



## Fit-for-Purpose Spatial Planning for Inclusive and Sustainable Palm Oil Governance in Indonesia

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### ABSTRACT

This qualitative literature review examines how fit-for-purpose spatial planning can strengthen palm oil governance in Indonesia by reducing agrarian inequality, preventing land-use conflict, protecting sensitive landscapes, and advancing broad-based welfare. The article argues that many controversies surrounding palm oil are not caused by the crop itself, but by weak spatial governance, insecure tenure, overlapping permits, inadequate recognition of local claims, fragmented institutions, and insufficient integration between production, conservation, and welfare policies. Drawing on recent literature on fit-for-purpose land administration, Indonesian spatial planning, palm oil certification, smallholder inclusion, land conflict, degraded-land allocation, peatland governance, and inclusive landscape governance, the article develops an integrative framework for palm oil spatial reform. The review finds that fit-for-purpose spatial planning can contribute through five mechanisms: spatial recognition, spatial transparency, spatial suitability, spatial inclusion, and spatial adaptability. These mechanisms can help Indonesia align palm oil's economic contribution with agrarian justice, conflict reduction, ecological protection, and smallholder welfare. The article recommends participatory spatial audits, conflict-risk mapping, differentiated treatment of forest-zone oil palm, degraded-land prioritization, smallholder legality pathways, and landscape-level coordination. The main contribution is to extend fit-for-purpose thinking from land administration into commodity-based spatial governance

## **INTRODUCTION**

Palm oil is a strategic sector in Indonesia's rural economy because it contributes to export earnings, employment, agro-industrial development, and smallholder livelihoods. Indonesia and Malaysia together dominate the global palm oil economy, and Indonesia's palm oil sector has become deeply embedded in national development planning, rural transformation, and global vegetable oil supply chains [1]. Palm oil also has high land productivity compared with many other vegetable oils, making it possible to meet large market demand with a smaller land footprint if production is governed through sustainable spatial and agronomic systems [2].

The policy issue, therefore, is not whether palm oil should be viewed simply as a problem or a solution. The more relevant question is how Indonesia can govern palm oil spatially so that it contributes to rural welfare while reducing social conflict and ecological risk. Several controversies associated with palm oil arise from insecure land rights, overlapping permits, unclear forest-zone status, insufficient recognition of customary and local claims, uneven smallholder inclusion, and weak integration between licensing, spatial planning, environmental safeguards, and welfare policy. Evidence from Riau shows that palm oil expansion, insecure land rights, and land-use conflict are strongly connected in one of Indonesia's major palm oil regions [3]. Research on forest-zone oil palm also shows that some oil palm areas are located within legally designated forest zones, creating complex policy ambiguity for smallholders, companies, and government agencies [4].

This article takes a constructive and reform-oriented position. It does not treat palm oil as inherently unsustainable. Instead, it argues that many sustainability and conflict problems in the sector are symptoms of weak spatial governance. When land allocation is unclear, when local claims are administratively invisible, when permits overlap with forests or peatlands, and when certification is disconnected from land legality, palm oil becomes a site of dispute and ecological risk. Conversely, when palm oil is allocated to suitable land, linked to smallholder support, governed through transparent spatial data, and embedded in landscape-level safeguards, it can contribute to inclusive rural development [5].

