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Technical Report

Reclamation and Commercialization of Post-Mined Sites through Palm Oil Plantations in Ghana: A Financial Feasibility Assessment Report

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December 2025

Acknowledgments

This work was conducted under the CGIAR Scaling for Impact Program. The authors are grateful for the support of the CGIAR Trust Fund contributors (www.cgiar.org/funders).

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Suggested Citation

Atampugre, G.; Ametefe, D. L.; Tilahun, S. 2025. *Reclamation and commercialization of post-mined sites through palm oil plantations in Ghana: a financial feasibility assessment report.* Colombo, Sri Lanka: International Water Management Institute (IWMI). CGIAR Scaling for Impact Program. 20p.

Front cover photo: Reclaimed post-mined site and newly planted oil palm interspaced with cowpea (*photo credit*: Kwaku Andoh Amponsah).

Back page photo: A 2-year-old oil palm plantation in Ahafo Ano South West, Ghana (*photo credit:* Kwaku Andoh Amponsah).

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Summary

The reclamation of post-mined land, commissioned under the Inclusive Landscape Management Plan (ILMP) by the International Water Management Institute (IWMI), represents a strategically vital initiative aimed at transforming vast tracts of degraded post-mined sites into productive arable land. The core methodology involves using oil palm and strategically selected leguminous crops to restore soil health, thereby achieving a foundational objective: generating sustainable socio-economic and environmental benefits —the triple bottom line. The project, based on a successful pilot in the Ahafo Ano Southwest District, was originally documented in an Investment Memorandum (IM) to present a scalable, investor-ready case.1 The initial structure envisaged private investment financing the high-risk reclamation process in exchange for long-term land access, underpinned by a compelling 70-30 profit-sharing model favoring investors but guaranteeing significant direct benefits to affected communities.

This expert analysis reveals a critical structural divergence that demands an immediate, profound strategic pivot. While the original framework demonstrated strong commercial potential based on limited pilot data, full-scale development projections after stakeholder validation workshop have exposed a binding constraint: the dramatically escalated cost of land reclamation. New estimates for reclaiming the targeted 13,391 hectares place the cost at approximately US$441.92 million. This enormous figure substantially exceeds the projected investment requirement for the core agro-industrial operations, which is calculated at US$40.44 million (excluding reclamation costs).

This structural mismatch effectively transforms the project from a bankable agro-industrial opportunity into an environmental rehabilitation effort that falls outside the mandate and risk appetite of typical private-sector investors. Without a fundamental recalibration, private capital mobilization is unachievable, and the original incentive structure, which relied on private investors funding the reclamation, is critically weakened. Consequently, the project must be strategically reframed as a blended initiative. This new position requires the non-commercial burden of reclamation to be absorbed by public or donor sources, thus de-risking the subsequent agro-industrial phase and preserving a viable platform for future private investment.

1. Background

As population and urbanization continue to expand, Africa's agrifood sector is undergoing significant transformation to meet its food security demands by prioritizing agricultural intensification (de Bruin et al., 2021). However, the attempt to achieve sustainable intensification has proven challenging for the continent, particularly grappling with intense pressure from competing land uses, induced land and water degradation, and climate change (Gupta et al., 2023). Resolving these complexities while ensuring a fair balance in resource allocation has led managers to explore a more comprehensive and inclusive approach to land and water management, such as adopting inclusive landscape management plans (ILMPs) (Tilahun et al., 2023).

According to Atampugre (2022), there is a rapid shift in land-use patterns, with mining activities replacing crop production in the southern part of Ghana. A shift in economic activities towards illegal mining continues to put farmers in the district at a constant disadvantage due to the invasion of the mining activities onto active farmlands, forcing owners to sell off their lands or face violent attacks, sabotage, and arson. This leads to displacement, loss of livelihoods, food price hikes, local food shortages, and higher costs of living. As part of the co-design of ILMP in Ghana, oil palm plantations emerged from the community as the prioritized viable action due to their resilience and capacity to thrive in previously mined areas (Atampugre et al., 2024).

Post-mined land reclamation with a palm oil plantation was conceived as an innovative mechanism for land restoration in Ghana, severely affected by environmental degradation stemming primarily from poor, small-scale, and artisanal mining practices. The core ambition has been to reclaim contaminated lands and convert them into commercially productive resources that deliver comprehensive benefits to local communities, investors, and the environment (Tilahun et al., 2025). The technical feasibility hinges on the specific capabilities of oil palm trees as commercial trees, when intercropped with leguminous crops, to restore soil health and productivity.

