and agrarian transformation, raising concerns about environmental governance, land inequality, and sustainability. This study conceptualizes palm oil expansion as an extractive regime to examine how governance arrangements shape land relations and resource control. Drawing on qualitative research in Aceh, it combines ethnographic fieldwork with institutional and policy analysis to investigate concession-based land tenure, state–corporate alliances, and regulatory frameworks. The findings show that environmental governance operates through legal and administrative mechanisms that facilitate land reclassification and large-scale concessions while marginalizing customary tenure systems. These processes enable capital accumulation while externalizing social and ecological costs, resulting in persistent land inequality and livelihood vulnerability. Although palm oil expansion contributes to economic growth, it simultaneously intensifies land conflicts and pressures on ecologically sensitive landscapes. Sustainability governance instruments, including ISPO and RSPO, function primarily as compliance-based frameworks that stabilize rather than transform extractive arrangements. The study highlights that meaningful sustainability requires recognition of customary land rights, equitable smallholder inclusion, and participatory governance capable of addressing structural inequalities.

Introduction

Palm oil expansion has emerged as a major driver of environmental change and agrarian transformation in many tropical regions, particularly in Southeast Asia (Meijaard et al., 2018). As the world's largest producer, Indonesia plays a central role in global palm oil supply chains, contributing significantly to economic growth, export revenues, and rural employment (Voora et al., 2019). However, the rapid expansion of oil palm plantations has also generated mounting concerns regarding deforestation, land-use change, and the degradation of ecologically sensitive landscapes, alongside persistent land conflicts and widening rural inequalities (Austin et al., 2019). These dynamics highlight that palm oil development is not only an economic process, but also a critical issue of environmental governance and sustainability (Miller et al., 2020).

Existing research has extensively examined palm oil from economic, environmental, and conflict-oriented perspectives. While these studies have documented its contributions to development as well as its environmental and social impacts, much of the literature remains fragmented. Environmental studies often focus on biophysical changes such as deforestation and land-use dynamics (Gaveau et al., 2016), whereas social science approaches emphasize land conflict, inequality, and governance (Jelsma et al., 2017). As a result, limited attention has been given to how environmental governance, political economy, and agrarian change are interconnected within a unified analytical framework (Bebbington et al., 2018).

To address this gap, this study conceptualizes palm oil expansion as an extractive regime. In this perspective, extractive regimes refer to institutional configurations through which land, capital, and labor are organized to facilitate accumulation while redistributing social and ecological costs (Bebbington et

al., 2018). Rather than viewing palm oil as a neutral agricultural commodity, this approach highlights how concession-based land tenure systems, state–corporate alliances, and regulatory frameworks structure access to land and natural resources (Lund, 2025). These governance arrangements not only enable large-scale plantation development, but also reshape land relations, marginalize customary tenure systems, and reproduce socio-ecological inequalities (Berenschot et al., 2024).

Indonesia provides a critical context for examining these dynamics. In regions such as Aceh, palm oil expansion has accelerated in the post-conflict period through renewed investment, decentralization policies, and the allocation of large-scale land concessions (Asia & Publications, 2026). These processes have intensified pressures on forested landscapes and customary land systems, while generating new forms of dispossession, labor incorporation, and rural differentiation (Li, 2017). At the same time, sustainability governance initiatives, particularly the Indonesian Sustainable Palm Oil (ISPO) and the Roundtable on Sustainable Palm Oil (RSPO), have been introduced to address environmental and social concerns (Choiruzzad et al., 2021). However, their effectiveness in transforming underlying governance structures remains contested (Putri et al., 2022). Building on qualitative research in Aceh, this study combines ethnographic fieldwork with institutional and policy analysis to examine how environmental governance operates within Indonesia's palm oil sector. It focuses on three interrelated dimensions: (1) concession-based land tenure systems that facilitate land reclassification and dispossession; (2) state–corporate alliances that structure capital accumulation and resource control; and (3) sustainability governance frameworks that seek to regulate environmental and social impacts (Zhao et al., 2022). By analyzing these dynamics, the study explores how extractive regimes are produced, normalized, and sustained in everyday governance practices (Lund, 2025).

This article contributes to environmental governance and sustainability debates by conceptualizing palm oil expansion as an extractive regime that links political economy processes with socio-ecological outcomes in agrarian contexts. It argues that current governance arrangements tend to stabilize rather than transform extractive dynamics, thereby reproducing land inequality and environmental pressures (Bebbington et al., 2018). Addressing these challenges requires not only technical improvements in sustainability standards, but also structural changes, including the recognition of customary land rights, more equitable smallholder inclusion, and participatory governance mechanisms (Putri et al., 2022).

Materials and methods

2.1 Research design

Building on the analytical framework outlined above, this study adopts a qualitative research design combining ethnographic fieldwork with institutional and policy analysis to examine palm oil expansion in Indonesia as an extractive regime shaping environmental governance, land relations, and sustainability outcomes. This approach is particularly appropriate for analyzing extractivism as a relational and historically embedded process, as it enables an in-depth understanding of how governance

arrangements, power relations, and everyday practices interact across scales and influence socio-ecological dynamics (Sanders et al., 2024).

2.2 Study area

Empirical fieldwork was conducted in selected palm oil-producing areas in Aceh, Indonesia, a critical case for examining environmental governance at the sub-national level. Aceh has long been integrated into plantation economies and is characterized by the coexistence of state, corporate, and customary land tenure systems within a multi-level governance structure (Putri et al., 2022). Although customary institutions are formally recognized, land governance remains dominated by national regulatory frameworks that prioritize concession-based allocation and large-scale investment.

Aceh's post-conflict and post-disaster context further shapes these dynamics. Following decades of armed conflict and the 2004 Indian Ocean tsunami, rapid decentralization and reconstruction processes facilitated new investment flows, including oil palm expansion. However, these transformations also generated governance vulnerabilities, such as overlapping land claims, weakened regulatory capacity, and limited recognition of customary tenure (Lubis et al., 2024). Consequently, palm oil expansion has often intensified land conflicts and socio-ecological inequalities.

