

Volume 2, Issue 3

Research Article

Date of Submission: 13 August, 2026

Date of Acceptance: 08 September, 2026

Date of Publication: 16 September, 2026

From Recovered Assets to Sustainable Public Value: The Developmental Role of Agrinas Palma Nusantara in Transforming Indonesia's Palm Oil Sector

Loso Judijanto*

IPOSS Jakarta, Indonesia

Corresponding Author:

Loso Judijanto, IPOSS Jakarta, Indonesia.

Citation: Judijanto, L. (2026). From Recovered Assets to Sustainable Public Value: The Developmental Role of Agrinas Palma Nusantara in Transforming Indonesia's Palm Oil Sector. *Lett Econ Res Updates*, 2(3), 01-16.

Abstract

Indonesia's palm oil economy faces a dual challenge: sustaining its contributions to growth, employment, food and energy security while improving land governance, productivity, social legitimacy and environmental performance. This qualitative narrative-integrative literature review examines the expected developmental role of PT Agrinas Palma Nusantara (Persero), a state-owned enterprise transformed in 2025 and entrusted with rapidly expanding plantation assets recovered or assigned by the state. Drawing on peer-reviewed literature published between 2020 and August 2026, the company's 2025 Annual Report and selected official disclosures, the article develops an Asset-to-Public-Value Transformation (APVT) framework. The framework treats entrusted hectares as inputs rather than outcomes and argues that developmental value arises only when heterogeneous assets are converted into lawful, productive, traceable, inclusive, higher-value and environmentally safeguarded systems. The review identifies eleven interdependent roles spanning asset-governance normalisation, productive rehabilitation, infrastructure, digital governance, smallholder and cooperative upgrading, downstream value creation, renewable energy, circular bioeconomy, natural-capital stewardship, innovation and human capital, and measurable public value. It also identifies legal heterogeneity, scale-capability mismatch, financing and infrastructure requirements, social conflict, ecological liabilities, mission overload and commodity-market risk as major constraints. A sequenced roadmap and multidimensional performance scorecard are proposed. The article concludes that Agrinas should be assessed through demonstrable additionality from better stewardship, capability building and value-chain integration rather than administrative control over land alone.

Key Words: Palm oil, State-Owned Enterprises, Agrinas Palma Nusantara, Asset Governance, Public Value, Sustainable Intensification, Smallholders, Downstreaming, Circular Bioeconomy, Indonesia

JEL Classification: L32; Q13; Q18; Q42; Q56

Introduction

Palm oil occupies an unusual position in Indonesia's development model. It is simultaneously an agricultural commodity, a major agro-industrial input, a source of rural livelihoods, an export product, a feedstock for domestic food industries and bioenergy, and a recurrent focal point of land-use and environmental controversy. This combination means that the sector cannot be evaluated solely through plantation output or export earnings. Its developmental performance depends on the quality of the entire system linking land governance, farm and estate productivity, fresh-fruit-bunch logistics, milling, refining, downstream manufacturing, energy policy, smallholder inclusion and ecosystem protection [1-5].

The strategic problem has also changed. Historically, rapid output growth was achieved substantially through expansion of planted area, but the sustainability and competitiveness of the next phase depend more heavily on yield improvement, timely replanting, better agronomy, infrastructure, processing efficiency and product upgrading. Climate-smart

intensification research shows that Indonesia retains substantial yield gaps and that improved management on existing plantation land can reduce pressure on forests and peatlands when it is coupled with credible land-use safeguards [6,7]. This shift from extensive growth to productivity- and value-led growth creates a particularly important role for institutions capable of coordinating assets, capabilities, investment and governance across the value chain.

At the same time, the palm oil sector continues to face governance problems that are not reducible to agronomy. The literature documents regulatory overlap, plantations located in state-forest areas, uncertain land rights, inconsistent certification access, company-community conflict and gaps between public and private sustainability regimes [8-12]. Recent research further shows that zero-deforestation and other sustainability commitments can generate persistent tensions among environmental performance, smallholder inclusion and commercial competition, while indirect sourcing remains a significant traceability blind spot in commodity supply chains [13,14]. For a state-owned enterprise that receives assets emerging from forest-area enforcement and asset recovery, these problems become core business issues. Legal status, spatial boundaries, community claims, ecological condition and accounting recognition determine whether an asset can be managed credibly before questions of yield or downstream investment are addressed.

PT Agrinas Palma Nusantara (Persero) is therefore a distinctive case. The company was transformed in 2025 from PT Indra Karya (Persero), an engineering and construction-consultancy enterprise, into a state-owned company whose core strategic direction includes palm oil plantations, downstream processing and contributions to national food and energy security. Its 2025 Annual Report states that the transformation is intended to integrate asset optimisation, productivity, governance, risk management, information technology, downstreaming, bioenergy and environmental, social and governance principles [15]. The report further records that by the end of 2025 the company had received approximately 1.712 million hectares through five stages of state asset handover, although legal and accounting treatment varied across those assets and some plantation-related activity had not yet been recognised in the company's financial statements [15].

The scale of the mandate expanded further in 2026. Official company disclosures reported an additional 2.37 million hectares entrusted in May 2026 and subsequently described a managed portfolio of about 4.11 million hectares, of which around 730,000 hectares were planted with oil palm. The same disclosure carefully distinguished a Rp2.86 trillion operational surplus from the management of state plantation assets from the company's corporate net profit, reinforcing the analytical need to distinguish administrative scale, entrusted assets, planted area, operational performance and corporate financial results [16,17]. This distinction is central to the argument developed in this article.

The article asks how Agrinas can convert a rapidly expanding and heterogeneous asset mandate into developmental value rather than simply becoming a large land administrator. Five questions guide the review: how the company's institutional position can improve palm-oil governance; through which upstream, midstream, downstream, technological, social and environmental mechanisms it can create value; how commercial viability can be reconciled with public mandates; which constraints threaten implementation; and what governance architecture and performance indicators are required to demonstrate additionality. The contribution is conceptual as well as policy-oriented: the article develops an Asset-to-Public-Value Transformation framework that treats entrusted land as an input and evaluates Agrinas by its ability to convert that input into legitimate, productive, inclusive, higher-value and environmentally safeguarded systems. Unlike approaches that treat state ownership or asset recovery as an endpoint, the APVT framework conceptualises recovery as the first stage of a sequenced transformation and makes measurable additionality the central test of developmental performance.

Literature Review

The contemporary palm oil literature increasingly treats the sector as an integrated value chain rather than a stand-alone crop. Plantation output has value only when harvesting, logistics, milling and processing operate within tight biological and commercial constraints, particularly because fresh fruit bunches deteriorate after harvest and because extraction efficiency depends on crop quality and mill management. Value creation therefore occurs through process upgrading, product upgrading and functional upgrading across connected activities. The broader economic significance of palm oil also extends beyond export revenue to household welfare, local labour markets and linked industries, although these benefits coexist with distributional and environmental trade-offs [1,18,19].

Sustainable intensification is the first major conceptual foundation for Agrinas' expected role. Monzon et al. (2021) show that yield gaps remain substantial and that improved agronomic management could reduce the need for future expansion under appropriate safeguards [6]. Zhao et al. (2023) further demonstrate that replanting strategy and yield improvement must be considered together because age structure can create future production instability even when plantation area remains constant [7]. At farm level, nutrient imbalances, suboptimal planting material, harvest discipline and management knowledge can depress yields, particularly among smallholders [20,21]. For Agrinas, this literature implies that the productive value of a recovered estate should be assessed block by block rather than inferred from nominal hectares.

Replanting is particularly important because it links current productivity to future production structure. Petri et al. (2024) identify finance, high-quality seedlings, information, training and land documentation as major barriers for Indonesian

smallholders, while Fosch et al. (2023) show that replacing unproductive palms can generate Sustainable Development Goal benefits when the transition is well designed [22,23]. Woittiez et al. (2024) similarly find that better management practices can improve smallholder outcomes, but implementation depends on people and local institutions rather than technical prescriptions alone [24]. Recent studies of Indonesian smallholder choices further show that replanting participation is shaped by subsidy design, financing access, land certificates, group-based registration and the capacity to implement good agricultural practices, reinforcing the need for bundled rather than single-instrument interventions [25,26]. These findings support a rehabilitation-first model in which Agrinas differentiates mature productive blocks, underperforming but recoverable blocks, replanting candidates and areas that should instead be restored or excluded from commercial development.

The second foundation is land and asset governance. Astuti et al. (2022) show that making illegal plantations spatially visible creates difficult policy choices because legalisation, enforcement and forest protection can pull in different directions [10]. Public sustainability standards face related institutional ambiguities, including rescaling of authority and potential incoherence between regulatory objectives [9,11]. In a company such as Agrinas, legal due diligence therefore cannot be treated as a one-time transfer document. It requires a living registry that combines the origin of the state assignment, current legal status, boundaries, licences, community claims, forest classification, peat status, conservation obligations and the operational rights actually available to the company.