The targeted project scale is substantial, aiming to reclaim and subsequently develop approximately 13,391 hectares, equivalent to 33,099 acres. The original investment case was predicated on an economic model derived from pilot success, projecting profitable production and sales of Crude Palm Oil (CPO) and Palm Kernel Oil (PKO). The pilot established the basis for cost-effective methods and efficient resource use, including leveraging community collaboration.

Such a project benefits from highly favorable global commodity market dynamics, providing a robust revenue base, provided the cost structure is manageable. The global palm oil market was valued at US$70.4 billion in 2023 and is projected to grow substantially, with a compound annual growth rate (CAGR) of 5.1% from 2024 to 2030. The Crude Palm Oil (CPO) component accounts for approximately 25% of global revenues. Concurrently, the global Palm Kernel Oil (PKO) market, valued at US$14.68 billion in 2023, is expected to reach US$21.41 billion by 2032, reflecting a CAGR of 4.28%. Both products are highly versatile, with extensive applications across key industries, including food and beverages (the dominant consumer, accounting for 66.5% of market revenue), biofuels, cosmetics, and industrial lubricants.

Post-mined land reclamation with oil palms is not merely a commercial venture but a critical enabler of national industrial and environmental policy. It aligns directly with the Government of Ghana's ambitious Red Gold initiative. This initiative is designed to drastically reduce the nation's reliance on palm oil imports, aiming to cut US$2 billion in import expenditures and meet the annual national demand of 250,000 MT by increasing local output (Mohammed, 2025; GhanaWeb, 2025).

The government has projected the need to cultivate 50,000 hectares, starting with 20,000 hectares for which it is actively seeking US$100 million in financing. This idea of palm oil plantation on post-mined land offers a unique opportunity by providing a mechanism for sustainable land restoration that directly contributes to national food security and import-substitution goals. The integration of large-scale reclamation with structured agro-industrial development presents a unique value proposition that should strongly warrant governmental and multilateral financial support, particularly in the context of the subsequent cost analysis.

The primary objective of this report is to assess the financial feasibility of scaling this reclamation and commercialization model, quantify investment needs, evaluate profitability and risks, and propose a blended finance structure that integrates public, private, and donor capital to ensure both environmental restoration and economic viability.

2. Methodology

The financial feasibility analysis was conducted using an integrated methodological framework that combined technical, economic, and stakeholder-driven approaches. First, baseline data were collected from the pilot oil palm reclamation site in the Ahafo Ano Southwest District, including land preparation costs, input requirements, yield performance, and management practices. IWMI conducted additional field verification of other post-mined sites across three regions in Ghana (Western, Ashanti, and Eastern) from 16th to 26th June 2025 to assess the level of degradation and compare it with that of the pilot sites (Figure 1). One district was selected per region, with three communities visited in each: Wassa East (Sekyere Krobo, Sekyere Nsuta, Abetemaso), Amansie West (Abronkaso, Ekoso, Atobrakrom), and Denkyembour (Akwatia, Apinamang, Topremang). These sites were previously subjected to varying levels of illegal mining (galamsey) and are now at different stages of degradation, presenting both challenges and opportunities for ecological and economic rehabilitation. The verification employed an observational assessment and discussion with the community.