These conditions make Aceh a strategic site for analyzing how extractive regimes are shaped by institutional change and uneven governance capacity, and how environmental governance and sustainability challenges are negotiated in post-crisis contexts. As illustrated in Fig. 1, Aceh is located at the northern tip of Sumatra within Indonesia, highlighting its position within broader national and regional dynamics of palm oil expansion. The multi-scalar mapping (world–Indonesia–Aceh) situates the study area within global commodity networks while emphasizing its sub-national specificity as an empirical case.

2.3 Participants and sampling

This study employed a purposive sampling strategy to select informants directly engaged in and affected by palm oil expansion, including indigenous communities, smallholder farmers, plantation workers, local government officials, and civil society actors. The selection aimed to capture analytical variation across key social positions, particularly gender, age, landholding status, and roles within governance and production networks.

A total of 30 informants were interviewed. The sample size was developed iteratively during fieldwork and guided by emerging findings, with data collection continuing until thematic saturation was achieved, when additional interviews no longer produced substantively new insights. This approach aligns with qualitative and ethnographic traditions that prioritize depth and contextual understanding over statistical representativeness (see Table 1).

Table 1
Composition of informants and rationale

Informant group	Number	Selection rationale
Indigenous communities	5	To capture customary land relations and experiences of dispossession
Smallholder farmers	7	To examine livelihood transformation and market integration
Plantation workers	5	To understand labor relations and dependency within plantation systems
Women (cross-category)	6	To highlight gendered experiences across production and governance roles
Local government officials	4	To analyze institutional perspectives on regulation and land governance
Civil society/ NGO actors	3	To capture advocacy, conflict mediation, and local institutional dynamics
Total	30	
Note: The distribution reflects analytical priorities rather than proportional representation.		
Source: Processed by authors (2026)		

The resulting sample enabled the study to examine differentiated experiences of land dispossession, livelihood transformation, and participation in palm oil value chains, while also capturing how these processes are shaped by power relations and institutional arrangements across scales (Berenschot & Dhiaulhaq, 2025).

2.4 Data collection

Primary data were collected through semi-structured in-depth interviews, participant observation, and documentary analysis. In-depth interviews explored informants' perspectives on land tenure governance, environmental change, plantation development, and sustainability governance initiatives, including ISPO and RSPO. Interviews followed a flexible guide, allowing respondents to articulate their experiences while enabling the researcher to probe emergent themes related to extractive governance, land inequality, and sustainability challenges (Berenschot & Dhiaulhaq, 2025). All interviews were conducted with informed consent, audio-recorded, and transcribed verbatim.

Participant observation was carried out through sustained engagement in community settings, including agricultural activities, village meetings, and everyday interactions related to plantation economies. This approach enabled the researcher to observe how extractive regimes are reproduced through routine practices and how environmental governance is enacted in everyday contexts (Astuti & McGregor, 2017). Documentary analysis examined policy documents, concession maps, corporate reports, and sustainability certification guidelines to provide institutional context (Astuti & McGregor, 2017).

Prior to data collection, all participants were informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw at any time. Informed consent was obtained verbally due to the field-based and community-oriented nature of the research, where written consent was not always culturally appropriate. Participants' anonymity and confidentiality were strictly maintained throughout the research process.

2.5 Data analysis

Data analysis followed a thematic approach involving iterative processes of coding, categorization, and interpretation (Konstantinos, 2024). Analytical attention focused on three interrelated dimensions: (1) environmental governance and land tenure arrangements; (2) capital accumulation and value chain dynamics; and (3) social differentiation and sustainability outcomes. These themes were interpreted through the lens of agrarian political economy and extractive regime theory (Bong et al., 2019).

2.6 Validity and reliability

To enhance the credibility and validity of the findings, this study employed methodological triangulation by systematically comparing data from interviews, observations, and documentary sources. Member checking was conducted with selected informants to ensure that interpretations accurately reflected local perspectives. These strategies align with established standards for qualitative research in environmental governance and sustainability studies (Saldaña, 2020).

This study received ethical approval from the Research Ethics Committee of Universitas Teuku Umar prior to data collection (Approval No. 164/UN59.L1/AL.04/2025). All research procedures were conducted in accordance with relevant ethical guidelines and regulations for social science research involving human participants, including the principles of voluntary participation, informed consent, anonymity, and confidentiality. Prior to participation, all respondents were informed about the objectives of the study and their right to withdraw from the research at any stage without consequence. The study adhered to the institutional ethical standards of Universitas Teuku Umar throughout the research process.

Results

3.1 Environmental governance through concession-based land tenure

Environmental governance in Indonesia's palm oil sector operates primarily through concession-based land tenure systems that structure access to land and natural resources. Rather than functioning as a neutral regulatory framework, this study shows that environmental governance is embedded within institutional arrangements that facilitate land dispossession and the reorganization of socio-ecological relations. In this context, governance mechanisms do not merely regulate land use but actively enable

the transfer of land from customary users to capital-intensive plantation systems, positioning dispossession as a normalized outcome of development.

This process is operationalized through a layered assemblage of legal and administrative instruments, including location permits (*izin lokasi*), cultivation rights (*Hak Guna Usaha* or HGU), and regional spatial planning regimes (*Rencana Tata Ruang Wilayah* or RTRW). These instruments function as a legal apparatus through which land is identified, classified, and allocated for plantation development. Rather than safeguarding existing land rights, they standardize land into administratively legible units, thereby facilitating its incorporation into formal concession systems while marginalizing customary tenure arrangements.

The spatial dimension of this governance system is illustrated in Fig. 2, which visualizes the expansion of oil palm concessions and the reclassification of land within the Tripa ecosystem in Nagan Raya.

