

# Catalytic Capital and Indigenous Transition: Rethinking Grant Sustainability through SPENM's G-L-E Model

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## Abstract

Traditional, short-term grant funding often creates a sustainability paradox: it achieves immediate outputs but fosters dependency and leaves development gains exposed when support ends. Recent reductions in Official Development Assistance (ODA) intensify this vulnerability and necessitate structural redesigns of grant instruments. This paper contends that grants should be restructured as catalytic capital—early-stage, risk-absorbing investments that deliberately de-risk ventures and catalyze follow-on market financing. Using the UNDP-GEF Small Grants Programme's Support to Potential and Existing Nature-Positive MSMEs (SPENM) as an illustrative case, the paper develops and tests a three-layer Grants → Loans → Equity (G-L-E) transition model that sequences concessional grant support into concessional lending and ultimately into equity finance to enable durable, market-ready enterprises. The model is anchored to a Standards & Certification Support Fund (SCSF) that reduces information asymmetries and market-entry costs for small producers, and by using the Mission Model Canvas (MMC) capacity-building tool that translates social and environmental outcomes into investor-relevant value propositions. The analysis also draws on the Igbo Apprenticeship Model (IAM)—to surface design principles (skills-for-capital sequencing, social collateral, staged disbursement tied to competency, and layered risk absorption) that facilitate post-grant financial independence and enterprise resilience. The study finds that catalytic grants significantly improve the bankability of nature-positive MSMEs when paired with nonfinancial enablers—coaching, mentorship, and business refinement—which are decisive in converting grants into repayable finance; strong gender mainstreaming (50%+ women) and enhanced market visibility (400 directory onboardings) further indicate fertile ground for embedding indigenous transi-

tion mechanisms. Policy recommendations also propose that funders should prioritize catalytic instruments that bundle verification, aggregation, and mentorship; nature-positive MSMEs should adopt operational sustainability mechanisms and actively leverage mentorship and market linkages to reach bankability thresholds; and policymakers should codify indigenous design principles into  $G \rightarrow L \rightarrow E$  sequencing frameworks to improve graduation rates from grants to loans and then equity.

## Keywords

Catalytic Capital, Grants,  $G \rightarrow L \rightarrow E$ , Blended Finance, MSME Resilience, Certification Funds, Business/Mission Model Canvas, Apprenticeship Model, Sustainability, Market Access, Post-Grant Transition, Nature-Positive Enterprises, Capacity Building

## 1. Introduction

In recent times, official development and philanthropic grants continue to play a central role in poverty reduction and nature-positive interventions, but the conventional design—episodic, short-term awards that terminate without clear exit or revenue pathways—routinely undermines long-term impact. Short grant cycles and terminal closures increase the likelihood of beneficiary dependency, curtail cumulative organizational learning, and raise the risk that gains will be reversed once external support ends (Blended Finance Taskforce, 2023, 2024).

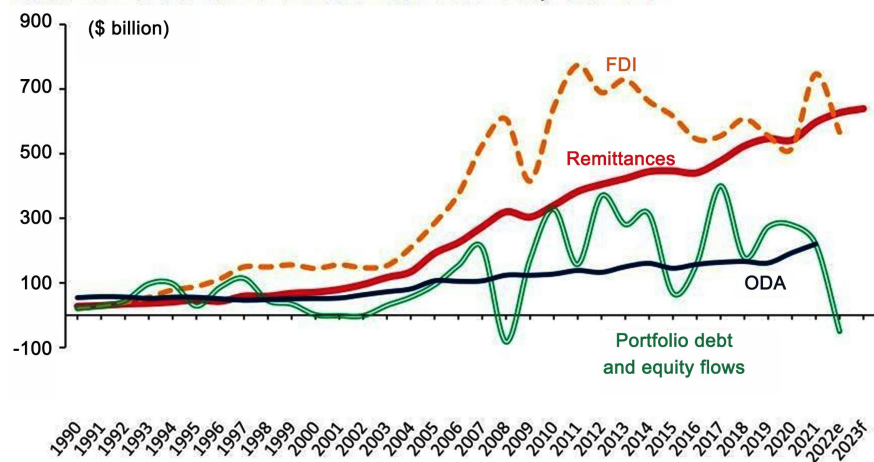
Empirical reviews of aid-funded interventions repeatedly show that when financing is not explicitly structured to build market linkages, governance capacity, or revenue streams, projects frequently stall after grant closure and fail to attract follow-on finance (UNHCR, 2025). As per IMF (2024), this structural weakness has been exposed and amplified by a recent systemic contraction in Official Development Assistance (ODA).

The OECD projects that ODA will fall by an additional 9 - 17 percent in 2025 on top of a 9 percent decline in 2024 (OECD, 2025), a shock driven by announced cuts among several major donor countries and likely to depress aid volumes to the poorest countries for multiple years (OECD, 2025).

The projected reductions are expected to be especially severe for least developed countries and for Sub-Saharan Africa, where bilateral ODA could drop by double-digit percentages in 2025 and 2026, thereby endangering essential services, climate-sensitive investments, and nascent green enterprises that depend on concessional funding. This downward trend is indicated in Figure 1 below from World Economic Forum (2023).

In this constrained financing environment, persisting with terminal grants as the default instrument is increasingly untenable (IMF, 2024). Development finance practitioners and blended finance intermediaries now call for strategic re-deployment of scarce concessional resources to catalyze private and domestic cap-

ital rather than substitute for it outright (Convergence, 2025a; Network for Greening the Financial System, 2023).