Social legitimacy is the third foundation. Indonesian oil-palm expansion has generated conflicts over land, compensation and authority, and such disputes can persist when formal ownership is unclear or when communities perceive benefits and decision processes as unfair. Large-scale evidence on Indonesian palm-oil conflicts shows that informalised institutions and power asymmetries can weaken formal conflict-resolution mechanisms, while more recent work demonstrates that companies themselves may become strategic actors in contentious land politics [27,28]. These findings increase the importance of transparent grievance processes, independent verification and credible community engagement. The wider literature on welfare and certification also warns against assuming that participation in a palm-oil economy automatically produces equitable outcomes [29,30]. For recovered state assets, legitimacy must therefore be rebuilt rather than presumed.

Certification and traceability form a fourth foundation because access to higher-standard markets increasingly depends on demonstrable legality and sustainability. Brandi (2021) documents the interaction between public and private governance in palm-oil standards, while Watts et al. (2021) and de Vos et al. (2023a) identify practical barriers faced by independent smallholders seeking certification [8,31,32]. Ekaputri et al. (2025) add an important market-access dimension: independent smallholders can be structurally underrepresented in certified mill supply chains even when they produce a substantial share of regional output [33]. Research on zero-deforestation supply chains further shows that indirect sourcing and weak smallholder integration can undermine traceability unless companies map supply sheds, improve land-tenure support and couple compliance with practical incentives [14,34]. Grabs and Garrett (2023) similarly demonstrate that environmental, social and economic sustainability goals can create implementation paradoxes when firms are expected to improve accountability while maintaining inclusion and competitiveness [13]. Traceability systems should therefore not be designed only to exclude non-compliant suppliers; they should also identify why suppliers are non-compliant and connect them to legalisation, extension, finance and group-organisation pathways.

The smallholder literature reinforces this inclusion argument. Oil palm can improve household welfare, but benefits vary with land access, market relations, farm size, input quality and risk exposure [18]. Certification projects can produce positive outcomes, yet review evidence indicates that impacts are uneven and that implementation gaps remain [35]. Li (2024) argues that stronger support for independent smallholders can protect rural livelihoods without requiring additional deforestation, while Hendrawan, Chrisendo and Musshoff (2024) emphasise resilience to future industrial challenges [36,37]. Renner et al. (2024) also show that certification can interact with economic benefits and agrochemical use in ways that require careful interpretation rather than simple claims of universal improvement [38].

Collective institutions are consequently important. Jelsma et al. (2024) show that farmer organisations can support replanting and resilience, although collective action must be credible and capable rather than nominal [39]. Research on Indonesian independent smallholders likewise suggests that cooperative or corporate-farming arrangements can improve access to finance, knowledge, technology, infrastructure and more stable market relationships when partnership governance is credible [40]. This is highly relevant to Agrinas' 2026 cooperation with the Ministry of Cooperatives, which positions cooperatives as operational and economic partners rather than only recipients of corporate social responsibility [41]. Such arrangements can potentially combine production, finance, extension, local employment and benefit sharing, but the design of contracts and decision rights will determine whether cooperatives become genuinely empowered enterprises or merely subcontracted labour pools.

The fifth theoretical foundation concerns the role of state-owned enterprises. Indonesia has long used state-owned entities as instruments within industrial and structural-transformation policy, and Kim and Sumner (2021) argue that such entities should be brought back into the analysis of industrial policy rather than treated as historical remnants [42]. Contemporary SOE research also emphasises hybrid goals: companies are expected to meet financial, industrial-policy, social and political objectives simultaneously [43,44]. This hybridity can be productive when long-horizon coordination

and public investment are required, but it can also generate goal ambiguity, weaken accountability and obscure whether poor commercial performance reflects legitimate public assignments or managerial failure [45,46]. Evidence from Indonesian SOEs outside palm oil also highlights dynamic capabilities, agility, resilience and market orientation as important determinants of competitiveness, suggesting that mandate expansion must be matched by organisational capability rather than administrative scale alone [47].

For Agrinas, the SOE literature suggests that a clear separation is needed between commercial objectives, compensated public-service assignments and broader developmental outcomes. Profitability matters because an enterprise that cannot maintain financial capacity will struggle to sustain agronomic investment, infrastructure and innovation. However, profitability cannot be the sole test when the company is also asked to regularise assets, support communities, restore ecosystems or contribute to energy security. The governance challenge is to make each objective explicit, attach measurable indicators and assign responsibility for costs so that developmental mandates do not become a blanket justification for weak performance [42,45].

The sixth foundation is downstream upgrading. A commodity economy captures more value when it can move beyond primary production into refining, differentiated products, oleochemicals and other industrial applications, but downstreaming is not automatically beneficial if investment is driven by capacity targets rather than technology, market demand and comparative capability. Purnomo et al. (2020) show that palm-oil policy must account for linkages between economic development and environmental outcomes across the value chain [2]. Rosyadi et al. (2021) also demonstrate that competitiveness remains a trade and market issue, while the broader governance literature indicates that increasingly stringent sustainability expectations can influence access to premium or regulated markets [19]. For Agrinas, downstreaming should therefore be treated as a selective portfolio strategy rather than a presumption that every upstream asset needs its own downstream facility.

Bioenergy creates a related but distinct opportunity. Indonesia's biodiesel strategy gives palm oil a strategic role in domestic energy policy, and Farobie and Hartulistiyoso (2022) identify both the potential and the policy, technology and sustainability challenges of palm-based biodiesel [48]. Prananta and Kubiszewski (2021) show why energy-return considerations matter when assessing renewable-energy pathways, while Kaniapan et al. (2021) review opportunities for using oil-palm residues in biofuel and bioenergy applications [49,50]. The implication is that energy-security claims should be supported by lifecycle, feedstock, logistics and project-economics analysis rather than by product labels alone.

Circular bioeconomy scholarship extends value creation to residues and waste. Nabila et al. (2023) review the scale and technological pathways for thermochemical upgrading of Indonesian oil-palm biomass, including solid fuels and biochar, while Cheah et al. (2023) frame circularity as an integrated approach to waste minimisation, resource efficiency and biorefinery development [51,52]. Wahyono et al. (2023) further illustrate the importance of lifecycle assessment in biodiesel pathways, and Trisyulianti et al. (2022) explicitly connect circular-economy implementation to performance management in Indonesian state-owned plantation enterprises [53,54]. Agrinas can therefore treat POME, empty fruit bunches, fibre, shells and replanting biomass as resource streams, but only when environmental benefits and investment returns are jointly demonstrated.

Environmental safeguards are the seventh foundation. Oil-palm expansion into carbon-rich forests has generated substantial carbon consequences, and recent spatial work confirms the importance of preventing further encroachment into high-carbon ecosystems [55]. Zero-deforestation commitments are necessary but may be insufficient if they ignore non-forest biodiverse systems or create perverse displacement effects [56]. Within existing plantation landscapes, riparian buffers and targeted ecological restoration can retain or recover biodiversity and ecosystem functions [57-59]. Behavioural evidence also suggests that smallholder adoption of oil-palm agroforestry depends on perceived income risk, environmental benefits and technical capability, underscoring the need to pair ecological diversification with credible incentives and extension support [60]. Agrinas' unusual asset-recovery mandate makes these findings particularly salient because inherited land uses should not automatically be grandfathered as acceptable future practice.

These literatures converge on a central proposition: the developmental problem is one of transformation, not possession. State ownership and administrative transfer can create the authority to act, but they do not by themselves create productivity, legitimacy, market access or sustainability. This review therefore proposes the Asset-to-Public-Value Transformation framework, in which assets are first classified and normalised, then rehabilitated, integrated, upgraded and evaluated for additional public value. The model combines sustainable intensification, land governance, SOE accountability, smallholder inclusion, downstream upgrading and circularity into a single analytical sequence.

Method

This study uses a qualitative narrative-integrative literature review rather than a systematic literature review (SLR). The choice is deliberate because the research problem spans agronomy, land governance, state-owned enterprise theory, agricultural economics, industrial policy, supply-chain governance, smallholder studies, biodiversity and renewable energy. The objective is interpretive and integrative: to connect heterogeneous evidence into a coherent conceptual and policy framework rather than to estimate a pooled effect from a narrowly defined body of studies. Accordingly, the review does not claim exhaustive retrieval, PRISMA compliance, protocol registration, meta-analysis or formal

risk-of-bias scoring. Qualitative review methodology instead emphasises clarity of purpose, contextual interpretation, transparent source boundaries and explicit synthesis decisions [61-64].

The academic evidence base prioritises peer-reviewed journal articles published between January 2020 and August 2026. Literature was identified iteratively around linked themes: the economic and environmental consequences of oil palm; sustainable intensification and replanting; land legality and governance; certification, traceability and zero-deforestation supply chains; smallholder welfare and cooperative organisation; state-owned enterprises and industrial policy; downstream value creation; bioenergy and circular bioeconomy; biodiversity and restoration; and literature-review methodology. Keyword-led discovery across scholarly search and publisher platforms was combined with backward and forward citation tracing from high-relevance anchor studies. Selection was purposive rather than exhaustive, with preference given to methodologically transparent empirical or review papers published in established peer-reviewed journals and directly relevant to Indonesia or to institutional mechanisms transferable to the Agrinas case. This approach is consistent with an integrative review whose purpose is conceptual synthesis rather than bibliometric enumeration [64].