Source: Google map (2026)

The map illustrates the spatial expansion of oil palm concessions and the reclassification of land within the Tripa peatland ecosystem, highlighting the overlap between concession boundaries, forest cover, and administrative zoning. These overlapping layers reveal how environmental governance operates not merely as a regulatory framework, but as a spatially embedded process that reorganizes land use and control. Rather than passively reflecting existing land relations, zoning regulations, concession mapping, and land-use planning function as spatial instruments through which land is rendered legible, categorized, and ultimately reassigned. In this process, peat swamp forests and customary lands are redefined as plantation zones, while official maps fix territorial boundaries in ways that override locally embedded land histories and claims.

As such, the figure demonstrates how environmental governance materializes through both legal and cartographic practices that transform land into governable and commodifiable space. These spatial technologies of governance facilitate the incorporation of land into concession systems, often marginalizing customary land use and normalizing dispossession as part of plantation expansion. Empirical evidence from Aceh indicates that dispossession unfolds not through overt coercion, but through gradual and bureaucratically mediated processes. Across field sites, community members consistently described land loss as an incremental transformation enacted through permits, mapping exercises, and administrative decisions. Land is often allocated prior to meaningful consultation, and customary territories are reclassified as state-controlled or ‘idle’ land suitable for investment. As summarized in Table 1, these mechanisms systematically translate socially embedded land relations into administratively available land, reinforcing a pattern of gradual, legally sanctioned dispossession rather than direct conflict.

Table 1
Legal institutional mechanisms producing dispossession in palm oil expansion

Instrument	Formal function	Empirical effects observed in Aceh
Location permit (*Izin Lokasi*)	Identifies land for plantation development	Issued prior to community consultation; villagers reported learning of permits only after survey activities and boundary marking had begun
Cultivation rights (*Hak Guna Usaha*, HGU)	Grants long-term cultivation rights	Customary (*adat*) land incorporated into concessions, with informal tenure treated as legally non-binding in licensing and dispute resolution processes
Regional Spatial Plan (*Rencana Tata Ruang Wilayah*, RTRW)	Regulates spatial land use	Community land reclassified as 'conversion' or 'non-settlement' zones, facilitating its allocation for plantation development
Concession and cadastral maps	Define legally recognized boundaries	Official maps override local land histories, producing overlapping claims and recurrent boundary disputes

Source: Processed by authors (2026)

These processes are experienced by local communities as a form of exclusion embedded in everyday governance practices. One village elder explained:

We were never invited to discuss the boundary or to sit together and decide where the land should be. One day, they came and showed us a map, saying this is the official boundary. But on that map, our fields, our houses, even our parents' graves were not there. It was as if our presence on this land had never existed. We tried to explain that we have lived here for generations, but they said what matters is what is written in the documents, not what we remember or know.

Similarly, a former village official noted:

After the permit comes out, everything is already decided at higher levels. By the time it reaches the village, we are only informed, not consulted. Even when communities raise objections, it is difficult to respond because the maps and documents are already fixed. Our claims are often treated as stories rather than rights, something informal that cannot compete with official records.

Local government officials further confirmed that once concession maps are formalized, administrative procedures must follow documented records rather than local histories. As one official explained:

When the concession map has been approved, we have to follow what is in the official documents. Even if there are overlapping claims or complaints from the community, it is difficult to change because the legal basis is already established. Our role is to implement what has been decided, not to reinterpret it.

For communities, this creates a structural asymmetry, as contesting land allocation requires legal resources, technical expertise, and financial capacity that are largely inaccessible.

These findings demonstrate that environmental governance in Indonesia's palm oil sector operates as a key mechanism of the extractive regime. Rather than mitigating environmental and social risks, governance frameworks function to legitimize and institutionalize land commodification through legal and spatial instruments. In this configuration, dispossession is not an unintended consequence but a systemic outcome produced through the routine workings of state law, planning, and administrative practice. By embedding extractive logics within governance structures, concession-based land tenure systems reproduce land inequality while presenting these transformations as lawful and development-oriented processes.

3.2 State–corporate alliances and extractive governance

Environmental governance in Indonesia's palm oil sector is not exercised solely through formal regulation, but through institutionalized alliances between state actors and corporate interests that shape the direction and outcomes of land-use transformation. This study finds that governance operates as a state–corporate configuration in which regulatory authority, development planning, and investment facilitation converge to enable capital accumulation. In this arrangement, the state does not function as a neutral regulator, but as an active partner in producing extractive outcomes.

These alliances are embedded within a multi-level governance architecture that links central ministries, provincial and district governments, plantation companies, and intermediary actors such as local elites, contractors, and land brokers. Authority is distributed across scales, but coordinated in ways that facilitate plantation expansion. Decentralization has expanded the role of district governments in licensing and land allocation, while national policy frameworks continue to define regulatory standards and investment priorities. This multi-scalar configuration enables corporate actors to navigate institutional layers through formal procedures and informal networks.

The operation of these alliances is sustained through a range of policy instruments, including plantation licensing regimes, minimum land area requirements, fiscal incentives, and public infrastructure provision. Regulatory frameworks systematically privilege actors with capital, technical expertise, and political access. For example, Minister of Agriculture Regulation No. 3 of 2024, which sets a minimum plantation size of 6,000 hectares, effectively aligns land governance with large-scale corporate investment models while excluding smaller producers and customary land users. In this sense, policy instruments function not only as regulatory tools but as mechanisms that structure unequal access to land and resources.

Empirical evidence from Aceh demonstrates how these arrangements are enacted in everyday governance practices. Plantation companies frequently obtain location permits and cultivation rights through expedited administrative processes, often facilitated by close coordination with local authorities. At the same time, public investment in roads, ports, irrigation systems, and energy infrastructure is directed toward supporting plantation economies, reducing operational costs for companies while reinforcing export-oriented production. These practices are commonly framed by

officials as part of a broader development agenda, emphasizing economic growth, employment generation, and regional competitiveness (see Table 2).