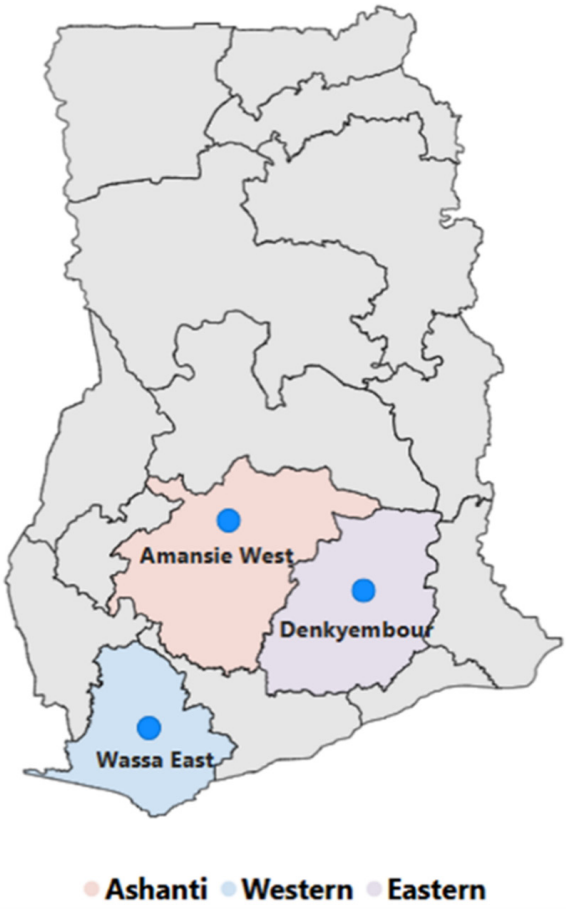

Figure 1. Location maps showing where additional verifications were conducted. *Source:* Authors' Construct

Input data on land reclamation costs were then complemented with secondary information from the existing literature and from similar reclamation activities by Save Our Lands Projects LBG (SOLPO) in Ghana, after verifying other post-mined lands. Using pilot information, an initial financial analysis was done. Stakeholder consultations with public and private sectors, academics, and civil society were conducted to validate assumptions and refine financial analysis. Then, using the information from stakeholder engagement and other reclamation initiatives, a final financial feasibility analysis was done. For these two analyses, detailed financial modeling was performed using discounted cash flow analysis to estimate the Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period.

Compared to the pilot site in the Ashanti region, these sites were found to be highly degraded with deep pits and logged water.

3. Results

3.1. Verification of the level of degradation

The environmental conditions at the surveyed post-mined sites reveal significant degradation, with all locations exhibiting a mix of deep and shallow pits and waterlogged areas, indicative of extensive, often unregulated mining activity. The physical landscape in communities like Abetemaso, Ekoso, Sekyere-Nsuta, Akwatia, and Topremang is heavily scarred, with notable risks of flooding, progressive soil erosion, and in some areas, complete topsoil loss, which greatly compromises their short-term agricultural potential.

The three sites in Western region (Wassa East) are in close proximity to streams or rivers, such as the Pra River, yet these water bodies are frequently clogged and polluted, which further amplifies ecological concerns and restricts irrigation possibilities (Figure 2). The regions span tropical monsoon and heavy rainfall zones, with lush vegetation in most communities, especially in Amansie West and Denkyembour, where cocoa, cassava, plantain, and oil palm thrive under the area's high humidity and fertile soils. Despite the physical damage, the land retains moderate to high agricultural potential, especially in areas where vegetation has begun to regenerate, provided that targeted land reclamation, soil restoration, and drainage interventions are implemented. The communities' agrarian history and residual vegetative cover suggest that, with proper investment and ecological rehabilitation, these lands can once again be transformed into productive farmland.

Figure 2. Visual evidence of waterlogged pit at degraded post mined site in Ashanti Region.

In contrast, the pilot site in the Ashanti Region showed comparatively less degradation. Although some surface disturbances were evident, the extent of pit formation and waterlogging was significantly lower than in the verified sites.

The reclamation cost breakdown from the Save Our Lands Project (SOLPO) outlines three severity levels for post-mining land restoration: low ($17,000/ha), medium ($33,000/ha), and high ($44,000/ha) (Table A1 in the Annex). Major cost drivers include pit backfilling, subsoil and topsoil replacement, and water management, with expenses rising sharply for deeper pits, contaminated water, and scarce soil material. Benchmark figures—such as USD 44,000/ha from the Ghana Forestry Commission and USD 57,000/ha from Newmont Ahafo—confirm the upper range of realistic costs. The document recommends budgeting $33,000/ha for pilot projects to ensure effective soil restoration, vegetation, and monitoring across degraded mined lands.

3.2. Initial pricing strategy and assumptions

The original financial analysis incorporated a conservative pricing strategy designed to hedge against potential market volatility. This approach used prices significantly below the prevailing world market averages. For CPO, while the average global price was US$825.00 per metric ton (MT), the model adopted a conservative rate of US$742.50 per MT. Similarly, for PKO, the 3-year average global price of US$1,313.00 per MT was reduced to US$1,181.70 per MT for projection purposes. This conservative approach aimed to demonstrate feasibility even under less favorable market conditions, reinforcing the initial attractiveness of the agro-industrial component.