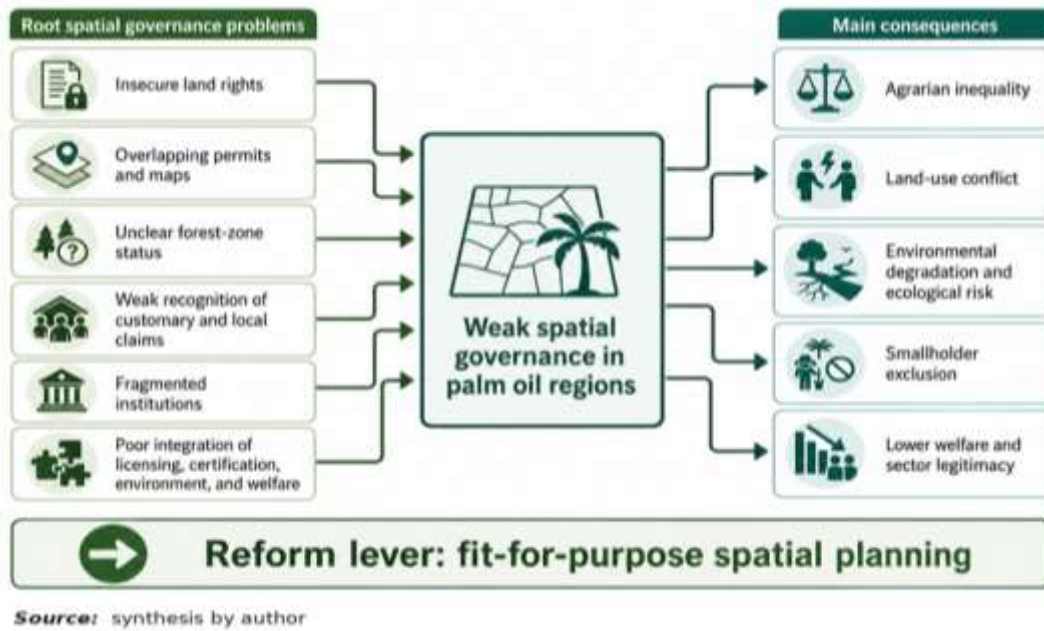


Figure 1. Why Spatial Governance in Indonesia’s Palm Oil Sector

Fit-for-purpose spatial planning offers a promising approach to this reform agenda. The fit-for-purpose concept was developed in land administration as a pragmatic response to conventional cadastral systems that were often too expensive, slow, and technically demanding for developing-country contexts [6], [7]. Its core principles include flexibility, inclusiveness, affordability, participation, and incremental improvement [8]. When extended into spatial planning, these principles can help Indonesia move from rigid, fragmented, and technocratic land-use control toward adaptive, participatory, and welfare-oriented palm oil governance, as illustrated in Figure 1.

The central research question is: How can fit-for-purpose spatial planning be used to reform Indonesian palm oil governance in ways that reduce agrarian inequality, minimize land conflict, prevent environmental degradation, and enhance broad-based social welfare? To answer this question, the article synthesizes literature on land administration, spatial planning, palm oil certification, smallholder welfare, agrarian conflict, degraded land, peatland governance, and inclusive landscape governance. Its main contribution is to extend fit-for-purpose thinking from land administration into commodity-based spatial governance, while reframing palm oil sustainability as a spatial justice problem involving recognition, transparency, suitability, inclusion, and adaptability.

This framing is important for academic and policy debates because it avoids two common simplifications. The first simplification is to evaluate palm oil solely through global environmental narratives, with insufficient attention to local tenure, village welfare, and Indonesia’s development needs. The second is to defend palm oil solely on economic grounds, without fully addressing the spatial roots of conflict and ecological harm. A fit-for-purpose perspective makes it possible to hold these dimensions together. It accepts palm oil as a major development sector while insisting that its legitimacy depends on fair land

allocation, transparent spatial data, ecologically suitable locations, and institutions that can adjust policy to diverse local conditions.

## LITERATURE RIVIEW

### **Fit-for-Purpose Land Administration and Spatial Planning**

Fit-for-purpose land administration emerged as an alternative to conventional land registration systems that require high-precision surveys, extensive legal procedures, and substantial institutional capacity. Rather than demanding complete technical precision at the beginning, fit-for-purpose land administration emphasizes what is sufficient for the governance purpose at hand and allows quality to improve progressively over time [6], [7]. This approach is particularly relevant in countries where formal land administration does not yet fully capture customary, informal, local, or smallholder claims.

Recent research also emphasizes that fit-for-purpose land administration must be maintainable. Bennett and colleagues argue that land administration systems often face persistent difficulties not only in initial establishment but also in long-term maintenance, updating, interoperability, and integration with other governance functions, such as spatial planning and valuation [9]. This point is important for palm oil governance because outdated or fragmented maps can become sources of conflict rather than instruments of resolution.

The extension from land administration to spatial planning is conceptually significant. Land administration records rights, restrictions, and responsibilities, while spatial planning allocates land among agriculture, conservation, settlement, infrastructure, industry, and public purposes. In Indonesia, spatial plan information systems have been studied as tools for sustainable land governance because they connect spatial planning, licensing, and monitoring [10]. A fit-for-purpose spatial planning approach, therefore, asks whether spatial data, zoning rules, institutional arrangements, and participation mechanisms are adequate for solving specific governance problems.

For palm oil, the governance purposes are practical and urgent. Spatial planning should identify where palm oil is legally and ecologically suitable, whose claims must be recognized, which landscapes require protection, how conflicts can be prevented, and how smallholders can access welfare-enhancing programs. Fit-for-purpose spatial planning is useful because it does not wait for perfect institutions or complete cadastral certainty before action begins. It promotes feasible first steps, followed by verification, correction, and progressive upgrading.

In this sense, fit-for-purpose does not mean low quality or weak standards. It means that the level of precision, legal formality, institutional procedure, and technological complexity should be appropriate to the governance function being performed. For example, preliminary village-level conflict-risk mapping may not require the same survey precision as final cadastral registration, but it can still be good enough to prevent licensing errors and guide mediation. Similarly, degraded-land screening may begin with satellite interpretation and administrative overlays, then be improved through field verification, community consultation, and ecological assessment. The value

of the approach lies in sequencing reform so that urgent governance failures can be addressed while systems are progressively upgraded.