Company-specific evidence is treated separately from peer-reviewed literature. The principal primary source is the PT Agrinas Palma Nusantara Annual Report 2025, supplemented by official company disclosures on the 2026 expansion of entrusted assets, operational surplus reporting, cooperative partnerships and digital procurement. These sources are used to establish what the company reports about its mandate, asset scale, strategy and organisational initiatives; they are not treated as independent proof of causal developmental impact. This distinction matters because corporate disclosure can document activity and intention but cannot by itself establish whether a programme improved welfare, reduced emissions or generated sector-wide additionality.

The analysis used two stages of thematic coding. First-cycle codes captured legality, spatial status, productivity, replanting, infrastructure, mills, logistics, digitalisation, procurement, smallholders, cooperatives, certification, traceability, downstreaming, bioenergy, circularity, biodiversity, community conflict, governance, finance, innovation, employment and public value. These were then consolidated into eleven second-cycle developmental roles. Each role was analysed through a common template: the problem or asset condition, the mechanism through which Agrinas could intervene, the expected additionality, the main implementation risk, the required safeguard and the indicator that could reveal whether value was actually created. Contradictory and cautionary findings were retained deliberately, particularly where studies identified distributional trade-offs, exclusion risks, governance failures or ecological limits, so that the synthesis would not reproduce an exclusively promotional corporate narrative.

The method has four limitations. First, Agrinas is changing rapidly, so figures on entrusted and planted area are date-sensitive and should not be interpreted as fixed structural characteristics. Second, the company is still in an early operational phase, which means many proposed roles are forward-looking pathways rather than evaluated impacts. Third, a qualitative review cannot establish a causal counterfactual for Agrinas' contribution. Fourth, because literature selection is purposive and non-exhaustive, the frequency with which a theme appears in this review should not be interpreted as bibliometric evidence of its prevalence in the wider literature. The article therefore uses terms such as expected role, plausible pathway and developmental additionality unless independent evidence supports a stronger claim.

Results: Thematic Findings on Agrinas' Expected Developmental Roles

The thematic synthesis identifies eleven interdependent roles. They should not be understood as an unrestricted expansion of corporate mandate. Rather, they form a hierarchy in which governance normalisation and productive rehabilitation precede higher-risk diversification. The APVT logic therefore begins with what Agrinas can uniquely contribute as a state-owned steward of recovered assets and only later moves toward functions that can also be performed by specialised partners or markets.

The first role is governance normalisation of recovered plantation assets. Agrinas receives assets with heterogeneous legal, spatial and operational histories, and the Annual Report explicitly notes differences in legal status and uncertainty over recognition of some plantation revenues. The appropriate response is an estate-level asset passport containing legal basis, boundary coordinates, current land use, planted and unplanted area, crop age, infrastructure, social claims, forest-zone relationship, peat and conservation status, liabilities and available operating rights. Astuti et al. (2022) demonstrate why spatial visibility is a prerequisite for credible policy, while public-private governance research shows that legality and sustainability standards must be mutually coherent rather than treated as parallel compliance systems [8-10].

Governance normalisation should also include social legitimacy. A state takeover does not extinguish historical community claims or disputes, and a legal transfer can coexist with unresolved questions about compensation, customary rights or local access. The company should therefore establish transparent grievance registers, time-bound resolution procedures, public maps where legally appropriate and independent social due diligence for high-risk estates. The goal is not to freeze every operation until every dispute is solved, but to avoid converting unresolved conflict into a long-term operating liability. Research on palm-oil land conflict indicates that power asymmetries and institutional informality can

otherwise reproduce contention even under formally legal corporate structures [28].

The second role is productive rehabilitation. Once an asset is legally and socially operable, Agrinas should classify plantation blocks according to agronomic condition and expected economic life. The relevant categories are not simply productive and unproductive: some blocks may justify better fertilisation and harvest management, others may need drainage or road rehabilitation, others require replanting, and some should be retired for ecological or legal reasons. Yield-gap and replanting studies show that productivity gains require both management improvement and age-structure planning; intensification without timely replanting can postpone rather than solve declining production [6,7,22].

The productive-rehabilitation role provides a basis for a productivity-before-expansion principle. Agrinas' rapidly growing administrative asset base could create a political temptation to highlight total hectares as evidence of performance. Yet hectares under management are not equivalent to mature productive hectares, and expanding active cultivation without resolving existing low productivity would reproduce the extensive-growth model that sustainability policy is trying to move beyond. The more defensible metric is value created per legally and ecologically eligible hectare, accompanied by restoration of areas that should not remain in production. This approach aligns commercial efficiency with conservation by making existing assets work better before new capital is committed to expansion [3,6,55,65].

The third role is infrastructure and engineering development. Agrinas retains a legacy engineering and construction-consultancy capability that its Annual Report describes as a transformation enabler. This is potentially a genuine differentiator because plantation productivity is often constrained by roads, bridges, drainage, water management, housing, utilities, transport access and mill connectivity as much as by field agronomy. Rather than viewing the legacy segment as unrelated to the new plantation mandate, Agrinas can integrate engineering capability into estate rehabilitation while maintaining project-level commercial discipline. The key governance condition is that internal engineering services should be benchmarked against competitive alternatives so that vertical integration creates efficiency rather than captive-cost inflation.

The fourth role is digital asset governance. A portfolio spread across many provinces cannot be credibly managed through fragmented spreadsheets and local records. Agrinas should build an interoperable geospatial and operational data architecture linking legal status, maps, crop condition, production, procurement, labour, environmental safeguards, smallholder suppliers, mills and financial performance. The company's July 2026 launch of an Integrated Procurement System is a useful early example of digitalisation targeted at transparency, efficiency, accountability and compliance [66]. The strategic next step is to connect procurement and operational data to a single asset registry so that management decisions and audit trails refer to the same underlying objects.

Digital traceability should also be developmental rather than merely exclusionary. Ekaputri et al. (2025) show that independent smallholders are underrepresented in certified mill supply chains, while de Vos et al. (2023a) and Watts et al. (2021) identify legality, organisation and capability as barriers to certification [31-33]. Evidence on zero-deforestation initiatives further indicates that knowledge, institutional and financial barriers can exclude independent producers and that indirect sourcing can obscure supply-chain risk unless supply sheds and intermediaries are explicitly mapped [14,34]. A traceability platform that simply labels suppliers as compliant or non-compliant therefore risks reproducing exclusion. A better architecture links supplier identity and land status to services: legal support, agronomic advice, group formation, replanting finance, certification preparation and transparent payment. This transforms traceability from a policing mechanism into a platform for upgrading.

The fifth role is smallholder and cooperative development. Agrinas' cooperation with the Ministry of Cooperatives creates an opportunity to combine state assets with collective rural enterprise, while the literature demonstrates that collective institutions can help farmers manage replanting, finance and market access when governance is credible [39]. Complementary evidence from Indonesia indicates that cooperative-based corporate-farming models can strengthen linkages among independent farmers, finance, technology, infrastructure and offtake arrangements [40]. The company should therefore develop a modular smallholder service platform covering verified land records, high-quality planting material, extension, fertiliser planning, financing, crop insurance where viable, harvest coordination, digital payment, traceability and guaranteed or competitive offtake. Such a system should be designed around farmer income and resilience rather than around maximising low-cost feedstock extraction.

Cooperative arrangements also need governance safeguards. A cooperative can lower transaction costs and create bargaining capacity, but it can also become an administrative shell if members lack information or if management is not accountable. Agrinas should require member-level transparency, independently review benefit-sharing formulas, publish service fees, and separate commercial transactions from social programmes. Gender and labour outcomes also deserve attention because oil-palm development can redistribute time use and work opportunities within households rather than affecting all members equally [30]. The appropriate performance measures therefore include net farmer income, payment timeliness, participation in decision making, replanting completion, grievance resolution and local skilled employment.

The sixth role is downstream value creation. Agrinas should not equate downstreaming with owning a refinery for every production cluster. Instead, it should identify product-market combinations where the company has secure feedstock, scale, logistics, technology partners and a defensible route to market. Some locations may justify crude-palm-oil sales into existing processors; others may support refining, food products, oleochemicals or integrated industrial clusters. The core test is additional domestic value added per tonne after capital costs, logistics, energy, working capital and market risk are considered. Downstreaming is strategically valuable when it deepens industrial capability and captures margin, not when it merely converts public capital into redundant capacity [2,19].

The seventh role is energy security. Agrinas' formal vision emphasises renewable energy, making palm-based energy an explicit corporate-development pathway. Biodiesel can support import substitution and domestic demand, but sustainability, energy return, feedstock opportunity costs and policy dependence remain material considerations [48,49]. Agrinas should therefore treat energy projects through stage gates: laboratory or technical validation, pilot scale, lifecycle assessment, feedstock and logistics modelling, policy-sensitivity analysis, financing structure and only then commercial deployment. This reduces the risk that national-strategic rhetoric substitutes for project economics.

The eighth role is circular bioeconomy development. Oil-palm plantations and mills generate biomass and effluents that can become energy, fertiliser, soil amendments or industrial feedstocks. Nabila et al. (2023) identify thermochemical pathways for Indonesian oil-palm biomass, while Cheah et al. (2023) review broader circular-bioeconomy applications across the palm-oil industry [51,52]. A portfolio company of Agrinas' potential scale could aggregate residues across sites, standardise project designs and replicate proven technologies. However, circularity should be measured through both environmental and financial productivity: tonnes of waste diverted, methane captured, energy generated, emissions avoided, fertiliser substitution, capital payback and operating reliability [53,54].