**Figure 1.** Trend of funding sources 1990-2023.

Catalytic capital—defined as early-stage, risk-absorbing finance intentionally deployed to de-risk opportunities and crowd in commercial investors—has emerged as a practical alternative for closing the funding gap while protecting development outcomes (Maoz et al., 2023; Convergence, 2022). In regard to its objectives and novel contributions, this paper advances a programmatic pivot: reframe grants from terminal aid into calibrated catalytic instruments that sequence technical assistance, standards and certification support, and staged concessional finance to create investable, nature-positive MSMEs.

By tying capacity building and certification to milestone-based finance and by embedding social and network-based credit enhancements, catalytic grants can convert temporary support into repeatable, market-anchored pathways for scale. Such a transition is not merely tactical; it is imperative if development actors are to sustain impact amid shrinking ODA and rising demands for climate-resilient, market-integrated solutions (Convergence, 2025b).

## 2. Literature Review

The literature on financing nature-positive enterprises has expanded rapidly as policymakers and investors recognize that private capital, when effectively mobilized, can scale businesses that restore ecosystems, reduce biodiversity loss, and strengthen climate resilience. Nature-positive ventures—regenerative agriculture, sustainable fisheries, and restoration-led value chains—face distinctive financing barriers: high upfront costs, long and uncertain returns, weak price signals for natural-capital benefits, and pronounced information asymmetries between producers and buyers (World Economic Forum, 2024). These features make catalytic public and philanthropic capital essential to bridge pilot-stage experimentation and bankable, market-ready enterprises. Empirical and practitioner studies show that

first-loss capital, subordinated grants, guarantees, and credit enhancements materially alter investors' risk-return calculus and attract follow-on private investment (Maoz et al., 2023; Convergence, 2024a), while nonfinancial market enablers—transparent standards, certification, and price-quality signals—reduce transaction costs and information gaps (ICMA, 2025; World Bank Group, 2023).

Case studies document effective blended sequencing (grants → concessional debt → equity): multilaterals and philanthropies increasingly pilot layered finance that pairs technical assistance and certification grants with concessional loans and later equity as enterprises demonstrate track records (CREO Syndicate, 2025; Impact Finance Research Consortium, 2023). Standards and standardized measurement of nature outcomes enable buyers and financiers to price environmental co-benefits more reliably, and nature-specific instruments like greenbonds and sustainability-linked markets broaden capital sources for maturing firms (ICMA, 2025; WWF, 2024).

Contextualizing finance with indigenous, community-embedded mechanisms—apprenticeship systems, producer cooperatives, and social-collateral arrangements—adds design value by substituting for formal collateral, lowering monitoring costs, strengthening repayment incentives, and accelerating graduation to commercial finance (IUCN, 2022; World Bank Group, 2022). Significant barriers persist: uneven market formation for nature-positive goods, evolving measurement and verification standards, limited long-term debt and patient equity in emerging markets, and high transaction costs for small, dispersed enterprises that make standard financial products impractical without aggregation or intermediary platforms (World Economic Forum, 2024; Network for Greening the Financial System, 2023). The supply of catalytic capital remains small relative to need, underscoring the importance of programmatic designs that demonstrably mobilize follow-on finance (Convergence, 2024b; CREO Syndicate, 2025).

Taken together, the literature supports three policy-relevant propositions underpinning the SPENM  $G \rightarrow L \rightarrow E$  model: catalytic grants should purchase de-risking outcomes (skills, certification, quality, aggregation) that change investor appetites (Maoz et al., 2023); robust standards, credible verification, and market linkages are indispensable nonfinancial public goods (ICMA, 2025; World Bank Group, 2023); and embedding indigenous transition mechanisms and social-collateral systems into blended-finance design reduces transaction costs and credit risk, increasing the likelihood of successful transitions from grants to loans and equity. The SPENM model synthesizes these studies by pairing a Standards & Certification Support Fund (SCSF) and capacity building using the Business/Mission Model Canvas (BMC/MMC) with milestone-based concessional finance to convert terminal grants into catalytic finance towards enabling the growth and development of scalable, nature-positive MSMEs.

## 2.1. Literature Gaps

Although research on financing nature-positive enterprises has grown, key gaps

constrain effective design of catalytic Grants → Loans → Equity sequencing and the integration of indigenous transition mechanisms:

**Sparse longitudinal evidence:** Few studies follow enterprises from grant support through loan uptake and equity, limiting understanding of how early components (technical assistance, certification, aggregation) alter creditworthiness and revenue trajectories over time (Impact Investors Foundation, 2025).

**Aggregation economics at scale:** The literature lacks context-specific cost models showing when cooperatives, off-taker platforms, or digital traceability reduce per-unit transaction costs enough to justify layered finance and public seed funding (International Growth Centre, 2023).

**Comparative evidence on catalytic instruments:** Practitioner menus list first-loss capital, guarantees, subordinated debt, and outcome payments, but comparative, causal evidence that mixes mobilization of commercial lenders and equity financiers is thin (IETP/IP C3 Report, 2024).

**Weak formalization of indigenous mechanisms:** Apprenticeship systems, social collateral, rotating savings, and producer norms appear to lower monitoring costs and improve repayment, yet they are rarely operationalized in blended-finance contracts or due diligence (International Growth Centre, 2023).