### **Spatial Justice and Agrarian Inequality**

Spatial planning is never neutral because it distributes access to land, infrastructure, markets, ecosystem services, and development opportunities. In palm oil regions, spatial decisions influence who gains access to productive land, who receives infrastructure, which claims are recognized, which areas are restricted for conservation, and which actors benefit from licensing and certification. For that reason, spatial planning should be understood as a justice mechanism, not only as a technical allocation instrument [5].

Agrarian inequality is partly produced through unequal spatial recognition. Corporate concessions may be formally mapped, registered, and visible to state agencies, while smallholder plots, customary territories, and community land uses may remain informal or administratively weak. This asymmetry affects bargaining power, access to compensation, eligibility for certification, and participation in replanting or support programs. Research on palm oil conflict in Riau confirms that insecure land rights and expansion dynamics can generate persistent land-use conflict [3].

Spatial justice includes three dimensions. Distributive justice concerns the allocation of land-based benefits and environmental burdens. Procedural justice concerns meaningful participation in decisions that affect land and livelihoods. Recognition justice concerns the acknowledgment of local histories, customary territories, smallholder claims, and community knowledge. Fit-for-purpose spatial planning can support these dimensions when participatory mapping, spatial data transparency, legal verification, and conflict mediation are integrated into planning practice.

The spatial justice lens is also useful because agrarian inequality is not only reflected in land size. It is also reflected in the quality of location, access to roads and mills, distance to markets, exposure to floods or fires, security of tenure, and eligibility for formal programs. Two farmers with similar land areas may have very different welfare prospects if one plot is legally recognized, connected to infrastructure, and eligible for replanting finance, while the other is located in a contested or restricted zone. Fit-for-purpose spatial planning, therefore, needs to measure inequality through a broader spatial bundle of rights, risks, services, and opportunities.

### **Palm Oil Certification and Smallholder Inclusion**

Palm oil governance in Indonesia is shaped by state regulation, market standards, private commitments, certification systems, and international sustainability expectations. The Indonesian Sustainable Palm Oil standard is a state-driven certification system, while the Roundtable on Sustainable Palm Oil is a voluntary transnational certification initiative. Research on ISPO shows that Indonesian palm oil sustainability governance reflects both norm adoption and institutional ambiguity, shaped by decentralization, international pressure, and fragmented authority [11].

Certification can support sustainability, but it is not automatically inclusive. Research on independent smallholders in Sumatra shows that farmers may value certification because it brings knowledge, market access, social recognition, and financial benefits, but effective participation often depends on organizational support and facilitation [12]. Comparative research on RSPO-certified value chains in Indonesia and Thailand also shows that upstream learning is limited when farmers lack incentives, autonomy, and direct knowledge transfer [13].

These findings imply that certification should be connected to spatial legality and welfare policy. Smallholders who are spatially invisible or legally uncertain may struggle to join certification schemes, obtain credit, access replanting programs, or participate in formal markets. Fit-for-purpose spatial planning can address this problem by identifying smallholder clusters, supporting land legality pathways, and linking mapped plots to extension, finance, cooperative development, and certification readiness.

The welfare dimension of certification should be emphasized. Certification is often discussed as a market-access instrument or an environmental compliance mechanism, but for smallholders it can also function as a channel for learning, organization, bargaining power, and institutional recognition. Santika and colleagues show that sustainability certification can influence village well-being and poverty outcomes in Indonesia, although impacts are uneven and depend on local conditions [14]. This means that certification should not be treated as a stand-alone market label. It should be embedded in spatial planning that identifies where smallholders are located, what constraints they face, and which support packages are required for certification to become welfare-enhancing rather than exclusionary.

#### **Environmental Governance, Degraded Land, and Peatlands**

Environmental outcomes in palm oil landscapes depend heavily on spatial allocation. Palm oil on suitable mineral soils or already degraded lands has different consequences from expansion into forests, peatlands, riparian zones, or high-conservation-value areas. Scenario research on Indonesian palm oil shows that economic development and environmental conservation can be reconciled through intensification, no-deforestation strategies, no-peat strategies, and land swapping [1].

Degraded land is central to a constructive sustainability pathway. Research on land availability for sustainable palm oil highlights the importance of identifying suitable lands that can support production without further forest conversion [15]. Land-swap policy can also help redirect development from high-carbon or forested areas to lower-risk areas, especially when integrated with agrarian reform and local government implementation [16]. These studies support a positive policy narrative: palm oil sustainability can be strengthened through better spatial allocation rather than through blanket rejection of the sector.

Peatlands require stricter safeguards because they are carbon-rich and hydrologically sensitive. Research on Indonesia's peatland governance shows that spatial and hydro-governance interventions face resistance because they affect powerful plantation interests and existing land-use arrangements [17]. Smallholder perceptions are also important. Ward and colleagues found that acceptance of peatland rewetting measures depends on perceived effects on fire risk, farm access, and yields [18]. Environmental planning must therefore combine ecological zoning with livelihood-sensitive design.