The initial financial projections, based on the pilot and preliminary extrapolations, served as the proof of concept for bankability. The model used a land area of 9,591 hectares (23,700 acres) and high-productivity assumptions, specifically an expected yield of 8.9 tons per acre. The required total investment, including reclamation and processing facilities, was estimated at a manageable US$13.4 million. The initial analysis demonstrated robust commercial viability, yielding highly attractive investor metrics (See Table 1).

The calculated Internal Rate of Return (IRR) reached 19.54% by Year 25, significantly surpassing the Weighted Average Cost of Capital (WACC) of 10.00%. The Net Present Value (NPV) was positive, totaling US$22.27 million, and the project achieved rapid capital recovery with a payback period of just 2.38 years over the 25-year horizon. This initial assessment unequivocally established that the commercial production model, the agro-industrial component, is highly profitable and bankable, provided the challenge of land reclamation costs can be efficiently absorbed or minimized.

***Table 1.** Original commercial viability, yielding highly attractive investor metrics*

Metric (USD million/%)	Year 10	Year 15	Year 20	Year 25
Cumulative Revenue	215.47	395.03	574.60	613.02
Cumulative Total Cost	183.59	331.63	473.25	613.02
Cumulative Profit	31.89	63.41	101.34	141.14
NPV	$1.77	$10.96	$17.79	$22.27
IRR	11.79%	17.19%	18.93%	19.54%
Payback	4.21	3.18	2.65	2.38
ROI (Cumulative)	237.50%	472.25%	754.80%	1051.19%

3.3. Re-analysis of financial feasibility

The structural viability of post-mined land with an oil palm plantation was modified by two critical issues, interconnected revisions to the underlying assumptions: the cost of reclamation and the yield (Tilahun et al., 2025).

The original investment case's failure to scale lay in underestimating the complexity of full-scale reclamation. The initial US$13.4 million estimate was based on pilot project data that used simpler, cost-effective methods and relied heavily on leveraged community collaboration. Subsequent stakeholder feedback and new engineering estimates confirmed that full-scale activities across 13,391 hectares of severely degraded post-mine land are far more complex and costly.

The new estimate pegs the cost of reclaiming a single hectare at approximately US$33,000. This estimate is based on reclamation experience from Save Our Lands Projects LBG, located in Ghana. When extrapolated across the total targeted area of 13,391 hectares, the resultant cost for land reclamation alone is a staggering US$441.92 million. This cost constitutes a definitive structural distortion in the financial model.

The revised reclamation cost of US$441.92 million is nearly 11 times greater than the revised investment required for the actual revenue-generating agro-industrial operations (US$40.44 million). This disparity forces the project to transition from an investment opportunity anchored by commercial returns into a high-cost, non-revenue-generating environmental rehabilitation effort. Private investors are asked to front-load capital for an expenditure that cannot be directly recovered, collateralized, or absorbed within standard private equity fund lifecycles. This inability to internalize large-scale, non-commercial environmental risk confirms that the project now falls outside typical private-sector mandates, making the original financing model obsolete.

The revised financial model incorporated the US$441.92 million reclamation cost and adjusted key operational assumptions. The total investment required consequently ballooned from US$13.4 million to US$482.3 million.

A second major constraint was the critical downward revision of the operational yield assumption. The expected yield per acre was reduced significantly from the original 8.9 tons to 4 tons. This sharp decline, combined with the higher operating outlays associated with the expanded scope and reclamation activities, severely suppresses revenue potential.

The combination of massive, front-loaded capital requirements and suppressed yield leads to prolonged cash flow suppression. Investors are required to commit US$441.92 million upfront, and revenues are further delayed by an estimated four-year waiting period necessary for the oil palm plantations to reach maturity. This extended period of capital consumption before any return is realized is unacceptable within typical private-sector timelines.