Table 2
State-corporate mechanisms of capital accumulation in palm oil expansion

Mechanism	State role	Empirical effects observed
Plantation licensing	Issuance of location permits and HGU	Accelerated corporate access to land; customary claims sidelined
Development standards	Minimum plantation size (6,000 ha)	Favors large corporations; excludes smallholders
Infrastructure provision	Public investment in roads, ports, energy	Reduces corporate costs; socialized development risks
Development narratives	Framing palm oil as growth and employment engine	Legitimation of dispossession and inequality
Decentralized authority	District-level permit issuance	Intensified land competition and overlapping claims
Source: Processed by authors (2026)		

At the local level, these dynamics are experienced as a form of exclusion embedded within formal procedures. A customary leader in Aceh Singkil explained:

The company came with permits issued by the government, and they said everything was already approved. We were told that all procedures had been followed, but we were never involved in those processes. There was no discussion with the community, no agreement from us. Suddenly, the land we have used for generations was already included in the concession. For them, the documents are enough, but for us, it feels like we were left out of decisions that directly affect our lives.

Similarly, a village-level official noted:

After the permits are issued at higher levels, we are expected to comply with whatever has been decided. The process happens above us, and by the time it reaches the village, everything is already fixed. Our role is mainly to implement, not to question, even when there are complaints from the community. Sometimes we know there are problems, but there is very little space for us to challenge those decisions.

These patterns are not unique to Aceh or Indonesia but reflect broader trends across Southeast Asia. In Malaysia, plantation expansion has similarly relied on close coordination between state agencies and corporate actors, with customary land claims often subordinated to statutory land titles. In Cambodia and Laos, concession-based agribusiness expansion has been facilitated through centralized licensing systems and state-backed infrastructure development, producing comparable alliances between political

elites and private capital. Across these contexts, extractive industries operate through state-mediated arrangements that prioritize investment and economic growth over equitable land governance.

These findings demonstrate that environmental governance in the palm oil sector is co-produced through state–corporate alliances that institutionalize extractive logics. Rather than constraining extraction, governance frameworks actively enable and legitimize capital accumulation by aligning regulatory systems, development narratives, and public resources with corporate interests. In this configuration, the state functions as a co-producer of extraction, facilitating the concentration of land and capital while externalizing social and ecological costs to rural communities. This dynamic underscores that extractive regimes are sustained not only through market forces, but through structured collaboration between political authority and economic power.

3.3 Smallholder incorporation and agrarian inequality

Smallholders are commonly positioned in policy discourse as primary beneficiaries of palm oil expansion. However, this study finds that their incorporation into the palm oil economy is fundamentally unequal and structured by asymmetrical power relations. Rather than representing a pathway toward inclusive rural development, smallholder participation is shaped by institutional arrangements that systematically differentiate access to land, capital, and markets. In this context, incorporation does not eliminate inequality but reconfigures it, producing stratified agrarian outcomes within the broader extractive regime.

A key axis of differentiation lies between smallholders integrated into nucleus–plasma schemes and those operating outside formal partnership arrangements. Plasma farmers are incorporated through contractual systems that link land, credit, and production to corporate mills. These arrangements provide access to inputs, technical support, and guaranteed market channels. However, they also impose long-term debt obligations and restrict farmers' decision-making autonomy. In contrast, non-plasma smallholders, often lacking formal land titles or capital, are excluded from these schemes and rely on informal intermediaries to access markets, placing them in structurally weaker positions within the value chain.

Both pathways are characterized by mechanisms that produce dependency rather than empowerment. In plasma systems, credit-financed production binds farmers to long-term repayment schedules that are often opaque, with deductions and pricing determined unilaterally by companies. Farmers bear production risks while having limited control over output prices or quality standards. For non-plasma farmers, dependence takes the form of market vulnerability, as intermediaries dictate prices and purchasing conditions. Across both arrangements, smallholders are incorporated into corporate-controlled value chains in ways that shift economic risk downward while securing stable inputs for industrial production.

Agrarian differentiation is further intensified through labor incorporation. Many smallholder households combine farming with wage labor on nearby plantations, reflecting a shift toward semi-proletarian

livelihoods. In districts such as Aceh Singkil, Nagan Raya, and Aceh Tamiang, households with limited land access increasingly depend on casual or seasonal employment as harvesters, maintenance workers, or pesticide applicators. These labor regimes are highly precarious, characterized by informal contracts, low wages, and weak labor protections. They are also differentiated along gender and generational lines: men dominate physically demanding harvesting work, while women are concentrated in unpaid family labor or hazardous tasks such as chemical spraying, and younger generations increasingly exit farming altogether.

These dynamics are reflected in the lived experiences of smallholders. A plasma farmer explained: *"On paper the land is ours, but in reality everything is decided by the company… how much is deducted, and how long the debt will last."* Similarly, an independent farmer noted: *"We work on our own land, but we do not decide the price. The middleman decides, and if we refuse, the fruit will rot."* These accounts highlight how both contractual and informal forms of incorporation limit autonomy, reinforcing dependence on corporate structures and market intermediaries.

The differentiated outcomes of smallholder incorporation are summarized in Table 3, which illustrates how distinct positions within the palm oil economy, plasma farmers, independent smallholders, smallholder–laborers, and land-poor households, are associated with varying degrees of access, vulnerability, and livelihood outcomes.

Table 3
Smallholder incorporation and agrarian outcomes in Aceh's palm oil sector

Smallholder position	**Mode of incorporation**	**Key vulnerabilities**	**Agrarian outcome**
Plasma smallholders	Contractual partnership with companies	Debt dependency, limited autonomy	Partial accumulation or indebtedness
Non-plasma smallholders	Informal market via intermediaries	Price volatility, weak bargaining power	Livelihood stagnation or decline
Smallholder–laborers	Farming combined with wage labor	Precarious work, low wages	Semi-proletarianization
Land-poor households	Plantation wage labor	Insecure contracts, limited mobility	Proletarianization
Source: Processed by authors (2026)			

While a minority of better-resourced farmers are able to accumulate modest gains, the majority experience stagnation, debt dependency, or increasing reliance on wage labor. These patterns demonstrate that incorporation produces a stratified rural structure rather than a uniformly improving livelihood trajectory.