### **Inclusive Landscape Governance**

Palm oil cannot be governed effectively through plot-by-plot planning alone. Plantations, smallholder plots, forests, peatlands, rivers, mills, settlements, infrastructure, and conservation areas are parts of broader social-ecological landscapes. Inclusive landscape governance literature emphasizes that spatial tools can support negotiation, coordination, and shared decision-making across multiple land uses and actors [19].

A landscape approach also helps avoid a rigid separation between production and conservation. Sustainable palm oil landscapes can include intensive production zones, smallholder clusters, riparian buffers, conservation corridors, community forests, agroforestry areas, peatland restoration zones, and welfare-oriented infrastructure. Fit-for-purpose spatial planning can support such mosaics because it uses spatial information that is adequate for practical decisions while remaining flexible enough to adapt to local institutional and ecological conditions.

Landscape governance is particularly relevant because palm oil externalities cross administrative boundaries. Water flows, fire risk, peatland hydrology, biodiversity corridors, labor mobility, and mill supply areas do not necessarily follow district borders. At the same time, Indonesian planning and licensing remain strongly shaped by administrative jurisdictions. A fit-for-purpose approach can bridge these realities by using administrative boundaries for accountability while incorporating landscape boundaries for ecological and economic analysis. This dual orientation is essential for palm oil regions where the effects of one actor's land-use decision may be experienced by other communities, districts, or ecosystems.

### **METHODOLOGY**

This article uses a qualitative literature review approach. A qualitative literature review is appropriate because the objective is to synthesize concepts, identify thematic patterns, and develop an integrated governance framework rather than calculate effect sizes or conduct statistical meta-analysis. Qualitative research is suitable for complex, context-dependent, and interpretive problems [20].

This article is not a systematic literature review. It does not claim to use PRISMA-based exhaustive screening or a rigid inclusion protocol. Instead, it uses purposive thematic selection of relevant and reputable literature. The selected literature covers fit-for-purpose land administration, Indonesian spatial planning, palm oil certification, smallholder welfare, agrarian conflict, forest-

zone oil palm, degraded land, land swap, peatland governance, and inclusive landscape governance.

The analysis proceeded through three stages. First, the literature was reviewed to identify recurring governance problems: insecure tenure, overlapping permits, forest-zone ambiguity, smallholder exclusion, conflict, ecological risk, and institutional fragmentation. Second, these problems were interpreted through fit-for-purpose principles: flexibility, inclusiveness, participation, affordability, and incremental improvement. Third, the article developed an integrative framework linking fit-for-purpose spatial planning to four outcomes: reduced agrarian inequality, reduced conflict, reduced environmental degradation, and improved welfare.

The initial manuscript provided by the author was used as a conceptual starting point. Its themes on sustainable spatial planning, fit-for-purpose land administration, administrative and landscape boundaries, benefit-sharing, degraded-land allocation, peatland safeguards, and adaptive implementation were refined into a focused article on Indonesian palm oil governance.

The review was conducted interpretively. Sources were read not only for empirical findings, but also for the governance mechanisms they suggest. The synthesis, therefore, focused on how particular spatial reforms may generate particular outcomes. For example, studies on land conflict were interpreted to identify the role of tenure uncertainty and overlapping claims; studies on degraded land and land swaps were interpreted to identify spatial suitability mechanisms; and studies on certification were interpreted to understand the welfare conditions under which standards can benefit smallholders. This method is consistent with a qualitative literature review because the objective is conceptual integration rather than exhaustive measurement.

## **RESULT**

### **Spatial recognition can reduce agrarian inequality**

The first finding is that fit-for-purpose spatial planning can reduce agrarian inequality by improving spatial recognition. In palm oil regions, the most powerful actors are often those whose claims are formally mapped and administratively visible. Smallholders, customary communities, and informal land users may have long-standing relationships with land, but their claims may not be adequately recorded in official systems. This creates a disadvantage in licensing, compensation, certification, dispute resolution, and access to support programs [21], [22], [23], [24], [25].

Participatory mapping can help correct this inequality. It can identify smallholder plots, customary territories, village boundaries, community forests, sacred sites, riparian areas, degraded lands, and disputed areas. However, participatory mapping must be connected to verification and legal pathways. If community maps are produced but ignored by authorities, they may raise expectations without improving justice. Spatial tools are most useful when embedded in institutional processes that allow communities to influence planning outcomes [19], [26], [27].

Forest-zone oil palm illustrates why recognition must be differentiated. Purwanto and colleagues show that forest-zone oil palm includes multiple realities, including smallholder cultivation, corporate operations, agroforestry possibilities, and areas where restoration or transition may be more appropriate [4]. A fit-for-purpose spatial approach can distinguish corporate violations, long-established smallholder plots, customary areas, degraded lands, and sensitive ecological zones. This allows policy to be corrective, fair, and realistic [4], [28], [29].