3.4. Comparative financial performance: Original vs. Revised case

The following table summarizes the catastrophic impact of the revised assumptions on the project's bankability over the 25-year projection period:

Table 2. Comparative financial metrics: Original vs. Revised investment case (25-year horizon)

Metric (USD Million/%)	Original Case (OC)	Revised Case (RC)	Viability Assessment
Total Investment (USD)	$13.4 Million	$482.3 Million	Structural Mismatch (36x Increase)
Yield per Acre (tons)	8.9	4.0	Significant Revenue Constraint
Cumulative Revenue (Year 25)	$613.02 Million	$462.86 Million	Sharp Decline
Cumulative Profit (Year 25)	$141.14 Million	($264.72 Million)	Perpetual Loss
IRR (Year 25)	19.54%	Not Meaningful (N/M)	Unbankable
NPV (Year 25)	$22.27 Million	Not Meaningful (N/M)	Value-Destroying
Payback Period (Year 25)	2.38 Years	Not Meaningful (N/M)	Capital Consuming

The results confirm that the Revised Case's internal cash generation capacity is insufficient to cover expenditures. Cumulative revenue drops sharply due to the lower yield, while costs balloon. Over the entire 25-year span, cumulative profits remain negative, peaking at a loss of ($264.72 million) by Year 25. Key indicators such as IRR, NPV, and ROI are deeply negative and "not meaningful". This evidence confirms that the project, with internalized reclamation costs, is fundamentally unbankable without structural adjustments that externalize the massive capital drag of the environmental rehabilitation component.

4. Discussions

4.1. Comprehensive risk profile and stakeholder management

The structural mismatch not only destroyed the project's financials but also significantly complicated the stakeholder risk landscape, particularly regarding land tenure and government fiscal commitments.

Financial and investor risk perception

The inclusion of the US$441.92 million reclamation cost materially heightened the project's overall risk exposure. Private investors anchor their decisions on clear, predictable cash flow projections, typically over a 10-15 year horizon for agro-industrial projects. The current structure violates these criteria in multiple ways:

1. **Return compression:** The magnitude of the sunk cost severely depresses overall IRRs to levels far below investor thresholds. The strong operating margins theoretically possible in palm oil cultivation are unable to offset the sheer size of the initial capital drag within standard investor timeframes.
2. **Sunk cost and collateralization:** Reclamation expenditure is inherently a sunk cost; it cannot be easily recovered or collateralized. This dramatically increases the perceived downside risk for commercial lenders and equity providers.
3. **Risk reallocation:** The project risk profile shifts from manageable market, operational, and yield risks to heavy environmental and social risks. These include environmental performance risk (uncertainty that rehabilitated soils will perform as projected), social risk (potential challenges to land-use agreements), and political risk (shifts against large private concessions). These risks are complex to price, insure, or manage commercially, leading to a complete erosion of mainstream investor appetite. Impact and climate investors may express interest, but they will mandate significant government or donor co-financing to absorb the non-commercial risk.

Community and land tenure dynamics

The project's original social contract was based on investors bearing the costly, high-risk reclamation process in exchange for long-term access to land and a clear profit-sharing model (70-30). The necessity of framing reclamation as a public good significantly weakens this social contract.

If the land is rehabilitated by third parties, specifically donor agencies or the government, the moral and economic rationale for communities to cede long-term rights of use to private operators is substantially reduced. Communities may assert their right to cultivate the reclaimed land themselves for food security or livelihoods, or negotiate for shorter, less favorable concession arrangements. These risks undermine the efficient land use and larger economic gains that accrue from structured, long-term private capital mobilization and technology transfer.

This dilemma creates a critical governance and sustainability loop: public funding solves the reclamation financial gap but simultaneously creates an acute land tenure risk. If tenure security is compromised, private capital will withhold investment in catalytic assets like modern processing mills and infrastructure. Without this advanced private investment, the project cannot achieve the high yields and export revenue necessary to realize the land's economic potential, ultimately failing the original mandate of efficient land use and substantial community profit-sharing. Therefore, the strategic fix (public funding) must be immediately offset by robust legal and operational mechanisms to ensure the tenure security required by investors.

Government fiscal and political risk

The sheer scale of the reclamation cost will present a significant fiscal challenge to the Government of Ghana. Allocating US$441.92 million exclusively to reclamation must be weighed against competing national priorities.

Specifically, this allocation exceeds the government's current US$100 million demand for developing 20,000 hectares under the Red Gold initiative. Furthermore, the expenditure is directed toward a non-revenue-generating preparatory activity (land reclamation) rather than catalytic assets such as modern processing facilities, enhanced storage, or export infrastructure, which are core objectives of the national industrial strategy and the Red Gold initiative.