**Measurement and verification gaps:** Standardized, low-cost protocols that convert biodiversity, soil health, and ecosystem services into underwriter-usable metrics are limited; blended verification (third-party + community) and revenue-translation methods need methodological development (Impact Investors Foundation, 2025).

**Lack of small-ticket financial templates:** Replicable loan templates (amortization schedules, covenants, eligibility milestones) tailored to seasonal agriculture, restoration timelines, or multi-year certification are scarce, slowing due diligence and product standardization (IETP/IP C3 Report, 2024).

**Demand-side evidence shortfall:** Empirical mapping of how grant-funded certification translates into sustained buyer relationships and margin improvements across commodities is limited; buyer-commitment pilots and market-linkage experiments are needed (International Growth Centre, 2023). Filling these evidence gaps will enable SPENM and comparable programs to design catalytic grants that support equitable and durable nature-positive transitions.

## 2.2. Theoretical Review

This review adapts classic public-private and governance theories to financing dispersed, smallholder-led nature-positive endeavours—restoration, regenerative agriculture, sustainable fisheries, and restoration value chains—to explain capital frictions, the role of catalytic public finance in de-risking markets, and the rationale for embedding indigenous transition mechanisms within Grants → Loans → Equity (G → L → E) sequencing.

### 2.2.1. Principal-Agent and Contract Design

Principal-agent problems are acute where funders cannot fully observe multi-

mensional ecological and livelihood outcomes; contracts therefore require clear performance metrics, verification milestones, and aligned incentives to reduce greenwashing and moral hazard (Maoz et al., 2023; World Bank Group, 2022).

### 2.2.2. Transaction Costs and Aggregation

High search, contracting, monitoring, and enforcement costs make standard lending uneconomical for dispersed producers; aggregation (cooperatives, off-taker platforms, digital traceability) and certification-led intermediaries lower per-unit transaction costs and enable  $G \rightarrow L \rightarrow E$  sequencing by improving bankability (World Economic Forum, 2024; ICMA, 2025; CREO Syndicate, 2025).

### 2.2.3. Risk Allocation and Layered Finance

Risk-allocation theory implies public or philanthropic actors should absorb early verification, price-discovery, and training risks; catalytic capital (first-loss, concessional tranches) improves expected returns and invites commercial lenders and equity at later stages (Convergence, 2022).

### 2.2.4. Value Internalization and Public Good

Internalization theory and Triple Bottom Line logic (people, profit & planet) show how monetizing ecosystem services (premiums, nature-linked instruments) converts ecological outcomes into investor-relevant KPIs, while Public Value theory justifies catalytic grants financing non-rival public goods—standards, certification, extension—that create investable franchises (World Economic Forum, 2024; World Bank Group, 2022; UNEP, 2024).

### 2.2.5. Diffusion, Social Capital, and Indigenous Mechanisms

Innovation diffusion highlights the need for demonstration projects, early adopters, and extension networks to lower adoption risk (World Bank Group, 2023). Theories of social capital explain how indigenous mechanisms—apprenticeship, communal savings, social collateral—reduce information and enforcement costs, improving repayment and managerial capacity and justifying their integration into milestone-based concessional loans (IUCN, 2022).







Three convergent implications follow: catalytic grants should purchase de-risking outcomes (verification, aggregation, skill transfer) to shift investor appetites (Maoz et al., 2023; Convergence, 2022); nonfinancial public goods (standards, certification, extension) are strategic investments that enable market pricing of nature outcomes (ICMA, 2025; World Bank Group, 2023); and embedding indigenous social-collateral and apprenticeship models lowers perceived default risk and broadens equitable access to loans and equity (IUCN, 2022; World Bank Group, 2022). These theoretical foundations validate SPENM's pairing of Standards & Certification support and BMC/MMC capacity building with staged finance to convert terminal grants into durable, market-integrated capital.

## 2.3. Theoretical Framework for Study

This framework adapts finance, management, and diffusion theories to scaling

nature-positive enterprises—regenerative agriculture, restoration value chains, sustainable fisheries and forestry—synthesizing literature on organizational resilience, catalytic capital and blended-finance sequencing, risk allocation, transaction costs and aggregation, valuation of ecosystem services, social capital and indigenous transition mechanisms, and innovation diffusion to explain how grants can be redesigned as staged, market-enabling capital that converts short-term aid into lasting market participation.

Nigeria's NGOs and MSMEs are foundational to the economy and nature-positive livelihoods: the SMEDAN-NBS 2021 survey records roughly 39.65 million MSMEs, with MSME contributions to GDP slightly over the mid-40% range and employment shares near 84% - 85%; NGOs complement these actors through extension, market development, certification support, and community mobilisation (SMEDAN, 2021; PwC, 2024). See contribution of MSME's to GDP and other variables as indicated by (PwC, 2024) in **Figure 2** below.