Recognition should also include temporal depth. Some palm oil plots are recent encroachments, while others are the result of long-standing settlement, transmigration, customary occupation, or informal local agreements that predate current enforcement priorities. Treating these situations identically may appear administratively simple, but can be socially unjust and politically ineffective. Fit-for-purpose spatial planning should therefore combine current spatial overlays with historical evidence, village testimony, permit chronology, and livelihood analysis. This does not mean legitimizing every land use. It means designing remedies that distinguish between intentional large-scale violations, administrative legacy problems, and vulnerable smallholder situations [30].

#### **Spatial Transparency Can Reduce Conflict**

The second finding is that spatial transparency can reduce land-use conflict. Conflict often emerges when communities, companies, and government agencies rely on different maps, different permit histories, and different interpretations of rights. In such conditions, distrust grows, and negotiation becomes difficult. Spatial plan information systems can support sustainable land governance when they improve integration, transparency, and usability across institutions [10].

A fit-for-purpose spatial planning system should include accessible spatial data, conflict-risk mapping, public verification, and grievance mechanisms. Before new permits are issued or existing permits renewed, authorities should verify whether proposed areas overlap with community claims, forest zones, peatlands, conservation areas, riparian zones, or unresolved disputes. This would shift palm oil governance from reactive conflict settlement to preventive spatial governance [6], [31], [32], [33], [34].

The Riau case demonstrates why this is necessary. Palm oil expansion, insecure land rights, and land-use conflict are closely related in one of Indonesia's most important palm oil regions [3]. If land claims are clarified only after conflict escalates, social costs, business uncertainty, and institutional distrust become much higher. Fit-for-purpose spatial planning can reduce these costs by identifying risks earlier and creating structured mediation pathways [35], [36], [37], [38].

Spatial transparency must be designed for use, not only for publication. Public geoportals are valuable, but conflict reduction also requires data that communities can understand, validate, and challenge. This may require village-level map displays, facilitated consultations, complaint windows, multilingual explanations, and simple procedures for correcting errors. Transparency also needs institutional consequences. If public objections reveal overlapping claims

or ecological risk, licensing processes should pause until verification is completed. Without procedural consequences, transparency may become symbolic rather than preventive [39], [40], [41].

### **Spatial Suitability Can Prevent Environmental Degradation**

The third finding is that spatial suitability is central to environmental protection. Palm oil should be directed toward land that is legally clear, biophysically appropriate, socially accepted, and ecologically lower risk. It should be restricted or prohibited where development would cause serious environmental damage, such as in peatlands, high-conservation-value forests, riparian zones, and other sensitive landscapes [42], [43], [44], [45], [46].

Degraded land and land swap are important instruments. Research on sustainable palm oil land availability shows the importance of identifying areas where palm oil can be developed without further deforestation [15]. Land-swap policy can redirect development away from forested or high-carbon areas toward lower-carbon and more suitable areas, especially when integrated with agrarian reform [16]. These approaches help maintain palm oil's economic contribution while reducing ecological harm.

Peatland protection requires more than prohibition. Because peatland hydrology is complex and local livelihoods may depend on existing land uses, policy must combine spatial zoning, water management, restoration, livelihood support, and stakeholder participation. Research on peatland governance shows that state attempts to control peatland use face political and institutional contestation [17]. Research on smallholder perceptions of rewetting shows that farmers' acceptance depends on perceived impacts on yields, access, and fire risk [18].

Environmental protection should therefore be framed as spatial risk management. A fit-for-purpose plan can classify palm oil areas such as suitable for continued production, suitable with improved management, suitable for replanting and intensification, requiring hydrological intervention, requiring restoration, or requiring livelihood transition. Such classification is more constructive than a binary legal-illegal or production-conservation distinction. It allows the government to protect sensitive ecosystems while also giving producers a clear pathway for compliance, correction, or transition [42], [47], [48], [49].

All important dimensions of fit-for-purpose spatial planning are illustrated in Figure 2.



Figure 2. Five Mechanisms of fit-for-purpose Spatial Planning

### Spatial Inclusion Can Strengthen Smallholder Welfare

The fourth finding is that spatial planning can improve welfare when it links land legality to support programs. Smallholders need more than formal obligations. They need accessible mapping, legal recognition, replanting finance, extension, cooperative support, certification facilitation, and market access. Certification research shows that independent smallholders can benefit from certification, but organizational support and fair benefit distribution are crucial [12], [50], [51], [52], [53], [54].

Spatial inclusion means that mapping should not be used only for control. It should also identify who needs support. District governments can use fit-for-purpose spatial data to locate smallholder clusters, identify low-productivity areas, prioritise replanting, target extension services, and prepare groups for certification. In this sense, spatial planning becomes a welfare instrument [55], [56].