These findings are consistent with broader patterns observed across Southeast Asia. In Malaysia, state-supported smallholder schemes have similarly produced differentiated outcomes, with contractual

inclusion often accompanied by declining autonomy and persistent debt dependence. In Cambodia and Laos, concession-based agribusiness expansion has generated comparable forms of unequal incorporation, combining contract farming, informal markets, and plantation labor regimes. Across these contexts, plantation economies function less as vehicles for inclusive development than as mechanisms for reorganizing agrarian relations in ways that prioritize capital accumulation.

These findings demonstrate that inequality within the palm oil sector is not produced solely through exclusion from land and markets, but through hierarchical forms of inclusion. Smallholders are incorporated into extractive regimes in ways that bind them to unequal economic relations, redistribute risk downward, and limit their capacity for autonomous production. In this sense, agrarian inequality is reproduced not only by dispossession, but by the structured incorporation of rural households into subordinate positions within the political economy of palm oil. This underscores that extractive regimes operate through both exclusion and unequal inclusion, reinforcing socio-economic differentiation under the guise of development.

3.4 Sustainability governance and the reproduction of extractive logics

Sustainability governance in Indonesia's palm oil sector is widely framed as a corrective mechanism for addressing environmental degradation and social inequality. However, this study finds that such governance is largely non-transformational. Rather than restructuring the underlying political–economic relations that drive extraction, sustainability initiatives operate as regulatory layers that stabilize and legitimize existing extractive arrangements. In this sense, sustainability governance does not displace extractive logics; it reorganizes them within a framework of managed compliance.

This dynamic is reflected in the institutional design of key sustainability instruments, particularly the Indonesian Sustainable Palm Oil (ISPO) and the Roundtable on Sustainable Palm Oil (RSPO). Both frameworks are grounded in compliance-based models that prioritize procedural verification, documentation, and audit systems. While they introduce environmental and social criteria, their primary function lies in standardizing practices and ensuring conformity with predefined indicators, rather than transforming land tenure systems, redistributing power, or addressing historical dispossession.

A fundamental limitation of these frameworks lies in their structural bias toward formal legality and corporate compliance. Certification processes privilege actors with access to land titles, administrative capacity, and financial resources, typically large plantation companies, while marginalizing smallholders and communities operating under customary or informal tenure systems. By prioritizing legally documented claims, sustainability governance renders customary land rights invisible within formal assessments, thereby reinforcing existing exclusions embedded in concession-based land governance.

Empirical evidence from Aceh demonstrates a persistent disconnect between certification and on-the-ground realities. Plantation companies frequently retain ISPO or RSPO certification despite ongoing land conflicts, unresolved customary claims, and labor precarity. In areas such as Aceh Singkil and Nagan

Raya, companies operating on disputed land continue to be recognized as compliant, as certification audits focus on procedural adherence rather than substantive justice. This reveals that sustainability governance evaluates whether rules are followed, rather than whether inequalities are addressed.

Community perspectives further illustrate this gap. As one customary leader explained:

The company already has the certificate, and they always show it as proof that everything is legal. But for us, the land problem is still there. They checked documents, permits, and boundaries on paper, but no one ever asked how the land was actually taken or whether we ever agreed to give it up. Our history with this land is not written in those documents, so it is ignored. We feel like the certification only sees what is on paper, not what really happened to us.

This reflects a broader perception that certification operates as symbolic validation rather than a mechanism for resolving underlying conflicts or recognizing community rights. Rather than addressing structural inequalities in land governance, sustainability instruments tend to privilege procedural compliance and documented legality, thereby obscuring the lived realities of dispossession and exclusion. This disjuncture between formal standards and empirical outcomes is not incidental, but indicative of how sustainability governance is structured and implemented in practice.

These dynamics are further systematized in Table 4, which highlights the divergence between the stated objectives of sustainability instruments, such as ISPO and RSPO, and their observed effects in the field. While these frameworks aim to promote responsible production, their implementation often results in procedural compliance without addressing land dispossession, social conflict, or ecological degradation. This gap underscores the limits of certification as a tool for substantive transformation.

Table 4
Sustainability governance instruments and their empirical effects in Aceh

Instrument	**Governance focus**	**Empirical effects**
ISPO (mandatory)	Legal compliance	Reinforces formal legality; contested concessions remain certified
RSPO (voluntary)	Procedural sustainability standards	Compliance-oriented audits; land conflicts treated as “legacy issues”
Certification audits	Standard verification	Limited attention to dispossession and customary (adat) claims
Jurisdictional approaches	Territorial sustainability governance	Strengthens state land control; marginalizes community claims
Source: Processed by authors (2026)		

A key consequence of these dynamics is the depoliticization of environmental and agrarian conflict. Sustainability governance reframes structural issues, such as land dispossession, labor exploitation, and ecological degradation, as technical matters of compliance, documentation, and monitoring. In doing so,

it shifts attention away from questions of power, land sovereignty, and historical injustice. Conflicts are redefined as administrative irregularities to be managed within certification systems, rather than political struggles requiring structural change

These patterns are consistent with broader trends across Southeast Asia. In Malaysia, certification schemes have similarly prioritized statutory land titles over customary rights, particularly in plantation frontiers such as Sabah and Sarawak. In Cambodia and Laos, agribusiness expansion has been accompanied by donor-driven sustainability and land formalization programs that convert customary land into administratively defined categories. Across these contexts, sustainability governance operates less as a mechanism of redistribution and more as a strategy for managing extractive frontiers under conditions of global scrutiny.

These findings demonstrate that sustainability governance functions as a mechanism for stabilizing extractive regimes rather than transforming them. By embedding extractive practices within frameworks of certification, audit, and compliance, sustainability initiatives legitimize continued expansion while mitigating reputational risks. In this configuration, sustainability does not oppose extractivism, it enables its persistence in more acceptable forms. Extractive regimes endure not by resisting reform, but by selectively incorporating sustainability discourse into their operational logic, thereby reproducing environmental pressures and social inequalities under the banner of responsible development.