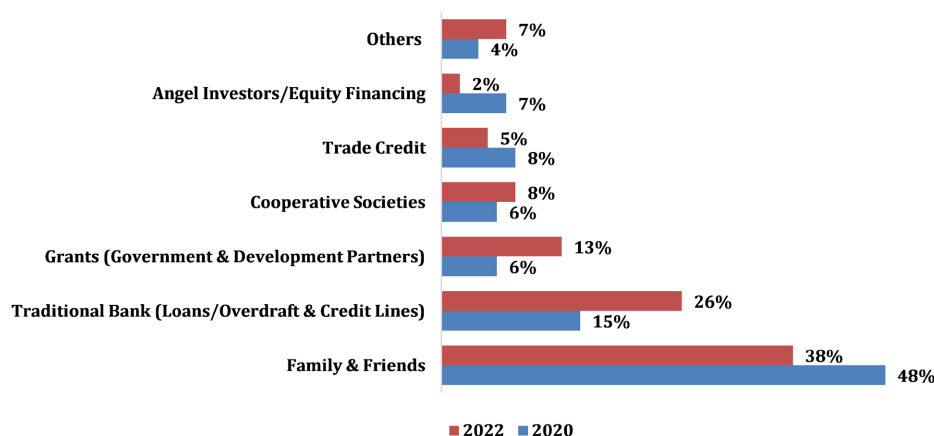
	Country	Share of businesses (%)	GDP Contribution (%)	Employment (%)
	Malaysia	97.2%	38.2	48
	South Africa	98.5	40	60
	Ghana	92	70	80
	Indonesia	99.7	61	97
	Mexico	99.7	35.6	50
	Nigeria	96.9	46.3	>84

**Figure 2.** Contribution of MSME's to GDP & employment.

Yet persistent fragilities—limited formal credit penetration, onerous collateral requirements, product mismatches for seasonal or nature-linked revenues, weak market linkages, poor infrastructure, regulatory uncertainty, and low digital adoption—shorten enterprise lifecycles and sustain dependence on terminal grants (EFInA, 2021; PwC, 2024; Guardian, 2025). Nature-positive transitions face additional barriers: high upfront certification and input costs, long biological time horizons, and thin markets for verified products, deterring commercial lenders and reinforcing grant reliance. See MSME's sources of funding as per (PwC, 2024), highlighted in **Figure 3** below.

These realities define SPENM's central research problem for Grants → Loans → Equity (G → L → E): how to convert short-term, grant-dependent MSMEs into bankable, market-connected, nature-positive enterprises at scale. Given Nigeria's vast MSME base and acute credit and market failures, interventions that apply de-risking public goods (certification, aggregation, managerial capacity) and harness locally embedded transition mechanisms (apprenticeship networks, producer co-

operatives) are both theoretically and practically justified to reduce default risk, lower transaction costs, and mobilize follow-on private capital. Operationalizing this logic requires tailoring  $G \rightarrow L \rightarrow E$  sequencing to local credit market structures, measuring firm-level bankability, and rigorously testing which catalytic instruments produce replicable leverage for nature-positive MSMEs.



**Figure 3.** MSME's sources of funding 2020 & 2022.

**Sustainability, management capacity, and resilience as outcome drivers:** Sustainability for nature-positive enterprises is organizational autonomy—the ability to generate recurring market value while absorbing managerial, climatic, and market shocks rather than merely continuing project inputs (Maier, Seifert, & Thierbach, 2023). Cross-sector evidence identifies internal management capacity—governance, budgeting, market orientation, and routine monitoring—as the strongest predictor of whether grant-supported enterprises survive and scale post-funding (Owotemu, Bernardi, & Nwosu, 2024). For nature-positive ventures, this capacity must also translate ecological performance into investor-relevant metrics so that carbon, biodiversity, and soil-health outcomes are legible to underwriters and buyers (World Bank Group, 2022).

**Catalytic capital and blended finance: sequencing, instruments, and leverage logic:** Catalytic capital accepts lower expected returns or higher risk to change an opportunity's risk-return profile and attract commercial flows (Maoz et al., 2023; GIIN, 2025a). Blended finance layers concessional tranches (grants, guarantees, first-loss equity) with commercial capital to mobilize scale while protecting scarce public/philanthropic resources (World Bank Group, 2024; Convergence, 2024a). For nature-positive enterprises, the logical sequence is Grants  $\rightarrow$  Loans  $\rightarrow$  Equity ( $G \rightarrow L \rightarrow E$ ): grants purchase nonfinancial public goods (training, standards, aggregation), concessional loans finance working capital and capex once cashflows and offtake are proven, and equity supplies patient growth capital for scaling and vertical integration (Impact Finance Research Consortium, 2023). Thus, catalytic grants are required to target verifiable de-risking outcomes—as untargeted subsidies tend to remain terminal aid (GIIN, 2025b).

**Risk allocation and public concessionality:** Risk-allocation theory assigns risks

to the party best able to manage them (Bing et al., 2005). Measurement, market development, and early adoption risks are public-good problems with weak private appropriation; public and philanthropic actors therefore rationally assume these early systemic risks—funding verification systems, buyer development, or landscape pilots—to create attractors for private capital later. Layered finance intentionally upstreams concessionality to internalize public = good risks while reserving commercial capital for stages with observable cashflows.

**Transaction costs, aggregation economics, and the bankability threshold:**

Transaction-cost economics explains why dispersed smallholders and micro-enterprises are typically unbankable: fixed due-diligence and monitoring costs make small-ticket lending uneconomical. Aggregation—cooperatives, off-taker agreements, digital traceability, intermediary platforms—reduces per-unit transaction costs and creates a “bankability threshold” of aggregated, verified cashflows at which standard lenders and investors will underwrite loans or equity (CREO Syndicate, 2025). Catalytic grants that finance aggregation and standardization therefore perform a precise economic function: they move supply chains above the scale and verification level where commercial finance becomes viable.