Certification can then become more inclusive. Degli Innocenti and Oosterveer show that upstream learning in certified palm oil value chains is constrained when farmers do not receive adequate incentives or knowledge transfer [13]. Spatial planning can help identify where learning support is needed and connect certification to local institutions, cooperatives, and extension systems.

Welfare-oriented spatial planning should also address productivity. Many smallholders cultivate aging palms, use limited inputs, lack technical advice, or sell through long intermediary chains. If expansion is restricted for environmental reasons but productivity constraints remain unresolved, farmers may experience declining income and may seek new land elsewhere. Spatial planning should therefore support intensification within suitable areas, replanting in legal plots, and access to mills and markets. This creates a positive

policy bargain: stronger environmental limits are paired with stronger livelihood support in appropriate locations [28], [52], [57], [58].

### **Spatial Adaptability Can Improve Implementation**

The fifth finding is that fit-for-purpose spatial planning must be adaptive. Palm oil landscapes change over time because of demographic shifts, market changes, climate risk, land conflicts, replanting cycles, infrastructure development, and policy reforms. Static plans become outdated quickly. Land administration maintenance literature shows that systems must be continuously updated and maintained to remain effective [9], [24], [59], [60].







Spatial adaptability requires regular review, monitoring, and learning. District spatial plans should be revised based on new data, conflict resolution outcomes, ecological monitoring, and community feedback. Pilot projects should test methods before national scaling. This is consistent with fit-for-purpose principles because reform begins with feasible steps and improves over time [61], [62], [63].


Adaptability also requires clear indicators. Authorities should be able to measure whether spatial reforms reduce unresolved overlaps, shorten conflict-resolution time, increase the number of legally recognized smallholder plots, improve certification readiness, protect peat and forest areas, and expand access to welfare programs. Without indicators, fit-for-purpose planning may remain an attractive concept but lack accountability. Indicators should be simple enough for district implementation, yet robust enough to support national monitoring and academic evaluation [64], [65], [66], [67], [68].

## **DISCUSSION**

### **An Integrated Framework for Palm Oil Spatial Governance**

The findings support a five-dimensional framework for fit-for-purpose palm oil spatial planning. First, spatial recognition addresses agrarian inequality by making smallholder and community claims visible. Second, spatial transparency addresses conflict by integrating maps, permits, claims, and ecological data. Third, spatial suitability addresses environmental risk by guiding palm oil toward appropriate landscapes. Fourth, spatial inclusion addresses welfare by linking legality with smallholder support. Fifth, spatial adaptability addresses implementation by allowing continuous learning and revision [21], [69], [70], [71], [72]. Comparison between conventional spatial planning and fit-for-purpose spatial planning approach is illustrated in Figure 3.

	Conventional approach	Fit-for-purpose approach
 Starting assumption	Formal zoning alone controls land use	Spatial planning is a governance tool, not only zoning
 Data requirement	Wait for precise and complete data	Start with adequate data, then improve progressively
 Participation	Technocratic and limited	Participatory and inclusive
 Treatment of diversity	Uniform model	Context-sensitive and differentiated
 Conflict management	Reactive settlement after disputes escalate	Preventive conflict-risk mapping and early mediation
 Update cycle	Static plans and infrequent updates	Adaptive monitoring, review, and revision

 **Goal:** integrate legality, welfare, and ecological protection in real landscapes.

Source: synthesis by author

Figure 3. Conventional Spatial Planning VS Fit-for- Purpose Spatial Planning

This framework shifts palm oil governance from sectoral compliance to integrated spatial reform. Certification, legality, conflict resolution, land allocation, peatland protection, and smallholder welfare should not be managed as separate bureaucratic domains. They are connected through space. A smallholder cannot easily join certification if the plot is legally uncertain. A company cannot be considered sustainable if its concession overlaps with unresolved community claims or high-risk ecosystems. A conservation zone may not be legitimate if local communities bear costs without benefit-sharing. Fit-for-purpose spatial planning helps connect these issues [5].

The framework also clarifies the difference between spatial planning as zoning and spatial planning as governance. Zoning determines permitted and prohibited uses. Governance determines how decisions are made, whose evidence counts, how conflicts are handled, how corrections are implemented, and how benefits are distributed. Palm oil reform requires both. Zoning without governance may produce maps that are ignored or contested. Governance without spatial clarity may produce negotiation without clear boundaries. Fit-for-purpose spatial planning combines both by treating maps as living governance instruments that can support negotiation, enforcement, support delivery, and learning [53], [73], [74], [75].


#### Advantages over Conventional Spatial Planning

Conventional spatial planning often assumes that formal zoning can control land use once maps and regulations are issued. In practice, palm oil landscapes show that zoning alone is insufficient when land claims overlap, institutions are fragmented, and enforcement is uneven. Fit-for-purpose spatial planning is more realistic because it begins from actual governance constraints.

It does not require perfect data before action, but it requires transparent improvement, participation, and accountability [76], [77], [78], [79].