The ninth role is natural-capital stewardship. Because some assets originate in forest-area enforcement, Agrinas has a stronger obligation than an ordinary plantation company to demonstrate that state recovery improves rather than merely rebrands land governance. The company should establish no-go criteria for high-conservation-value areas, peat and legally protected ecosystems, and should develop restoration plans for riparian zones, degraded forest remnants and ecological corridors. Research demonstrates that forested riparian buffers and tree-island restoration can meaningfully improve biodiversity and ecosystem functioning in oil-palm landscapes [57,58,67]. At smallholder level, the potential environmental benefits of agroforestry are also conditioned by farmers' perceived income risks and technical capabilities, so restoration and diversification programmes should combine ecological objectives with viable livelihood incentives [60]. Environmental performance should therefore be managed as an asset condition with measurable targets rather than as a narrative appendix to operational reporting.

The tenth role is innovation and human-capital development. Agrinas began the plantation transformation with deep engineering experience but comparatively limited history as a plantation operating company. Partnerships with experienced plantation operators, universities and technology providers can shorten this learning curve, and the company's 2025 collaborations with IPB University and Universitas Indonesia provide an institutional starting point [15]. The strategic priority should be absorptive capability: Agrinas must be able to internalise agronomic standards, data science, environmental monitoring, mill technology, cooperative management and project-finance skills rather than remaining permanently dependent on external advisers.

The eleventh role is public-value creation. This is the integrative outcome of the preceding roles and the most important safeguard against measuring success by size. Public value includes commercially sustainable cash generation, productive state assets, taxes and dividends, but also domestic value added, rural employment, farmer income, food and energy resilience, technological capability, legal certainty and ecosystem improvement. SOE scholarship shows why these objectives need explicit measurement: multiple goals can justify state ownership but also create ambiguity unless performance is made transparent [43-45].

The thematic findings also reveal substantial constraints. Legal-status heterogeneity can delay investment and financial recognition; organisational capability may not expand as quickly as entrusted land; infrastructure rehabilitation can demand large capital; social conflict can disrupt operations and legitimacy; environmental liabilities may reduce economically usable area; and commodity prices or downstream policy can change project returns. Mission overload is a further risk because a single SOE cannot simultaneously maximise profit, absorb unlimited recovered assets, provide social programmes, stabilise food supply, expand renewable energy and restore ecosystems without explicit prioritisation and financing. The sustainability-governance literature further cautions that environmental, social and economic objectives can generate persistent implementation paradoxes if organisations do not make trade-offs and responsibilities explicit [13]. Agrinas will therefore need portfolio discipline as much as expansion capacity.

The six-stage value-chain logic is summarised in Figure 1. The figure emphasises that land governance is not a preliminary administrative box that disappears once production begins. It remains connected to every later stage through governance and digital layers, because legality, traceability and stakeholder legitimacy condition market access, finance and sustainability throughout the chain.

Agrinas Palma Nusantara in an Integrated Palm Oil Value Chain

From recovered assets to competitive, inclusive and sustainable public value

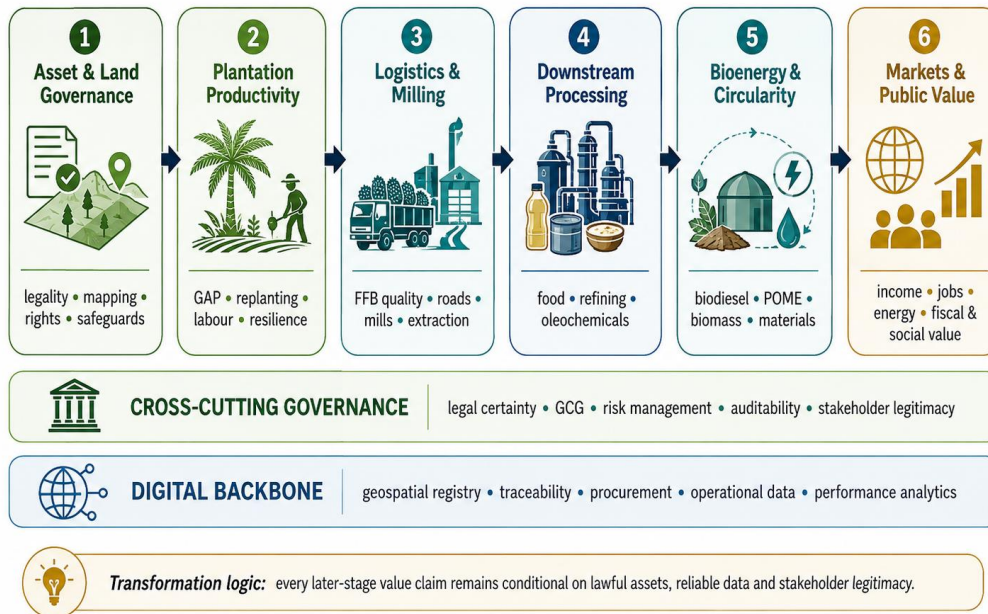


Figure 1: Agrinas Palma Nusantara in an Integrated Palm Oil Value Chain

Source: Author's synthesis based on the qualitative literature review and PT Agrinas Palma Nusantara Annual Report 2025.

Figure 1 also shows why Agrinas should be conceived as an orchestrator rather than a vertically integrated owner of every function. The company may directly operate some estates, use partnerships for mills or downstream processing, and rely on cooperatives or specialist providers for other activities. What matters is whether the interfaces are governed so that quality, information, incentives and accountability remain coherent across the chain.

The APVT framework in Figure 2 converts the thematic findings into a sequence. It begins with recovery and classification, proceeds through governance normalisation and rehabilitation, and then moves to integration, upgrading and the demonstration of public value. Commercial discipline and public safeguards run across the sequence because neither profitability nor public purpose is sufficient on its own.

Asset-to-Public-Value Transformation (APVT) Framework

A sequenced developmental logic for Agrinas Palma Nusantara

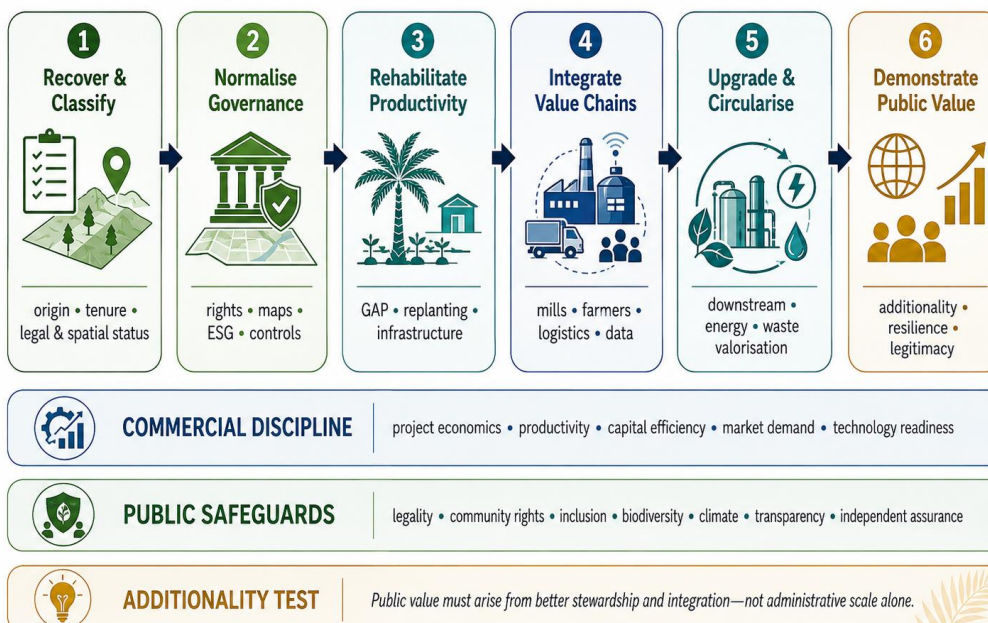


Figure 2: Asset-to-Public-Value Transformation (APVT) Framework

Source: Author's synthesis.

Figure 2 is especially important for interpreting Agrinas' large asset mandate. The framework rejects a direct causal link from 'more hectares' to 'more national contribution'. Administrative scale can create opportunity, but value is realised only through intermediate transformations, and each stage can fail. This makes the framework suitable for both corporate strategy and shareholder oversight.

Figure 3 consolidates the eleven roles into an operating architecture. The roles are mutually reinforcing: for example, digital governance strengthens legal certainty and farmer inclusion; infrastructure improves both productivity and market integration; and circularity can reduce environmental liabilities while creating additional revenue streams. Conversely, weakness in asset governance or social legitimacy can undermine investments made in downstream or energy projects.