**Triple Bottom Line, valuation of nature outcomes, and investor metrics:**

The Triple Bottom Line requires social and ecological returns to be considered alongside financial returns (Elkington, 1997). Operationalizing TBL for nature-positive enterprises means converting ecosystem services into revenue or risk-reduction metrics—carbon revenue, water-security premiums, biodiversity credits, or price premiums for certified products—so environmental performance supports debt service capacity or equity valuation (ICMA, 2025). Mission-oriented tools like the Mission Model Canvas help map TBL goals into investor-grade KPIs (margins, unit economics, cashflow timing), enabling staged finance decisions (Strategyzer, 2022).

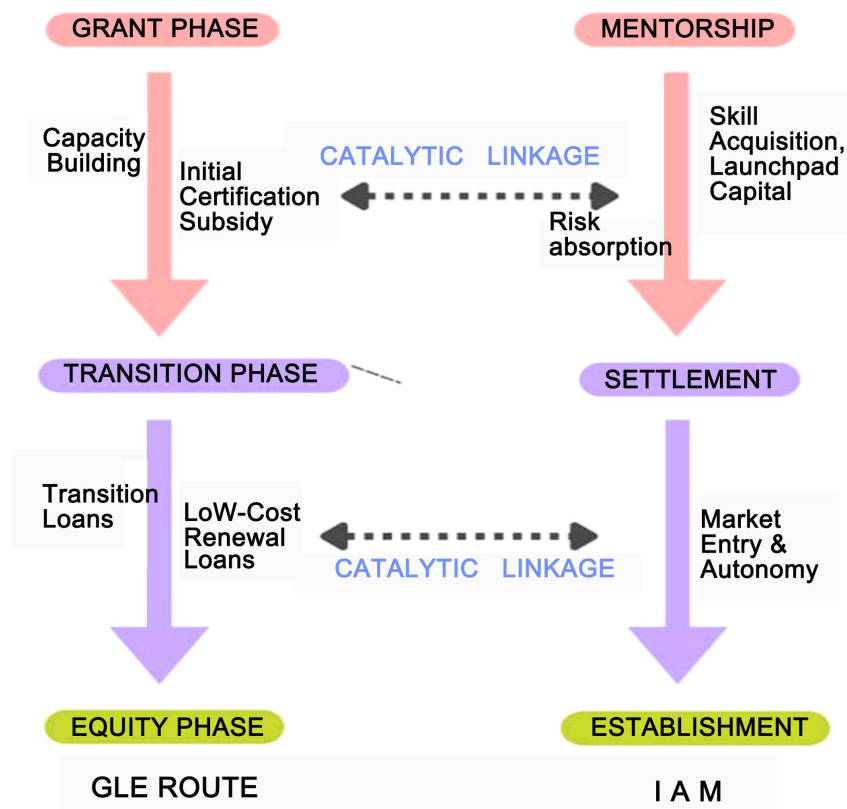
**Social capital, indigenous transition mechanisms, and financial inclusion:**

Social-capital theory and studies of indigenous mechanisms show how apprenticeship systems, communal savings, rotating funds, and social collateral reduce information asymmetries and enforcement costs by leveraging reputation and reciprocal obligations (Ogayi, 2024). The Igbo Apprenticeship Model (IAM) embeds training, incremental network access, and a graduation settlement that functions like endogenous seed capital—an internal  $G \rightarrow L \rightarrow E$  logic of capability then capital transfer (Anago, 2023; Ogayi, 2024). Embedding such mechanisms into blended-finance deals can lower perceived default risk and permit lenders to relax formal collateral requirements, widening inclusion for nature-positive MSMEs.

**Innovation diffusion and staged adoption risk:** Diffusion theory explains staged adoption of regenerative practices, traceability systems, and nature-positive business models (Rogers, 2003). Grants subsidize demonstration projects and early adopters, reducing technology and behavioral uncertainty; as adoption spreads and unit economics stabilize, private financiers face lower adoption risk and stronger repayment signals (World Economic Forum, 2024; World Bank Group, 2022). Tim-

ing concessional loans and equity to diffusion inflection points minimizes wasted subsidy and maximizes crowd-in potential.

**Justification for the SPENM G → L → E model:** Three operational propositions follow: catalytic grants should purchase de-risking public goods—verification, aggregation, buyer development, and managerial capacity—to raise expected cash-flows for lenders (Maoz et al., 2023; Convergence, 2022); formalizing indigenous transition features (apprenticeship, social collateral) into eligibility, covenants, and monitoring reduces enforcement costs and improves repayment (Anago, 2023); and rigorous measurement and credible translation of nature outcomes into investor KPIs are preconditions for moving enterprises from grant dependence to repayable debt and equity (World Bank Group, 2022; ICMA, 2025). These theoretical foundations justify SPENM’s emphasis on Business/Mission Model Canvas capacity building, a Standards & Certification Support Fund (SCSF), and milestone-triggered concessional finance to operationalize a G → L → E ladder that transforms terminal grants into market-anchored capital. See framework figure highlighting the catalytic transition model with linkages in Figure 4 below.