This approach is also appropriate for Indonesia's diversity. Riau, Jambi, Central Kalimantan, West Kalimantan, and Papua have different histories of plantation expansion, smallholder participation, forest-zone overlap, peatland risk, infrastructure access, and customary land relations. A uniform model would be inappropriate. Fit-for-purpose planning allows national principles to be adapted to local contexts [71], [80], [81].

Another advantage is political feasibility. Comprehensive reform often fails when it demands that all institutions, databases, and legal categories be perfected before implementation. Fit-for-purpose planning reduces this barrier by allowing reform to begin in priority areas and by distinguishing between minimum viable spatial information and later improvement. This is especially useful in districts where conflict is urgent, smallholder legality is unresolved, or environmental risk is high. The approach can deliver early benefits while building institutional trust for deeper reform [32], [82], [83]. Figure 4 illustrates spatial suitability and response matrix for palm oil governance as discussed previously.

Spatial category	Main risk	Fit-for-purpose response
 Legally clear and suitable land	 Low to moderate risk	 Continue production, intensify sustainably, support certification
 Degraded land	 Lower deforestation risk	 Prioritize for new development after field verification
 Smallholder oil palm in forest zone	 Legal ambiguity	 Differentiate cases; legality pathway, agroforestry, or transition support
 Peatlands	 High carbon, fire, and hydrology risk	 Restrict expansion; hydrological management; restoration where needed
 High-conservation-value forest, riparian zones, and sensitive areas	 High ecological risk	 Protect, buffer, and restore
 Overlapping claims and conflict zones	 High social risk	 Pause licensing, verify claims, and mediate disputes

Source: synthesis by author

Figure 4. Spatial Suitability and Response Matrix for Palm Oil Governance

### Policy Implications

In the short term, Indonesia should conduct participatory spatial audits in priority palm oil districts. These audits should identify smallholder plots, concession boundaries, forest-zone overlaps, peatlands, degraded lands, conflict zones, and customary claims. They should be designed not as one-time mapping exercises, but as the basis for spatial negotiation, legal correction, and targeted support [78], [84], [85], [86].

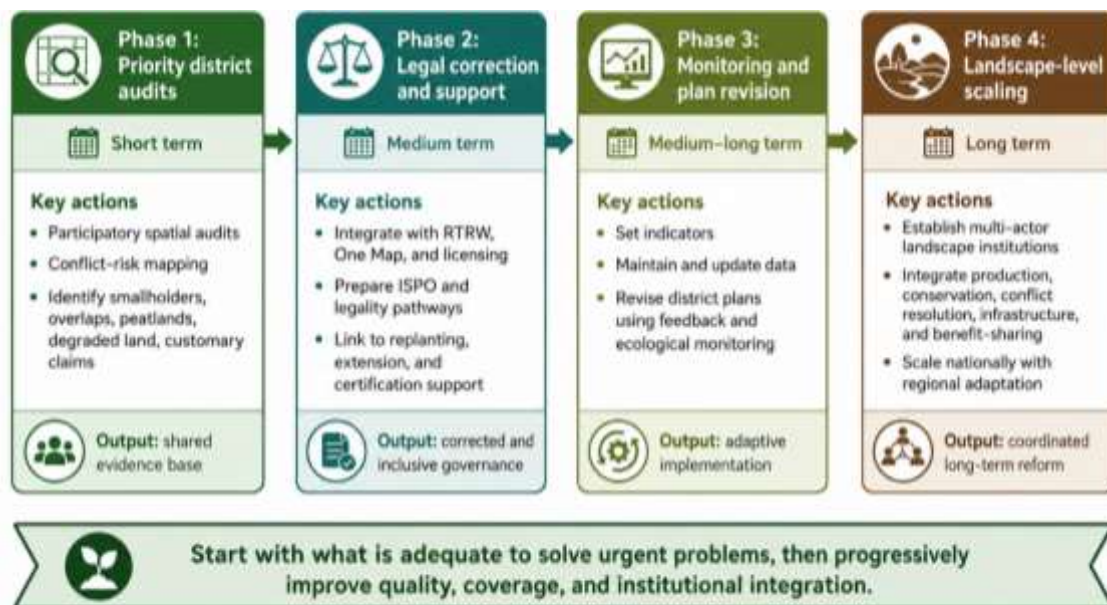
Indonesia should also institutionalize conflict-risk mapping before plantation permits are issued or renewed. This would help prevent conflicts rather than merely respond after escalation. Conflict-risk maps should include

overlapping claims, previous disputes, customary territories, plasma obligations, ecological risk, and community objections [84], [87], [88].

In the medium term, fit-for-purpose principles should be integrated into RTRW, ISPO, One Map updating, plantation licensing, and smallholder replanting. ISPO implementation would become more effective if linked to verified spatial data, smallholder legality pathways, and local support systems. Spatial planning would become more legitimate if it incorporated certification needs, market access, welfare programs, and environmental safeguards [89], [90], [91], [92].