3.5 Contestation, adaptation, and the limits of transformation

Local communities affected by palm oil expansion in Aceh are not passive recipients of extractive development. They actively negotiate, contest, and adapt to shifting socio-ecological conditions. However, this study shows that such agency unfolds within tightly constrained political–economic structures that significantly limit its transformative potential. While communities engage with and respond to extractive processes, their capacity to reshape underlying governance arrangements remains restricted.

Contestation emerges through a range of visible and organized actions, including protests, boundary disputes, legal claims, and advocacy efforts aimed at asserting customary land rights and challenging concession allocations. These actions, often supported by civil society organizations, reflect growing awareness of environmental impacts and legal rights. At the same time, community responses have evolved over time: initial acceptance of plantation development, driven by expectations of employment and infrastructure, has gradually shifted toward dissatisfaction as land loss, unequal contractual arrangements, and unmet promises become more apparent.

Beyond these formal expressions of resistance, communities also engage in everyday forms of negotiation and contestation. These include delaying cooperation, withdrawing labor, selectively complying with company demands, and pursuing informal negotiations with local officials. Such practices reflect pragmatic strategies for navigating unequal power relations and maintaining limited

autonomy within constrained conditions. Yet, these forms of resistance tend to be fragmented and individualized, limiting their capacity to produce broader structural change.

These efforts repeatedly encounter institutional barriers. Weak legal recognition of customary land tenure, limited access to formal dispute resolution mechanisms, high legal costs, and the risk of intimidation or criminalization constrain community action. Decision-making authority remains concentrated at higher administrative levels, while local actors lack the resources and institutional leverage required to challenge formally documented permits and concessions. As a result, communities are systematically disadvantaged in disputes over land and governance.

In response, households adopt a range of adaptive livelihood strategies to cope with land loss and economic uncertainty. These include diversifying income sources through plantation wage labor, subsistence farming, leasing remaining land, or engaging in temporary migration. Indigenous communities also adjust traditional practices to altered landscapes, for example by cultivating mixed crops in marginal areas or renegotiating access to shrinking forest resources. While these strategies demonstrate resilience and flexibility, they remain shaped by structural constraints.

Importantly, adaptation enables survival but does not alter the conditions that produce vulnerability. Instead, it often contributes to the stabilization of extractive arrangements by allowing communities to absorb shocks and adjust to dispossession. Community responses therefore tend to generate incremental gains, such as temporary compensation or localized adjustments, rather than systemic change, reinforcing dependence on the very systems that reproduce inequality.

These dynamics point to a critical distinction: resistance does not necessarily lead to transformation. Within Indonesia’s palm oil extractive regime, contestation and adaptation are frequently absorbed into existing governance structures, limiting their capacity to disrupt extractive dynamics. State–corporate alliances, concession-based land tenure systems, and sustainability governance frameworks collectively constrain the scope of meaningful change. Extractive regimes thus demonstrate resilience not despite resistance, but partly through their ability to accommodate and manage it.

This analysis underscores that transformative change in agrarian contexts cannot be achieved through community resilience or localized resistance alone. While grassroots contestation remains essential, it must be accompanied by structural reforms that redistribute power and reconfigure environmental governance. This includes the recognition of customary land rights, more equitable smallholder integration into value chains, and participatory governance mechanisms capable of challenging entrenched extractive logics. Without such shifts, contestation and adaptation risk becoming mechanisms through which extractive regimes are managed and reproduced rather than fundamentally transformed. To synthesize these interrelated dynamics, Fig. 2 presents a conceptual representation of palm oil expansion as an extractive regime.

Source: Processed by authors (2026)

This figure illustrates the interconnected dynamics through which environmental governance, state–corporate alliances, and concession-based land tenure systems structure unequal smallholder incorporation, resulting in agrarian inequality. Sustainability governance mechanisms (e.g., ISPO and RSPO) operate within this configuration primarily through compliance-based approaches, contributing to the stabilization of extractive dynamics rather than their transformation. Although contestation and adaptation emerge at the local level, they remain constrained in their capacity to produce structural change, reinforcing the persistence of extractive regimes.

Conclusion

This study advances understanding of palm oil expansion in Indonesia by conceptualizing it as an extractive regime that links environmental governance, land inequality, and sustainability challenges. Drawing on qualitative research in Aceh, the study demonstrates that palm oil expansion is not merely an economic or agricultural process, but a governance-driven transformation in which legal, administrative, and spatial mechanisms restructure access to land and natural resources.

First, the findings show that environmental governance operates through concession-based land tenure systems that enable land reclassification and large-scale plantation expansion. Instruments such as location permits, cultivation rights, and spatial planning frameworks function as an integrated governance apparatus that renders land administratively legible and available for investment. In this process, customary land systems are systematically marginalized, and dispossession occurs through gradual and bureaucratically mediated mechanisms rather than overt conflict.

Second, the study highlights how state–corporate alliances play a central role in sustaining extractive dynamics. Multi-level governance arrangements facilitate policy alignment, investment flows, and regulatory support that consolidate land control and enable capital accumulation. These arrangements not only shape access to land but also structure the incorporation of smallholders into palm oil value chains in uneven ways. As a result, land inequality is reproduced both through exclusion and through unequal forms of inclusion that generate dependency, livelihood vulnerability, and differentiated socio-economic outcomes.

Third, the analysis demonstrates that sustainability governance instruments, including ISPO and RSPO, have limited transformative capacity. While these frameworks aim to promote responsible production, they primarily operate through compliance-based approaches that prioritize formal legality and procedural standards. In practice, certification processes often overlook historical dispossession, unresolved land claims, and unequal power relations, thereby contributing to the stabilization and reproduction of extractive arrangements rather than their transformation.

The study further shows that although local communities actively engage in contestation and adaptation, these responses remain constrained by structural conditions. Community strategies, ranging from organized resistance to everyday coping practices, tend to produce incremental adjustments rather

than systemic change. This highlights a critical limitation of resilience-based approaches in addressing deeply embedded governance inequalities.