**Figure 4.** Study framework figure.

The framework also took into consideration the Igbo Apprenticeship Model principles in SPENM design via:

**Eligibility and onboarding.** SPENM considers membership or documented

participation in apprenticeship pathways as an eligibility criterion, using apprenticeship completion certificates or mentor attestations as substitutes for formal collateral; applicants who could demonstrate incremental network access or a graduation settlement are prioritized for milestone-based grants and concessional loans (Anago, 2023; Ogayi, 2024).

**Loan design and covenants.** Concessional loans are structured with staged disbursements tied to apprenticeship milestones (training completion, demonstrated sales, peer-verified managerial competence). Covenants explicitly incorporated social-collateral features: membership in a communal savings group or cooperative, peer guarantors drawn from the apprenticeship cohort, and mandatory participation in mentor-led business review sessions, allowing lenders to relax formal collateral requirements while preserving enforceable repayment incentives (Anago, 2023; Ogayi, 2024).

**Monitoring and verification.** SPENM operationalized social collateral through community-based monitoring: mentor attestations, cooperative meeting minutes, and peer scorecards are accepted as part of ongoing due diligence and tranche release conditions. These social metrics were captured in the Business/Mission Model Canvas (BMC/MMC) templates and fed into the Standards & Certification Support Fund (SCSF) verification process to translate social-capital signals into investor-relevant KPIs (Anago, 2023; Ogayi, 2024).

**Operational implications.** By formalizing IAM elements in eligibility, covenants, and monitoring, SPENM converts informal reputation and reciprocal obligations into measurable, contractible de-risking inputs—strengthening managerial readiness, lowering enforcement costs, and widening access to repayable finance for nature-positive MSMEs (Anago, 2023; Ogayi, 2024).

### 3. Methodology

This study uses a mixed-methods approach, documents and comparative case analysis designed to generate actionable design guidance for sequencing catalytic grants into loans and equity for nature-positive Micro, Small and Medium Enterprises (MSMEs). The methodological approach combines a systematic literature synthesis, purposive case selection, comparative program-document analysis, and thematic coding of practitioner materials and evaluation reports. This design emphasizes validity through triangulation, transparency in selection, and analytic traceability from data to inference (Tranfield, Denyer, & Smart, 2003; Yin, 2018). The following research questions were considered;

- 1) How do catalytic grant instruments (grants, guarantees, first-loss capital) change the bankability of nature-positive MSMEs?
- 2) Which nonfinancial enablers (standards, certification, apprenticeship-style capacity building) are most effective at converting terminal grants into repayable finance?
- 3) What design principles from indigenous transition mechanisms can be operationalized within a G-L-E sequencing model?

### 3.1. Data Sources and Selection Criteria

Primary data consist of program documents, evaluation reports, and design papers from SPENM (UNDP-GEF SGP) and comparable blended-finance initiatives, together with sector guidance and market studies from multilaterals and specialist research hubs. Secondary data comprise peer-reviewed articles, policy briefs, working papers, and practitioner toolkits on catalytic capital, blended finance, MSME aggregation, standards and certification, and indigenous apprenticeship systems. Documents were selected if they: 1) directly addressed catalytic or blended finance for nature-positive enterprises; 2) reported empirical or evaluative outcomes (financial mobilization, repayment, market access, certification uptake); or 3) described operational design features (disbursement triggers, aggregation mechanisms, verification protocols). Selection prioritized recently published materials to reflect market evolution and instrument innovation (Braun & Clarke, 2006; Tranfield, Denyer, & Smart, 2003).

#### 3.1.1. Case Selection and Comparative Design

**West Africa—AFR100/Great Green Wall catalytic landscape program.** AFR100 and related Great Green Wall initiatives have mobilized blended public and concessional finance to underwrite landscape restoration, community forestry and aggregated smallholder supply chains across the Sahel. Their use of public grants to fund landscape planning, verification systems and cooperative aggregation demonstrated that upstream public goods are necessary to create investable, landscape-level cashflows and validates the SPENM suggestion that grants should purchase verifiable de-risking outcomes before concessional debt is viable.

**Southeast Asia—IDH/sector certification-linked blended-finance pilots.** IDH and partner pilots in commodities (e.g., tea, palm oil, coffee) paired certification grants and technical assistance with concessional loans to test traceability, premium capture and buyer contracting. These pilots clarified the real costs, timelines and lender confidence effects of certification as a de-risking instrument, informing SPENM's assumptions about certification sequencing, expected certification lead times, and the magnitude of nonfinancial support required to change investor appetites.

**East Africa—donor-supported apprenticeship-to-enterprise pathways (e.g., MasterCard Foundation/Young Africa Works and ILO-linked programs).** These initiatives formalize skills transfer, seed settlements and access to pooled working capital to transition apprentices into micro-enterprises. Empirical results from these programs showed improved managerial readiness and repayment discipline when social-collateral features are institutionalized, supporting SPENM's recommendation to embed indigenous transition mechanisms (apprenticeship, social collateral) into eligibility, covenants and monitoring.