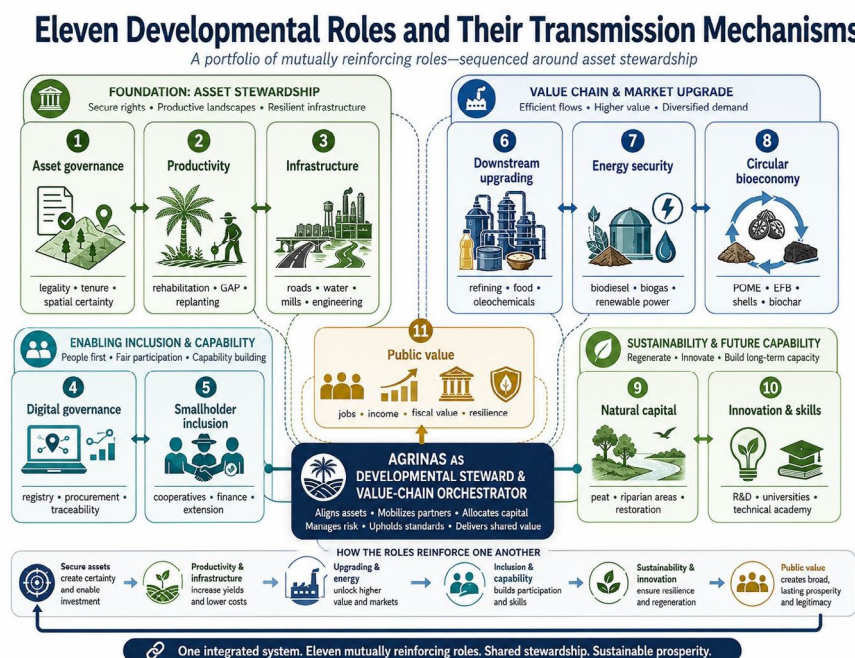


Figure 3: Eleven Developmental Roles and Their Transmission Mechanisms

Source: Author's synthesis.

The figure also prevents the role portfolio from being interpreted as eleven independent expansion programmes. Agrinas does not need to own all capabilities. Some roles represent control functions that should remain internal, while others can be delivered through partnerships, procurement or joint ventures. The strategic task is to determine where state ownership adds unique coordinating value and where competition or specialist providers are more efficient.

Discussion and Analysis

The results suggest that Agrinas should be understood as a state-owned developmental steward rather than primarily as a plantation-area aggregator. This distinction matters because the company's mandate begins where many ordinary companies would prefer not to begin: with assets whose legal, social, agronomic and ecological conditions may be uncertain. Its comparative role is therefore not simply to produce palm oil but to reduce institutional disorder and convert recovered assets into transparent economic systems. In theoretical terms, this extends the industrial-policy discussion of SOEs from ownership and investment toward asset normalisation as a productive capability [42,44].

The APVT framework also clarifies the meaning of additionality. If an estate could be operated equally well by any commercial firm under established legal conditions, Agrinas' public value must arise from better efficiency, strategic coordination or other measurable benefits. Where an asset requires legal regularisation, community settlement, restoration or multi-agency coordination, the developmental additionality may instead lie in creating conditions for productive activity that did not previously exist. This does not excuse weak financial management; it changes the counterfactual against which performance should be judged. The most useful shareholder question is therefore not 'How much land does Agrinas control?' but 'What improvement occurred because Agrinas had stewardship responsibility?'

This logic supports a sequenced roadmap. Phase I should stabilise and legitimise the portfolio through legal and spatial verification, estate triage, social-risk mapping, urgent maintenance and baseline governance controls. Phase II should integrate and optimise by standardising GAP, replanting, infrastructure planning, farmer and cooperative systems, mill connectivity, traceability and digital management. Phase III should upgrade and diversify through selective downstreaming, bioenergy, circular projects, innovation and restoration. The ordering is not bureaucratic caution; it is a capital-allocation principle that prevents high-visibility projects from outrunning basic asset readiness.

Figure 4 translates this sequencing into an implementation roadmap. The timeline is deliberately indicative because different estates will progress at different speeds. A legally clear and productive estate may enter Phase II or III quickly, while a socially contested or environmentally sensitive asset may remain in Phase I until key safeguards are satisfied. Portfolio management should therefore allow different assets to occupy different stages at the same time.

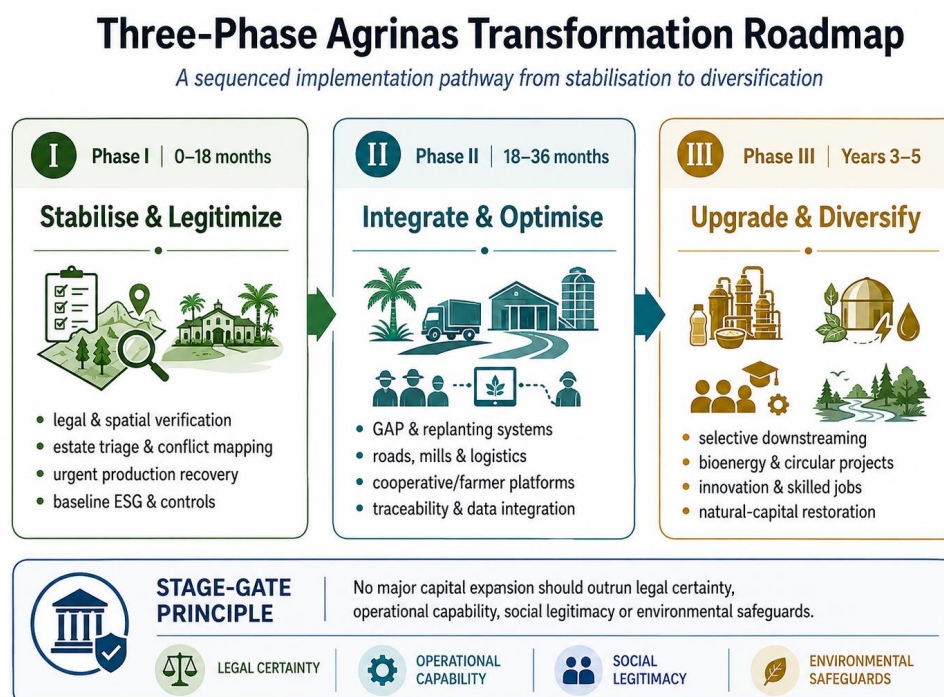


Figure 4: Three-Phase Agrinas Transformation Roadmap
Source: Author's synthesis.

The roadmap also implies explicit stage gates. A downstream plant should not be approved merely because feedstock exists somewhere in the portfolio; it should require a defined catchment, stable legal access to feedstock, logistics, market demand, financing and environmental approvals. Similarly, a replanting programme should not be launched without planting material, cash-flow planning, labour and community arrangements. These gates make strategic discipline visible and reduce the risk of mission-driven overinvestment.

Governance architecture is the next critical issue. Agrinas needs a shareholder-level mandate that distinguishes commercial objectives from public assignments and states how non-commercial tasks will be funded or evaluated. At company level, a portfolio transformation office should maintain the asset registry, stage classification, risk register and project economics for major initiatives. Operational business units can then be accountable for production and cost, while central functions assure legal, environmental, procurement and data standards. This arrangement preserves operational responsibility without allowing decentralised estates to create incompatible systems.

Independent assurance should grow with the company's scale. Corporate self-assessment is useful, and the Annual Report provides a strong 2025 governance self-assessment baseline, but large recovered-asset portfolios require independent validation of legal, social, environmental and performance claims. External audit, spatial verification, public grievance reporting and selected third-party assurance can reduce information asymmetry between management, shareholders, regulators, communities and financial partners. This is particularly important for an SOE because the publicness literature identifies financial accountability and goal ambiguity as persistent governance risks [45].

Agrinas' cooperative strategy deserves particular attention in this governance architecture. The company's 2026 agreement with the Ministry of Cooperatives creates a pathway for communities to participate directly in plantation operations and value creation, and research supports the potential of collective institutions for replanting and market access [39]. Yet participation should be evaluated through substantive indicators rather than the number of cooperatives signed. A credible model would track net income, member distribution, governance quality, productivity, payment terms, access to finance and the proportion of value-added activities in which cooperatives participate.

Certification and traceability policy should follow the same logic. Smallholders face unequal ability to comply with formal requirements, and certified supply chains can passively exclude independent suppliers when mills prefer lower-transaction-cost partners [31–33]. Studies of zero-deforestation supply chains likewise show that producer inclusion, indirect sourcing and accountability are intertwined rather than separable problems [14,34]. Agrinas can potentially mitigate this problem because it operates at the junction of land regularisation, commercial offtake and public policy. A supplier identified as legally or technically deficient can be channelled into an upgrading pathway rather than simply

excluded from the supply base. Such a system would make inclusion a governance mechanism rather than a separate social programme and would help manage the environmental-social tensions identified in Indonesian private sustainability governance [13].

The environmental implications are similarly significant. State recovery creates a rare opportunity to redraw the relationship between productive land and ecological safeguards. Agrinas should use ecological screening to identify areas where restoration creates more public value than continued cultivation, particularly where carbon, peat, riparian or biodiversity risks are high. The literature shows that landscape-scale interventions such as riparian buffers and tree islands can improve biodiversity and ecological functioning, while continued expansion into carbon-rich systems carries substantial environmental costs [55,57,58]. This creates a basis for natural-capital accounting alongside financial accounting.