These findings contribute to environmental governance and sustainability debates by demonstrating how land inequality and socio-ecological pressures are co-produced within extractive regimes. The study underscores that addressing sustainability challenges in Indonesia's palm oil sector requires structural reforms that go beyond technical and certification-based solutions. Key priorities include the recognition of customary land rights, more equitable smallholder integration into value chains, and participatory governance mechanisms capable of redistributing power and challenging entrenched state–corporate dominance.

In this context, the study aligns with broader global sustainability agendas, particularly efforts to promote responsible production, reduce inequality, and support inclusive governance. By highlighting the limitations of existing governance approaches, this research calls for a reorientation of sustainability interventions toward addressing the political and institutional foundations of extractive development.

Declarations

Clinical trial number

Not applicable

Ethics approval and consent to participate

This study involves human participants and was conducted in accordance with ethical research standards. Informed consent was obtained from all participants prior to data collection.

Competing interests

The authors declare no competing interests.

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Author Contribution

I. conceived the study, designed the research framework, conducted fieldwork, analyzed the data, and wrote the main manuscript draft. V.H. contributed to the conceptual framework, interpretation of findings, and revision of the manuscript. I.M.S. supported data collection, literature review, and

manuscript editing. D.S. contributed to policy analysis, validation of findings, and critical review of the final manuscript. All authors reviewed and approved the final version of the manuscript.

Data Availability

The datasets generated and/or analysed during the current study are available from the corresponding author on reasonable request.

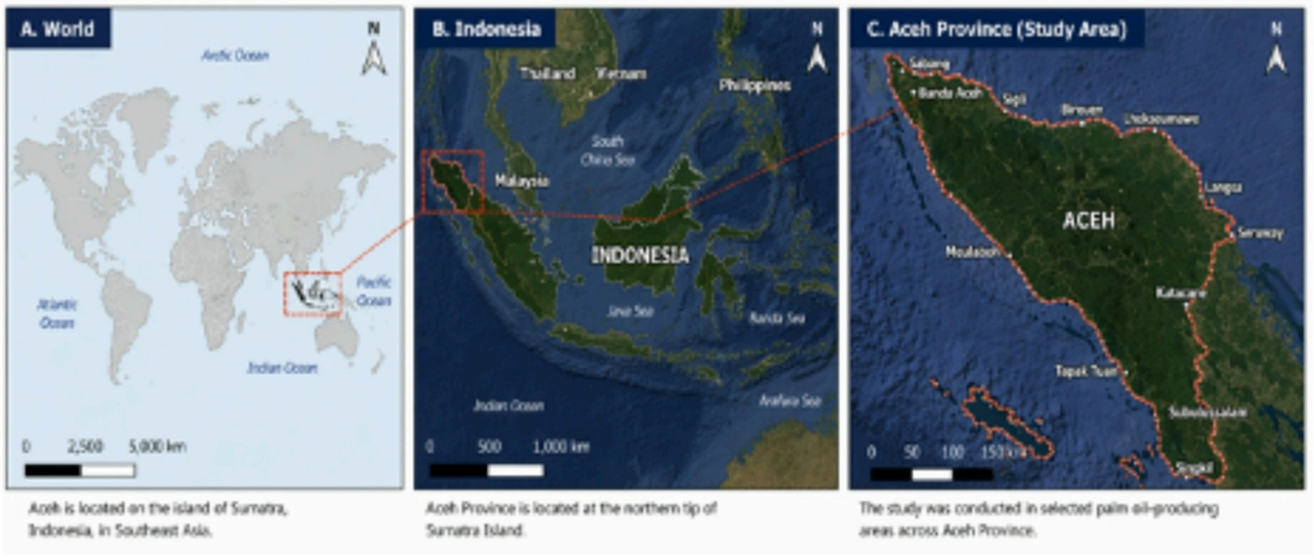
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Figures



Aceh is located on the island of Sumatra, Indonesia, in Southeast Asia.

Aceh Province is located at the northern tip of Sumatra Island.

The study was conducted in selected palm oil-producing areas across Aceh Province.

Figure 1

Multi-scalar location of the study area (world, Indonesia, and Aceh Province). Source: Google Maps (2026), modified by authors.