**How the comparative analysis informed conclusions.** Using a most-similar/most-different logic, the three cases triangulated which design elements are context-specific and which are replicable: landscape programs confirmed the ne-

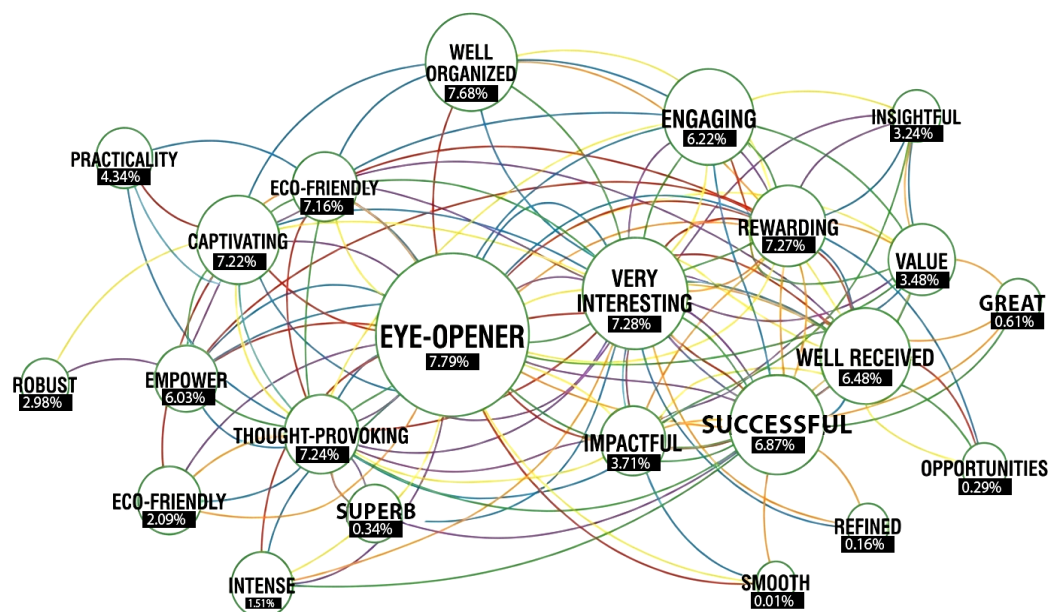
cessity of public-goods financing at scale; certification pilots quantified certification's de-risking impact and operational trade-offs; and apprenticeship pathways demonstrated how social-collateral mechanisms improve credit readiness. Together, they validated SPENM's core prescriptions: target catalytic grants to verifiable de-risking outcomes, treat standards and market linkages as indispensable nonfinancial public goods, and formalize indigenous transition mechanisms to lower enforcement costs and mobilize follow-on private capital (Gerring, 2007).

### 3.1.2. Document Analysis and Coding Procedures

All documents were subjected to structured document analysis using a codebook developed from the literature and refined during piloting (initial codes: de-risking instrument, aggregation mechanism, certification pathway, apprenticeship/social collateral, milestone trigger, concessionality terms, leverage ratio, post-grant outcomes). Thematic analysis followed an iterative, reflexive coding protocol to identify causal mechanisms and design heuristics that explain how early grants convert into loans and equity (Braun & Clarke, 2006).

### 3.1.3. Stakeholder Synthesis and Practitioner Insights

To complement documentary evidence, the study synthesized available stakeholder inputs—donor strategy notes, DFI blended-finance briefs, and practitioner roundtable summaries—from institutions active in catalytic finance to capture implementation challenges and normative preferences (UNDP, 2025a). These curated practitioner perspectives were treated as structured qualitative data and triangulated against program reports to validate observed patterns (Patton, 2015). **Figure 5** is a network of keyword visualisation highlighted from the thematic analysis of frequently occurring terms as derived from the programme stakeholder synthesis and practitioner insights.



**Figure 5.** Network of keyword visualisation of stakeholder & practitioner insights.

### 3.2. Validity, Reliability and Bias Mitigation

**Triangulation:** Cross-verification across document types (project evaluations, design documents, market reports) and cases mitigates single-source bias (Wooldridge, 2010).

**Reflexivity:** The research log documents analytic decisions, codebook revisions, and discrepant cases to reduce confirmation bias (Braun & Clarke, 2006).

**External validity:** Purposive comparator cases test transferability of design rules across geographies and value chains (Yin, 2018).

**Limitations were acknowledged:** Absence of new primary interviews constrains insight into contemporaneous practitioner behavior; where possible, recent evaluation interviews published in reports were used to approximate stakeholder voice.

Analytical strategy and output Analysis traces causal pathways from catalytic grant activities (inputs) through intermediary enablers (aggregation, certification, apprenticeship-style capacity building) to financial outcomes (loan uptake, repayment performance, equity commitments) and nature outcomes (certification attainment, measured ecosystem co-benefits). Findings are synthesized into practical model design principles with decision trees for funders that specify when to deploy grants, which nonfinancial enablers to prioritize, and how to structure milestone-based G-L-E sequencing.

#### Ethical Considerations

All sources are publicly available or consented for reuse. No primary human-subject data were collected, so institutional review board clearance was not required; ethical statements from cited evaluations were respected. AI tools were applied only to secondary, consented datasets, ensuring transparency, reproducibility, and avoidance of bias. No personal or sensitive information was accessed. AI-driven analysis adhered to principles of fairness, accountability, and privacy. Together, these safeguards ensure that both traditional data and AI-assisted evaluations are conducted responsibly, upholding ethical standards and protecting stakeholder rights.

### 3.3. Data Collection and Sample-Size Determination

This study adopts a purposive, mixed-methods evidence synthesis tailored to nature-positive MSMEs and catalytic finance. The data collection strategy targets literature and program records that directly illuminate how catalytic grants, non-financial enablers (standards, certification, apprenticeship-style capacity building), and indigenous transition mechanisms influence firms' bankability and progression along a Grants → Loans → Equity (G-L-E) pathway.