A multidimensional scorecard is therefore required. Commercial indicators should include return on assets, cash conversion, cost per tonne, working capital and capital productivity. Agronomic indicators should include fresh-fruit-bunch yield, crop-age profile, extraction rate, replanting progress and harvest quality. Governance indicators should include legally verified area, mapped boundaries, procurement compliance, audit findings and grievance closure. Social indicators should track farmer income, local employment, cooperative performance and safety. Environmental indicators should include greenhouse-gas intensity, methane capture, peat exposure, restoration and biodiversity condition. Innovation indicators should measure technical capability, data completeness, R&D adoption and resilience.

Figure 5 presents the scorecard as a system centred on public additionality. Profitability is intentionally one dimension rather than the centre because it is an enabling condition for sustained development, not the sole outcome. At the same time, public value should not be allowed to become an unmeasurable residual category. Each dimension requires operational indicators and, where possible, baselines and counterfactuals.



Figure 5: Integrated Developmental Performance Scorecard
 Source: Author's synthesis.

The scorecard also helps address a common problem in SOE evaluation: incomparable objectives. A high social contribution cannot automatically compensate for uncontrolled cost, and strong profits cannot automatically compensate for unresolved illegality or environmental damage. The purpose of the dashboard is not to collapse all objectives into one synthetic number, but to make trade-offs visible to management and shareholders so that strategic choices are explicit.

From a policy perspective, the first recommendation is to establish a multi-year Agrinas Asset Transformation Masterplan that classifies the entire portfolio by legal readiness, agronomic condition, ecological risk, social risk, infrastructure gap and value-chain connectivity. Such a masterplan should be spatially explicit and updated as asset status changes. It would allow the shareholder and relevant ministries to see the difference between land entrusted, land legally operable, planted area, productive area, restoration area and assets awaiting resolution. This alone would materially improve the quality of public debate about Agrinas' scale.

The second recommendation is to institutionalise the productivity-before-expansion rule. Capital expenditure should prioritise rehabilitation and replanting of economically and ecologically eligible existing plantations unless a new development can demonstrate superior additionality and low environmental risk. This rule is consistent with the intensification literature and reduces the risk that expanding administrative control creates incentives for further land conversion [6,7].

The third recommendation is to build a national-scale but modular farmer and cooperative service platform. The platform should combine traceability, legal documentation, extension, replanting planning, finance, harvest coordination and market access. Because smallholders are heterogeneous, services should be tiered rather than standardised. Independent farmers with unresolved tenure require a different pathway from organised plasma farmers or mature cooperatives already meeting market standards [31,33,36].

The fourth recommendation is to apply stage-gated capital allocation to downstreaming, energy and circular-economy investments. Projects should demonstrate feedstock security, technology readiness, market demand, lifecycle performance, financial return and strategic additionality. Aggregating residues or feedstock across the Agrinas portfolio may create scale advantages, but every large investment should still be evaluated against alternatives such as tolling, offtake agreements, joint ventures or third-party processing. This preserves strategic flexibility while preventing a state-owned portfolio from becoming over-integrated.

The fifth recommendation is to separate and disclose three performance layers: corporate commercial performance, operational performance of state-assigned assets, and developmental outcomes. Agrinas' own 2026 disclosure distinguishing operational surplus from corporate profit is a useful precedent [17]. Extending this distinction to productivity, social and environmental outcomes would make it easier for shareholders and the public to assess what the company controls directly, what is associated with a public assignment and what has been independently demonstrated as impact.

For theory, the Agrinas case adds a distinctive mechanism to the study of state-owned enterprises. Much SOE research focuses on ownership, internationalisation, political goals or corporate governance [43,44,46]. Agrinas highlights a different role: the state-owned enterprise as an institutional bridge between enforcement and productive reorganisation. The APVT framework labels this capability 'developmental stewardship' and proposes that its output is not the asset itself but the reduction of legal, operational and sustainability disorder around that asset.

The case also contributes to sustainable-commodity governance by linking jurisdictional reform to an operating company. Bahrudin et al. (2024) show that jurisdictional initiatives depend on political and institutional pathways, while palm-oil certification literature documents the limitations of supply-chain governance that operates without sufficient local capacity [8,12,35]. Research on goal-based and zero-deforestation governance further demonstrates that coordination, data-sharing, smallholder inclusion and competitive incentives can pull organisations in different directions unless implementation mechanisms explicitly address those tensions [13,34]. Agrinas could connect these levels because it has a commercial incentive to make assets operable and a public mandate that can justify investment in legalisation, farmer support and landscape safeguards. Whether it succeeds will depend on retaining both dimensions rather than allowing either commercial short-termism or public mission overload to dominate.

Finally, the review suggests that Agrinas should crowd in rather than crowd out complementary actors. PalmCo or other experienced operators can provide plantation expertise; private processors and technology firms can supply specialised capital; banks can finance credible farmer and industrial projects; universities can support R&D; cooperatives can organise community participation; and independent auditors can strengthen accountability. Evidence from cooperative-based corporate-farming models suggests that such multi-actor arrangements can improve smallholder access to finance, technology, infrastructure and offtake when governance responsibilities are explicit [40]. The SOE's developmental advantage lies in orchestration where coordination failures are severe, not in replacing every market actor. This principle keeps the corporate boundary disciplined while preserving the ability to solve problems that fragmented institutions have left unresolved.

Analytical Decision Matrices

Table 1 summarises the principal transformation problems identified in the review and links them to Agrinas' expected role and observable evidence. The purpose is to prevent strategic recommendations from remaining at the level of broad corporate aspirations by specifying the condition that should change if the role is performed effectively.

Asset or system condition	Expected Agrinas role	Primary mechanism	Evidence of progress
Uncertain legality or boundaries	Governance normalisation	Legal-spatial asset passport; social and ecological due diligence	Verified status, mapped area, resolved high-risk cases
Low-yield or ageing plantations	Productive rehabilitation	GAP, replanting, inputs, harvest discipline	Yield/ha, crop-age profile, replanting completion
Weak roads, drainage or mill access	Infrastructure development	Engineering-led rehabilitation and logistics planning	Lower transport loss, downtime and delivered FFB cost
Fragmented records and procurement	Digital governance	Integrated asset registry, traceability and e-procurement	Data completeness, procurement compliance, auditability
Smallholder exclusion or weak organisations	Farmer/cooperative upgrading	Extension, finance, group governance, transparent offtake	Farmer net income, certification readiness, payment quality
Low domestic value capture	Selective downstreaming	Portfolio-based processing and market partnerships	Domestic value added/tonne, margin, skilled employment
Residue and emissions liabilities	Circular bioeconomy	POME capture, biomass valorisation, lifecycle screening	Methane captured, waste diverted, energy/material value
Ecological liabilities	Natural-capital stewardship	No-go rules, buffers, restoration, monitoring	Restored area, GHG intensity, biodiversity indicators
Source: Author's synthesis based on the qualitative literature review.			

Table 1: Asset Transformation Problems, Expected Agrinas Roles and Evidence of Progress

Table 1 makes the sequencing logic operational by linking each asset or system condition to a specific Agrinas role, intervention mechanism and observable evidence of progress. The matrix therefore shifts the discussion from broad strategic ambition to verifiable transformation: legal uncertainty should become verified status, low productivity should become measurable yield improvement, and weak inclusion should become better farmer-level outcomes rather than simply more transactions.

Table 2 translates the APVT framework into a governance matrix that pairs each developmental domain with an explicit additionality proposition, principal risk, safeguard and illustrative KPI. This format makes the conditions for value creation visible before resources are committed or activities are scaled.

Developmental domain	Additionality proposition	Main risk	Key safeguard	Illustrative KPI
Asset governance	State recovery becomes operable and auditable	Legal dispute; opaque rights	Independent legal/spatial verification	% portfolio legally verified
Agronomy	Higher output from existing eligible land	Input waste; delayed replanting	Block-level agronomic plans	FFB t/ha; replanting rate
Smallholders	More inclusive, productive supplier base	Passive exclusion; weak cooperatives	Transparent contracts and member governance	Net farmer income; payment days
Downstreaming	More domestic value captured per tonne	Overcapacity; policy dependence	Stage-gated investment appraisal	Value added/t; ROIC
Energy/circularity	Residues and feedstock create energy/material value	Technology and lifecycle underperformance	Pilot and LCA before scaling	GHG avoided; project IRR
Natural capital	Recovered assets improve environmental condition	Grandfathering harmful land use	No-go criteria and restoration plans	Restoration area; GHG intensity
Public value	Commercial and developmental outcomes become visible	Mission overload; attribution failure	Separate performance layers and assurance	Additionality dashboard
Source: Author's synthesis.				

Table 2: APVT Governance Matrix: Additionality, Risk, Safeguards and Illustrative KPIs

Table 2 makes the governance logic explicit: every developmental domain pairs an additionality claim with a material risk, a safeguard and a measurable KPI. This structure keeps public purpose testable and ensures that scaling decisions are conditioned on evidence rather than assumed benefit.

Conclusion

Agrinas Palma Nusantara has emerged at an unusual moment in Indonesia's palm-oil development. The country remains dependent on palm oil for significant economic, rural and strategic-energy functions, yet future competitiveness increasingly requires better productivity, stronger land governance, smallholder inclusion, traceability, downstream

capability and environmental legitimacy. Agrinas' rapidly expanding portfolio of state-entrusted plantation assets places the company directly at the intersection of these challenges. The analysis in this article argues that the company's importance should therefore be judged by transformation quality rather than asset scale.