If the government does commit scarce resources to reclamation, political compulsion may lead officials to prioritize direct community use for food security over long-term concessions to external investors, introducing further political risk. The project must demonstrate how public investment in the US$441.92 million reclamation component strategically unlocks the highly profitable US$40.44 million agro-industrial segment, thereby generating disproportionate long-term national policy returns through environmental leadership and value chain integration.

4.2. The strategic solution: Blended finance and public good framework

In light of the comprehensive viability gap, the project's future rests entirely on a strategic shift that externalizes the reclamation costs and de-risks the commercial component.

Reframing reclamation: alignment with climate resilience and multilateral finance

Reclamation, given its cost and non-commercial nature, must be strategically marketed to global institutions as a good public initiative. This reframing aligns the project with critical global priorities, specifically climate resilience and large-scale environmental restoration objectives.

This positioning leverages IWMI's unique expertise in water and land management, positioning the organization to convene multi-stakeholder coalitions necessary to mobilize support from multilateral development agencies (MDAs) and climate finance. Enhanced eligibility for targeted grants, concessional finance, and green funding mechanisms is secured by highlighting the project's integration of renewable energy, carbon credit opportunities, and potential for biodiversity restoration.

Proposed blended finance structure (The "First-Loss" Model)

The mechanism requires a clear separation of financial roles based on risk absorption. The US$441.92 million reclamation cost must be entirely assumed by donors or government resources. These funds serve as "first-loss" capital, absorbing the initial, non-commercial, high-risk expenditure. This commitment transforms the physical land base into a remediated asset suitable for agriculture, paid for by public funds targeting environmental and social impact. In line with the Global Environment Facility's guidance on blended finance, such first-loss mechanisms are crucial for de-risking private capital and catalyzing sustainable investment in climate-resilient landscapes (GEF, 2020; GEF, 2024).

Once the land is remediated, private investors are engaged to finance the subsequent, commercially viable agro-industrial operations. This component, valued at US$40.44 million, includes establishing plantations, installing processing facilities (Crude Palm Oil and Palm Kernel Oil mills), and developing logistics infrastructure. By externalizing the massive reclamation cost, the financial profile of the US$40.44 million component improves dramatically, allowing it to meet typical commercial IRR and NPV requirements. This structure effectively balances the public good (environmental remediation) with the prospect of private profit (processing and exports).

Table 3. Proposed project financing structure: Public good vs. Commercial components

Component	Cost Burden (Approx.)	Financing Source	Nature of Capital
Land Reclamation (13,391 ha)	$441.92 Million	Government/Multilateral Agencies/Climate Funds	First-Loss, Concessional (Public Good)
Agro-Industrial Operations (Plantations, Mills, Logistics)	$40.44 Million	DFIs, Strategic Investors, Private Equity	Commercial, Equity, Senior Debt
Outgrower Support/ Social Infrastructure	Integrated (Shared)	Blended Grants/Long-Term Concessional Debt	Impact-Oriented/ Shared Risk
Total Project Investment	$482.36 Million	Blended Public-Private Coalition	Risk-Weighted Allocation

4.3. Implementation strategy: Phased reclamation with geographic zoning

The complexity and cost of the reclamation mandate require an optimized implementation model. The original five-year phased reclamation plan should be refined through a strategy of geographic zoning.

Structuring the land into clearly defined geographic clusters enables multiple government agencies or development partners to co-fund reclamation within their respective zones simultaneously. This approach distributes the US$441.92 million cost across diverse budgetary sources, reducing concentration risk for any single entity. Furthermore, this optimized phasing ensures that as specific zones are certified as reclaimed, private investors can immediately begin cultivation and plantation establishment on those parcels, thereby shortening the overall time-to-revenue for the US$40.44 million commercial component.