In the long term, Indonesia should establish landscape-level palm oil governance institutions in major producing regions. These institutions should coordinate across districts, sectors, and land-use categories. They should have the authority to integrate production, conservation, conflict resolution, infrastructure, smallholder support, and benefit-sharing. Inclusive landscape governance literature supports this approach because spatial tools are most effective when embedded in multi-actor coordination [19].

Implementation should be sequenced in a practical roadmap. A sequenced policy roadmap for fit-for-purpose palm oil governance is illustrated in Figure 5. The first phase should focus on priority districts with high conflict, high smallholder concentration, or high ecological sensitivity. The second phase should integrate spatial audit results with legal correction, ISPO preparation, replanting programs, and district spatial plan revision. The third phase should institutionalize monitoring indicators and data maintenance arrangements. The fourth phase should scale lessons nationally while allowing regional adaptation. This sequencing reflects the core fit-for-purpose idea: start with what is adequate to solve the problem, then improve quality, coverage, and institutional integration over time [93], [94].



Source: synthesis by author

Figure 5. Sequenced Policy Roadmap for Fit for Purpose Palm Oil Governance

### **Critical Reflection and Limitations**

Fit-for-purpose spatial planning should not be romanticized. Participatory mapping can be captured by local elites. Spatial data can be politicized. Certification can exclude smallholders if costs are too high. Degraded-land policies can fail if land is remote, unproductive, or contested. Peatland restoration can face resistance if farmers fear income loss. These risks show that fit-for-purpose planning is not a technical shortcut. It is a governance reform pathway.

The study also has limitations. It is based on a qualitative literature review and does not provide original fieldwork from palm oil-producing districts. Its findings are interpretive and conceptual rather than statistical. Because Indonesia's palm oil landscapes are diverse, the framework should be adapted to specific regional contexts. Future research should test the framework through comparative case studies in major palm oil provinces and develop indicators for spatial recognition, transparency, suitability, inclusion, and adaptability.

A further limitation is that fit-for-purpose planning may face political resistance. Spatial transparency can reveal uncomfortable overlaps, elite capture, regulatory inconsistencies, or historical mistakes. Participatory mapping can challenge established claims. Degraded-land prioritization can be constrained by infrastructure and profitability. These challenges do not weaken the argument for fit-for-purpose planning, but they show that technical design must be accompanied by political commitment, safeguards against capture, and credible mechanisms for dispute resolution.

### **CONCLUSIONS AND RECOMMENDATIONS**

This article concludes that fit-for-purpose spatial planning provides a strong and realistic framework for improving palm oil governance in Indonesia. Palm oil can remain a strategic sector for rural development and national prosperity, but its long-term legitimacy depends on spatial governance that is more transparent, inclusive, adaptive, and environmentally responsible.

The review shows that fit-for-purpose spatial planning can contribute to four major outcomes. It can reduce agrarian inequality by recognizing smallholder and community claims. It can reduce conflict by improving spatial transparency and mediation. It can prevent environmental degradation by directing palm oil toward suitable and degraded lands while protecting forests, peatlands, and high-conservation-value areas. It can improve welfare by linking spatial legality with certification, replanting, finance, extension, and market access.

The article's main conceptual contribution is to extend fit-for-purpose thinking from land administration into palm oil spatial governance. This extension matters because palm oil sustainability is not only a matter of farm-level practice or certification. It is also a matter of where palm oil is located, whose rights are recognized, how conflicts are mediated, which landscapes are protected, and how benefits are distributed.

Policy recommendations include participatory spatial audits, conflict-risk mapping, differentiated treatment of forest-zone oil palm, degraded-land prioritization, peatland safeguards, smallholder legality pathways, ISPO-spatial

planning integration, and landscape-level governance institutions. Future research should examine these recommendations through empirical case studies and develop measurable indicators for implementation.

Indonesia's opportunity is significant. With better spatial governance, palm oil can be positioned not as a source of persistent conflict but as a sector capable of supporting rural welfare, environmental responsibility, and national development. Fit-for-purpose spatial planning offers a practical pathway toward that goal.

The overall message is therefore cautiously optimistic. Palm oil governance does not require abandoning the sector's economic role. It requires improving the spatial conditions under which the sector operates. If land rights are recognized, conflicts are anticipated, sensitive ecosystems are protected, and smallholders are supported, palm oil can make a stronger contribution to sustainable rural development. Fit-for-purpose spatial planning is not a complete solution by itself, but it provides a coherent and implementable foundation for comprehensive reform.

#### **FURTHER STUDY**

This research still has its limitations, so further studies on the topic of Fit-for-Purpose Spatial Planning for Inclusive and Sustainable Palm Oil Governance are needed to improve this research and provide more insights for the authors and readers.

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