The proposed Asset-to-Public-Value Transformation framework identifies a sequence from recovery and classification through governance normalisation, productive rehabilitation, value-chain integration, upgrading and the demonstration of public additionality. Eleven roles operationalise that sequence: asset governance, productivity, infrastructure, digital governance, smallholder and cooperative development, downstreaming, energy security, circular bioeconomy, natural-capital stewardship, innovation and human capital, and public-value creation. The roles are mutually reinforcing, but they must be sequenced because governance and operational capability are prerequisites for capital-intensive diversification.

The principal policy implication is that Agrinas should adopt a transparent asset-transformation masterplan and multidimensional scorecard. Shareholders and management should explicitly separate commercial performance, state-assignment operations and developmental outcomes; apply productivity-before-expansion; establish rigorous legal, social and ecological due diligence; build an inclusive traceability and cooperative platform; and subject major downstream or energy projects to stage-gated investment tests. Independent assurance should increase as the portfolio grows.

Agrinas can become a consequential institution in Indonesia's palm-oil economy, but the route is narrower than the size of its land mandate may suggest. Administrative transfer can create control, yet sustainable public value requires legal certainty, agronomic capability, disciplined capital, social legitimacy and environmental safeguards. If those elements are integrated, the company could demonstrate a model in which state asset recovery becomes a pathway to more productive and accountable development. If they are not, rapid scale may magnify rather than resolve the governance problems that motivated state intervention in the first place.

References

1. Qaim, M., Sibhatu, K.T., Siregar, H. and Grass, I. (2020) 'Environmental, economic, and social consequences of the oil palm boom', *Annual Review of Resource Economics*, 12, pp. 321–344.
2. Purnomo, H., Okarda, B., Dermawan, A., Ilham, Q. P., Pacheco, P., Nurfatriani, F., & Suhendang, E. (2020). Reconciling oil palm economic development and environmental conservation in Indonesia: A value chain dynamic approach. *Forest Policy and Economics*, 111, 102089.
3. Meijaard, E., Brooks, T. M., Carlson, K. M., Slade, E. M., Garcia-Ulloa, J., Gaveau, D. L., ... & Sheil, D. (2020). The environmental impacts of palm oil in context. *Nature plants*, 6(12), 1418-1426.
4. Murphy, D. J., Goggin, K., & Paterson, R. R. M. (2021). Oil palm in the 2020s and beyond: challenges and solutions. *CABI agriculture and bioscience*, 2(1), 39.
5. Hafiz, N., Azmi, K. M., Nimfa, D. T., Latiff, A. S. A., & Wahab, S. A. (2022). COVID-19 and its implications to the assessment of sustainable palm oil supply Chain management: an Indonesian perspective. *Frontiers in Sustainability*, 2, 738985.
6. Monzon, J. P., Slingerland, M. A., Rahutomo, S., Agus, F., Oberthür, T., Andrade, J. F., ... & Grassini, P. (2021). Fostering a climate-smart intensification for oil palm. *Nature Sustainability*, 4(7), 595-601.
7. Zhao, J., Elmore, A. J., Lee, J. S. H., Numata, I., Zhang, X., & Cochrane, M. A. (2023). Replanting and yield increase strategies for alleviating the potential decline in palm oil production in Indonesia. *Agricultural Systems*, 210, 103714.
8. Brandi, C. (2021). The Interaction of Private and Public Governance: The Case of Sustainability Standards for Palm Oil: C. Brandi. *The European Journal of Development Research*, 33(6), 1574-1595.
9. Choiruzzad, S. A. B., Tyson, A., & Varkkey, H. (2021). The ambiguities of Indonesian Sustainable Palm Oil certification: internal incoherence, governance rescaling and state transformation: SAB Choiruzzad et al. *Asia Europe Journal*, 19(2), 189-208.
10. Astuti, R., Miller, M. A., McGregor, A., Sukmara, M. D. P., Saputra, W., & Taylor, D. (2022). Making illegality visible: The governance dilemmas created by visualising illegal palm oil plantations in Central Kalimantan, Indonesia. *Land use policy*, 114, 105942.
11. Putri, E. I. K., Dharmawan, A. H., Hospes, O., Yulian, B. E., Amalia, R., Mardiyansih, D. I., ... & Suradiredja, D. Y. (2022). The oil palm governance: challenges of sustainability policy in Indonesia. *Sustainability*, 14(3), 1820.
12. Macdonald, K., Diprose, R., & Pugley, D. D. (2024). Scaling-up sustainable commodity governance through jurisdictional initiatives: Political pathways to sector transformation in the Indonesian palm oil sector?. *World Development*, 176, 106504.
13. Grabs, J., & Garrett, R. D. (2023). Goal-based private sustainability governance and its paradoxes in the Indonesian palm oil sector. *Journal of Business Ethics*, 188(3), 467-507.
14. Zu Ermgassen, E. K., Bastos Lima, M. G., Bellfield, H., Dontenville, A., Gardner, T., Godar, J., ... & Meyfroidt, P. (2022). Addressing indirect sourcing in zero deforestation commodity supply chains. *Science Advances*, 8(17), eabn3132.
15. PT Agrinas Palma Nusantara (2026a) Annual Report 2025: Sustainable Transformation Towards National Food and Energy Independence. Jakarta: PT Agrinas Palma Nusantara (Persero).
16. PT Agrinas Palma Nusantara (2026b) 'Agrinas Palma Nusantara Terima Tambahan 2,37 Juta Hektare Lahan Negara', 13 May.
17. PT Agrinas Palma Nusantara (2026c) 'PT Agrinas Palma Nusantara (Persero) Bukukan Surplus Operasional

Pengelolaan Aset Perkebunan Rp2,86 Triliun pada 2025', 9 July.

18. Mehraban, N., Kubitz, C., Alamsyah, Z., & Qaim, M. (2021). Oil palm cultivation, household welfare, and exposure to economic risk in the Indonesian small farm sector. *Journal of Agricultural Economics*, 72(3), 901-915.
19. Rosyadi, F. H., Mulyo, J. H., Perwitasari, H., & Darwanto, D. H. (2021). Export intensity and competitiveness of Indonesia's crude palm oil to main destination countries. *Agricultural Economics/Zemědělská Ekonomika*, 67(5), 189.
20. Lim, Y. L., Tenorio, F. A., Monzon, J. P., Sugianto, H., Donough, C. R., Rahutomo, S., ... & Grassini, P. (2023). Too little, too imbalanced: nutrient supply in smallholder oil palm fields in Indonesia. *Agricultural Systems*, 210, 103729.
21. de Vos, R. E., Nurfalah, L., Tenorio, F. A., Lim, Y. L., Monzon, J. P., Donough, C. R., ... & Slingerland, M. (2023). Shortening harvest interval, reaping benefits? A study on harvest practices in oil palm smallholder farming systems in Indonesia. *Agricultural Systems*, 211, 103753.
22. Petri, H., Hendrawan, D., Bähr, T., Musshoff, O., Wollni, M., Asnawi, R., & Faust, H. (2024). Replanting challenges among Indonesian oil palm smallholders: a narrative review. *Environment, Development and Sustainability*, 26(8), 19351-19367.
23. Fosch, A., Ferraz de Arruda, G., Aleta, A., Descals, A., Gaveau, D., Morgans, C., ... & Moreno, Y. (2023). Replanting unproductive palm oil with smallholder plantations can help achieve Sustainable Development Goals in Sumatra, Indonesia. *Communications Earth & Environment*, 4(1), 378.
24. Woittiez, L. S., Slingerland, M., Noordwijk, M. V., Silalahi, A. J., Heerwaarden, J. V., & Giller, K. E. (2024). People, palms, and productivity: testing better management practices in Indonesian smallholder oil palm plantations. *Agriculture*, 14(9), 1626.
25. Hendrawan, D., & Musshoff, O. (2024). Smallholders' preferred attributes in a subsidy program for replanting overaged oil palm plantations in Indonesia. *Ecological Economics*, 224, 108278.
26. Siregar, A. A., Halimatussadiyah, A., Moeis, F. R., Anky, W. A. K., & Nainggolan, D. (2024). The oil palm replanting imperative: Are smallholder farmers willing to participate?. *Forest Policy and Economics*, 169, 103362.
27. Berenschot, W., Dhiaulhaq, A., Hospes, O., Adriana, R., & Poetry, E. (2022). Anti-corporate activism and collusion: The contentious politics of palm oil expansion in Indonesia. *Geoforum*, 131, 39-49.
28. Berenschot, W., Dhiaulhaq, A., Hospes, O., & Pranajaya, D. (2024). Corporate contentious politics: Palm oil companies and land conflicts in Indonesia. *Political Geography*, 114, 103166.
29. Santika, T., Wilson, K. A., Law, E. A., St John, F. A., Carlson, K. M., Gibbs, H., ... & Struebig, M. J. (2021). Impact of palm oil sustainability certification on village well-being and poverty in Indonesia. *Nature Sustainability*, 4(2), 109-119.
30. Rowland, D., Zanello, G., Waliyo, E., & Ickowitz, A. (2022). Oil palm and gendered time use: A mixed-methods case study from West Kalimantan, Indonesia. *Forest policy and economics*, 137, 102682.
31. Watts, J. D., Pasaribu, K., Irawan, S., Tacconi, L., Martanila, H., Wiratama, C. G. W., ... & Manvi, U. P. (2021). Challenges faced by smallholders in achieving sustainable palm oil certification in Indonesia. *World Development*, 146, 105565.
32. De Vos, R. E., Suwarno, A., Slingerland, M., Van Der Meer, P. J., & Lucey, J. M. (2023). Pre-certification conditions of independent oil palm smallholders in Indonesia. Assessing prospects for RSPO certification. *Land use policy*, 130, 106660.
33. Ekaputri, A. D., Gaveau, D. L., Heilmayr, R., & Carlson, K. M. (2025). Uneven participation of independent and contract smallholders in certified palm oil mill markets in Indonesia. *Communications Earth & Environment*, 6(1), 721.
34. Eggen, M., Heilmayr, R., Anderson, P., Armson, R., Austin, K., Azmi, R., ... & Carlson, K. M. (2024). Smallholder participation in zero-deforestation supply chain initiatives in the Indonesian palm oil sector: Challenges, opportunities, and limitations. *Elem Sci Anth*, 12(1), 00099.
35. Ogahara, Z., Jespersen, K., Theilade, I., & Nielsen, M. R. (2022). Review of smallholder palm oil sustainability reveals limited positive impacts and identifies key implementation and knowledge gaps. *Land use policy*, 120, 106258.
36. Li, T. M. (2024). Securing oil palm smallholder livelihoods without more deforestation in Indonesia. *Nature Sustainability*, 7(4), 387-393.
37. Hendrawan, D., Chrisendo, D., & Musshoff, O. (2024). Strengthening oil palm smallholder farmers' resilience to future industrial challenges. *Scientific reports*, 14(1), 12105.
38. Renner, S., Ruml, A., Lakemann, T., Nuryartono, N., Tjoa, A., Corre, M. D., & Lay, J. (2024). Smallholder RSPO certification, economic benefits and agrochemical use. *Environmental Research Letters*, 19(11), 114093.
39. Jelsma, I., Gay, F., Ollivier, J., & Rapidel, B. (2024). Collective action, replanting and resilience; Key lessons from 40 years of smallholder oil palm cultivation in the Ophir plantation, Indonesia. *Agricultural Systems*, 213, 103801.
40. Witjaksono, J., Djaenudin, D., Fery Purba, S., Yulianti, A., Fadwiwati, A. Y., Muslimin, ... & Seerasarn, N. (2024). Corporate farming model for sustainable supply chain crude palm oil of independent smallholder farmers. *Frontiers in Sustainable Food Systems*, 8, 1418732.
41. PT Agrinas Palma Nusantara (2026d) 'PT Agrinas Palma Nusantara (Persero) dan Kementerian Koperasi Perkuat Kemitraan Koperasi Sawit untuk Dukung Ketahanan Pangan dan Energi Nasional', 2 July.
42. Kim, K., & Sumner, A. (2021). Bringing state-owned entities back into the industrial policy debate: The case of Indonesia. *Structural Change and Economic Dynamics*, 59, 496-509.
43. Rygh, A., & Benito, G. R. (2022). Governmental goals and the international strategies of state-owned multinational