4.4. Strategic community engagement and tenure security

The greatest risk to the blended finance model is the threat of community land claims undermining the tenure security required by private investors. Mitigation measures must be legally robust and operationally integrated:

1. **Reinforced leasehold agreements:** Long-term leaseholds must be emphasized and facilitated by the government to provide structural tenure security and predictability. These agreements, envisioned in Phase 1, must be structurally resistant to post-restoration disputes.
2. **Inclusive outgrower schemes:** Community participation must be shifted from a focus on passive profit-sharing to active, remunerative involvement through deepened inclusive outgrower arrangements. These schemes must be fully integrated into investor-led value chains, guaranteeing market access and aligning community economic incentives with the project's long-term success.
3. **Community-aligned infrastructure:** The siting of processing facilities, logistics hubs, and other catalytic infrastructure must be chosen strategically to deliver tangible benefits—such as employment, local economic multiplier effects, and social services—to surrounding communities. This infrastructure must remain commercially anchored to preserve efficiency, scale, and investor control, while simultaneously mitigating social risks through visible, shared prosperity.

5. Conclusions

Immediate next step: Commissioning the Viability Gap Analysis (VGA)

The most critical and immediate action required during the Project Activation Phase is the commissioning of a detailed Viability Gap Analysis (VGA). This is not merely an academic exercise but a necessary precursor for capital mobilization.

The VGA's primary purpose is to scientifically quantify the precise level of public or concessional support required to bridge the financial gap and elevate the commercial IRR of the US$40.44 million agro-industrial component back above the WACC threshold. This analysis will provide the robust, evidence-based foundation needed to engage MDAs and development partners, moving the conversation from general strategic alignment to actionable, de-risked financial participation. The quantified gap will enable targeted negotiations for blended financing instruments, such as grants or highly concessional debt, specifically designed to optimize the risk-return profile for subsequent private equity and DFI participation.

Operationalizing community partnership models

A simultaneous priority must be the swift establishment of the legal and operational framework for community partnership. The emphasis must shift away from the potentially contentious topic of profit-sharing, which can become complicated if communities perceive that the land restoration was gifted by the government, towards guaranteed value-chain integration. This requires expediting the legal instruments necessary for reinforced, long-term leaseholds and structuring guaranteed off-take schemes for community outgrowers, ensuring commercial longevity and mitigating the critical land tenure risk.

Blueprint for sustainable land use transformation

The updated analysis confirms that post-mined land reclamation using a palm oil plantation is structurally unviable as a standalone private investment due to the US$441.92 million reclamation cost and suppressed yield assumptions. However, the project's foundational promise, its profound strategic, socio-economic, and environmental value as a mechanism for climate resilience and rural transformation, remains intact.

To advance this potential, the imperative is clear: the project must be aggressively reframed as a blended public-private initiative, treating the massive reclamation cost as an essential public-good investment supported by government and donor capital. This approach de-risks the early stages and creates a viable, commercially attractive platform for private-sector participation, particularly once the project has progressed beyond the initial maturation and cost-efficiency challenges.

Successfully executed Project ReGenesis, anchored by a phased implementation strategy, robust blended finance, and reinforced tenure security mechanisms, offers a blueprint for regional land-use transformation. It has the potential to position Ghana as a leader in sustainable agro-industrial development and to showcase IWMI's capacity to catalyze innovative, impact-driven models that effectively bridge critical research with policy goals and scalable commercial investment. The recommendation is to proceed immediately with the strategic reframing and the commissioning of the Viability Gap Analysis to mobilize the necessary public capital.

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Annex

Table A1. *Reclamation cost breakdown (per hectare)*

Component	Low Severity ($17,000/ha)	Medium Severity ($33,000/ha)	High Severity ($44,000/ha)	Notes
Water management (pumping & treatment)	$1,500	$3,000	$6,000	Cost depends on water volume & contamination.
Pit backfilling (haul + compaction)	$3,000	$6,000	$8,000	Key driver: pit depth & haul distance.
Leveling & grading	$1,500	$2,500	$3,500	Heavy equipment & labor.
Subsoil replacement (300 mm)	$2,500	$7,000	$12,000	Cost rises with distance/ material scarcity.
Topsoil replacement (100 mm + amendments)	$2,000	$6,000	$8,500	High severity may require imported growth media.
Revegetation (seedlings, cover crops, erosion mats)	$3,000	$5,000	$3,500	Medium invests more in durable planting; high severity may rely on engineered soil systems.
Monitoring & maintenance (Years 1–3)	$1,500	$2,000	$2,500	Site visits, data collection, survival checks.
Mobilization & contingency	$2,000	$1,500		Proportions shrink as complexity rises (covered within other components).
TOTAL / ha	$17,000	$33,000	$44,000	Matches target severity levels.

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