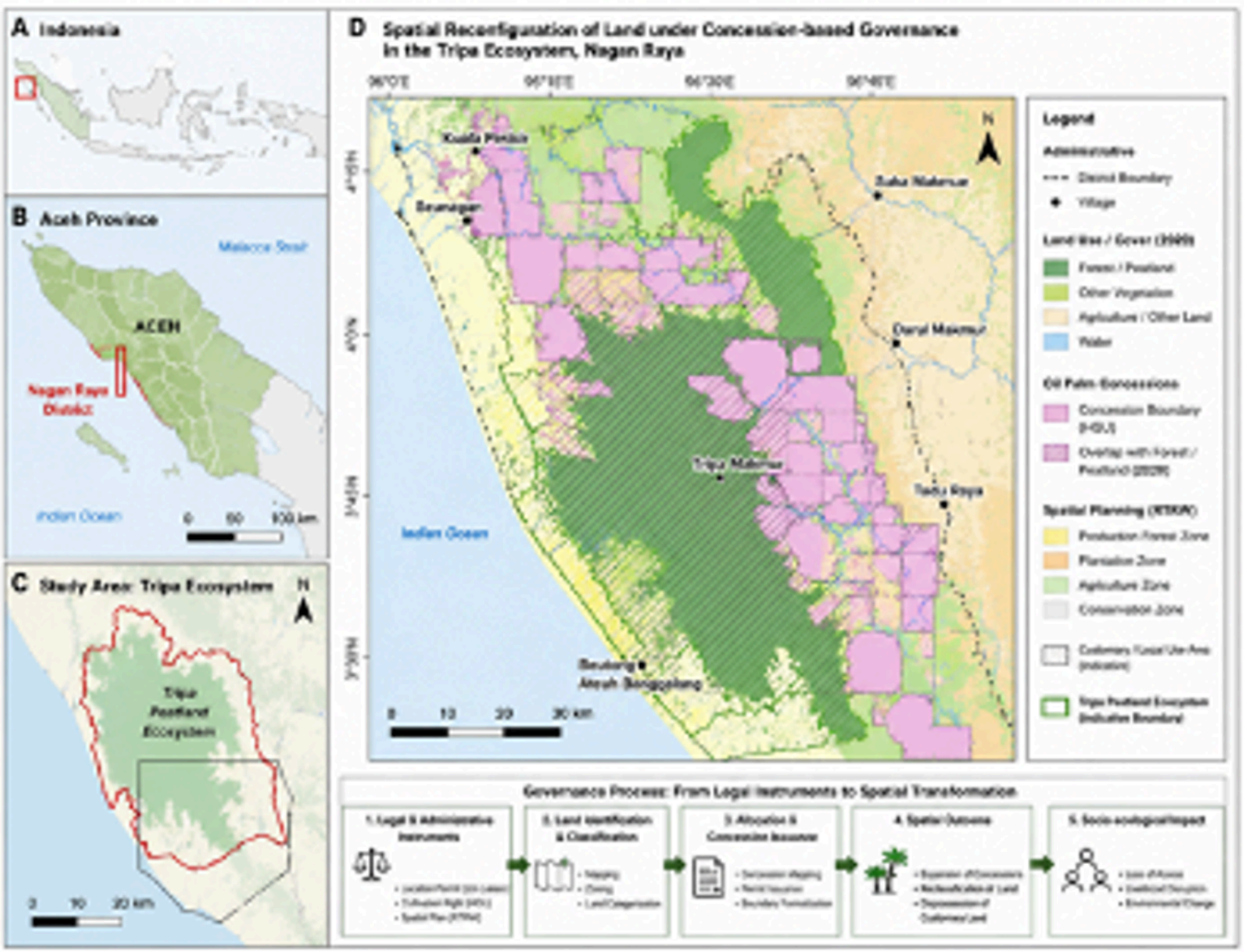


Figure 2

Spatial reconfiguration of land under concession-based governance

Source: Google map (2026)

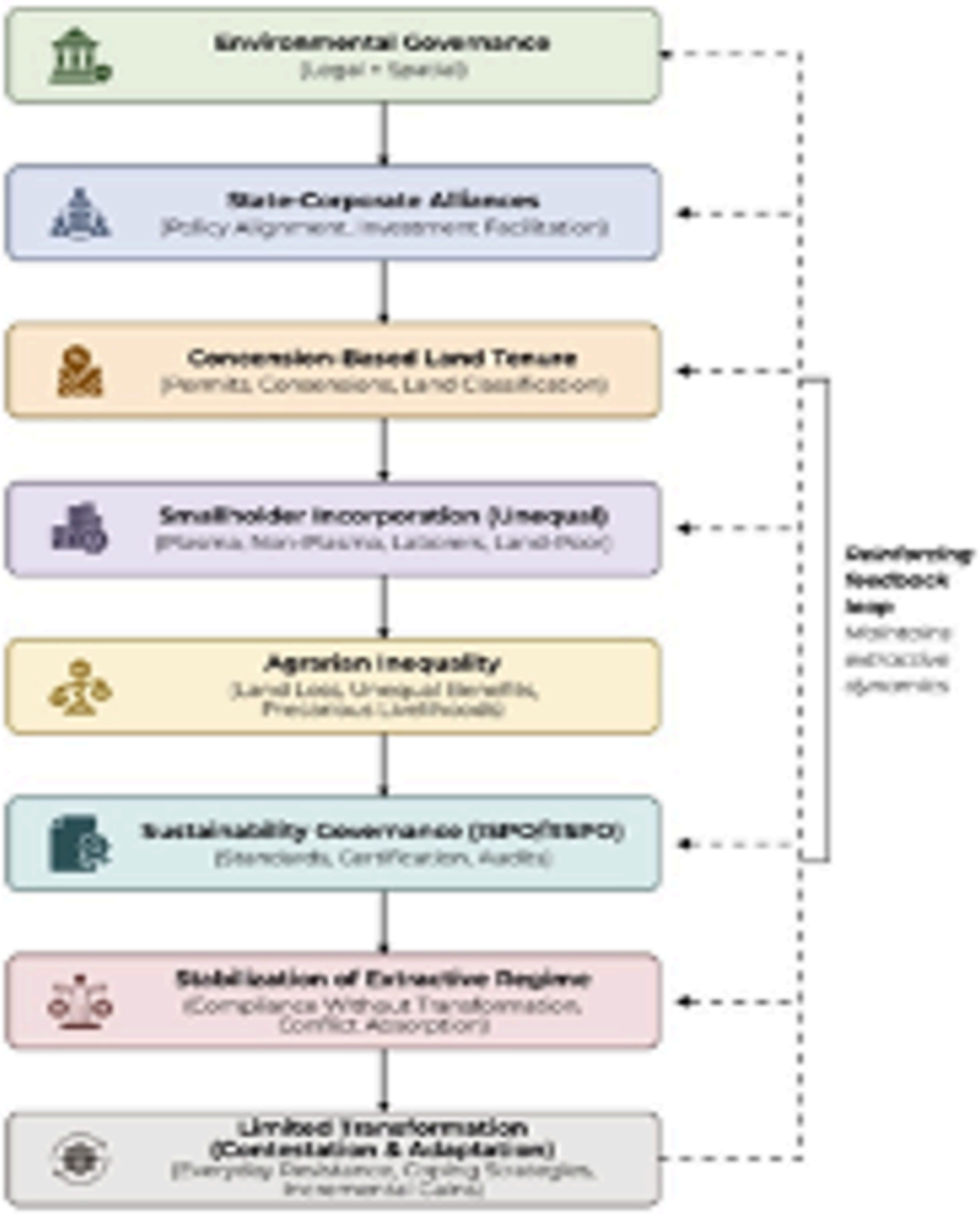


Figure 3

Palm oil expansion as an extractive regime

Source: Processed by authors (2026)