- enterprises: A conceptual discussion. *Journal of Management and Governance*, 26(4), 1155-1181.
44. Cardinale, R., Landoni, M., & Mi, Z. (2024). Global state-owned enterprises in the 21st century: Rethinking their contribution to structural change, innovation, and public policy. *Structural Change and Economic Dynamics*, 68, 468-472.
 45. Ruggiero, P., Sorrentino, D., & Mussari, R. (2022). Earnings management in state-owned enterprises: bringing publicness back in. *Journal of Management and Governance*, 26(4), 1277-1313.
 46. Panibratov, A., & Klishevich, D. (2023). Emerging market state-owned multinationals: a review and implications for the state capitalism debate. *Asian Business & Management*, 22(1), 84-117.
 47. Syarief, R. (2024). Strengthening the competitiveness of state-owned enterprises. *Journal of Open Innovation: Technology, Market, and Complexity*, 10(1), 100199.
 48. Farobie, O., & Hartulistiyoso, E. (2022). Palm oil biodiesel as a renewable energy resource in Indonesia: current status and challenges. *Bioenergy Research*, 15(1), 93-111.
 49. Prananta, W., & Kubiszewski, I. (2021). Assessment of Indonesia's future renewable energy plan: A meta-analysis of biofuel energy return on investment (eroi). *Energies*, 14(10), 2803.
 50. Kaniapan, S., Hassan, S., Ya, H., Patma Nesan, K., & Azeem, M. (2021). The utilisation of palm oil and oil palm residues and the related challenges as a sustainable alternative in biofuel, bioenergy, and transportation sector: A review. *Sustainability*, 13(6), 3110.
 51. Nabila, R., Hidayat, W., Haryanto, A., Hasanudin, U., Iryani, D. A., Lee, S., ... & Yoo, J. (2023). Oil palm biomass in Indonesia: Thermochemical upgrading and its utilization. *Renewable and Sustainable Energy Reviews*, 176, 113193.
 52. Cheah, W. Y., Siti-Dina, R. P., Leng, S. T. K., Er, A. C., & Show, P. L. (2023). Circular bioeconomy in palm oil industry: Current practices and future perspectives. *Environmental Technology & Innovation*, 30, 103050.
 53. Wahyono, Y., Hadiyanto, H., Gheewala, S. H., Budihardjo, M. A., Adiansyah, J. S., Widayat, W., & Christwardana, M. (2023). Evaluating the environmental impacts at the end point level of the biodiesel production process from multiple feedstocks in Indonesia through life cycle assessment methodology. *Waste and Biomass Valorization*, 14(9), 3115-3131.
 54. Trisyulianti, E., Prihartono, B., Andriani, M., & Suryadi, K. (2022). Sustainability performance management framework for circular economy implementation in state-owned plantation enterprises. *Sustainability*, 14(1), 482.
 55. Xu, Y., Yu, L., Ciais, P., Li, W., Santoro, M., Yang, H., & Gong, P. (2022). Recent expansion of oil palm plantations into carbon-rich forests. *Nature Sustainability*, 5(7), 574-577.
 56. Fleiss, S., Parr, C. L., Platts, P. J., McClean, C. J., Beyer, R. M., King, H., ... & Hill, J. K. (2023). Implications of zero-deforestation palm oil for tropical grassy and dry forest biodiversity. *Nature Ecology & Evolution*, 7(2), 250-263.
 57. Deere, N. J., Bicknell, J. E., Mitchell, S. L., Afendy, A., Baking, E. L., Bernard, H., ... & Struebig, M. J. (2022). Riparian buffers can help mitigate biodiversity declines in oil palm agriculture. *Frontiers in Ecology and the Environment*, 20(8), 459-466.
 58. Pashkevich, M. D., Luke, S. H., Aryawan, A. A. K., Waters, H. S., Caliman, J. P., Dupérré, N., ... & Turner, E. C. (2022). Riparian buffers made of mature oil palms have inconsistent impacts on oil palm ecosystems. *Ecological Applications*, 32(4), e2552.
 59. Zemp, D. C., Guerrero-Ramirez, N., Brambach, F., Darras, K., Grass, I., Potapov, A., ... & Kreft, H. (2023). Tree islands enhance biodiversity and functioning in oil palm landscapes. *Nature*, 618(7964), 316-321.
 60. Hendrawan, D., & Musshoff, O. (2024). Risky for the income, useful for the environment: Predicting farmers' intention to adopt oil palm agroforestry using an extended theory of planned behaviour. *Journal of Cleaner Production*, 475, 143692.
 61. Wilson, S. M., & Anagnostopoulos, D. (2021). Methodological guidance paper: The craft of conducting a qualitative review. *Review of Educational Research*, 91(5), 651-670.
 62. Dhollande, S., Taylor, A., Meyer, S., & Scott, M. (2021). Conducting integrative reviews: a guide for novice nursing researchers. *Journal of research in nursing*, 26(5), 427-438.
 63. Barry, E. S., Merkebu, J., & Varpio, L. (2022). State-of-the-art literature review methodology: A six-step approach for knowledge synthesis. *Perspectives on Medical Education*, 11(5), 281-288.
 64. Kraus, S., Breier, M., Lim, W. M., Dabić, M., Kumar, S., Kanbach, D., ... & Ferreira, J. J. (2022). Literature reviews as independent studies: guidelines for academic practice. *Review of managerial science*, 16(8), 2577-2595.
 65. Grass, I., Kubitz, C., Krishna, V. V., Corre, M. D., Mußhoff, O., Pütz, P., ... & Wollni, M. (2020). Trade-offs between multifunctionality and profit in tropical smallholder landscapes. *Nature communications*, 11(1), 1186.
 66. PT Agrinas Palma Nusantara (2026e) 'Agrinas Palma Nusantara Luncurkan Integrated Procurement System, Perkuat Tata Kelola dan Perluas Peluang bagi UMKM Lokal', 6 July.
 67. Purwanto, E., Santoso, H., Jelsma, I., Widayati, A., Nugroho, H. Y., & van Noordwijk, M. (2020). Agroforestry as policy option for forest-zone oil palm production in Indonesia. *Land*, 9(12), 531.