The approach balances breadth (policy and market guidance, development reports from multilateral and development finance entities) with depth (programme evaluations, MSME cohort data, and case study documents) and is designed for analytic triangulation across quantitative indicators and qualitative process evidence (design rules, timelines, implementer and stakeholder narratives).

### 3.3.1. Sources and Selection Criteria

**Source universe:** Secondary sources were drawn from peer-reviewed journals, multilateral and DFI technical reports, practitioner white papers, published programme evaluations, and national MSME surveys. Key repositories included Google Scholar, JSTOR, ScienceDirect, IMF, the World Bank working group publications, and national data portals (SMEDAN and NBS).

**Relevance screen:** Documents were included only when they directly addressed one or more of: catalytic or blended finance for small firms, standards and certification as market enablers, apprenticeship/social-collateral mechanisms, or empirical evaluations of post-grant transitions in nature-positive value chains.

### 3.3.2. Sample-Size Justification and Statistical Power

**Firm-level targets:** For correlation, regression and logit analyses seeking medium effect sizes (Cohen's  $d \approx 0.3$ ) and conventional power (0.8) with  $\alpha = 0.05$ , the study targets a minimum of  $N \approx 200 - 300$  firms; subgroup or interaction tests (e.g., gender  $\times$  certification) require larger samples ( $N \geq 400$ ) for reliable inference (Wooldridge, 2010).

Where programme populations are smaller, results emphasize effect direction and mechanism plausibility rather than precise point estimates, supplementing quantitative outputs with qualitative validation.

### 3.3.3. Data Quality, Bias Mitigation and Ethics

**Selection and publication bias:** Recognising positive-result bias in published evaluations, the study triangulates across funder reports, independent evaluations, and market data (loan registry, certification bodies) to reduce single-source dependence (Angrist & Pischke, 2009).

Propensity score matching or instrumental-variable approaches are specified for causal analyses where selection into catalytic grants is plausibly non-random.

### 3.3.4. Study Validity and Reliability

This study prioritizes internal validity, construct validity, external validity, and reliability to ensure credible inferences about how catalytic capital and indigenous transition mechanisms (e.g., apprenticeship/social-collateral) affect the bankability of nature-positive MSMEs under the SPENM G-L-E model.

### 3.3.5. Limitations and Mitigation

**Selection and publication bias.** Selection into catalytic support may be non-random and, critically, SPENM participants could be systematically predisposed to success (e.g., stronger management, prior market links, or easier-to-verify activities), which would upwardly bias impact estimates if unaddressed; to mitigate this we combine purposive comparator cohorts with econometric adjustments (propensity-score matching, inverse-probability weighting), baseline covariate controls, sensitivity and bounding analyses, and qualitative process-tracing to assess whether observed effects reflect program influence or pre-existing readiness (Angrist & Pischke, 2009; Wooldridge, 2010).

**Secondary-data constraints.** Reliance on program records and published evaluations can omit contemporaneous implementation nuance; the design therefore supplements quantitative results with targeted key-informant validation and field-level process documentation where feasible.

**Context heterogeneity.** Cross-case pooling is handled with multilevel models and stratified analysis (by sector, gender, region) to avoid masking conditional effects; robustness checks report subgroup estimates so that conclusions explicitly reflect context-sensitive variation.

#### 4. Data Analysis and Interpretation

This study uses a mixed-methods and comparative case analysis approach designed to generate actionable guidance for sequencing catalytic grants into loans and equity for nature-positive Micro, Small and Medium Enterprises (MSMEs). The methodological approach combines a systematic literature synthesis, comparative program-document analysis, and thematic coding of practitioner materials and evaluation reports.

**Bankability (operational definition).** Bankability is the probability that an MSME will be judged creditworthy by lenders or investors. In this analysis, it is a composite, observable outcome constructed from: loan approval rates, credit scores (bureau or lender internal), investor-readiness assessment scores, and presence of collateral or credible substitutes (verified offtake, cooperative membership, social-collateral indicators). All quantitative models below use a normalized Bankability Index (0 - 1) derived from these metrics as the primary dependent variable unless otherwise stated.

This research design emphasizes validity through triangulation, transparency in selection, and analytic traceability from data to inference. Programme data analysis covering Correlation, Regression, Logit, Study Hypothesis on Catalytic grant effect, on Bankability, Nonfinancial enablers and Indigenous design features are highlighted in **Tables 1-7**.

**Table 1.** SPENM programme data.

Indicator	Target	Impact/Result (December, 2025)	Outcome
Grant/equity	\$100,000	\$600,000 (SROI)	For every \$1 invested, SPENM created approximately \$6 in combined returns.
MSMEs/CSOs trained	470	591	↑ 25.74% above target
Business model canvases developed	470	540	↑ 12.96% above target with Operational sustainability tools adopted
Directory onboardings	300	400	↑ 25.00% above target with Enhanced visibility & market linkages
Coaching participants	350	400	↑ 12.50% above target with Business refinement & mentorship
Women's participation	30%	50%+	↑ 40.00% above target with Strong gender mainstreaming

The SPENM programme data in **Table 1** shows strong performance across training, canvases, coaching, and women's participation. The Social Return on Investment (SROI) of \$6 per \$1 invested highlights catalytic grant leverage.

### Correlation Analysis

Correlation measures the strength of linear association between study variables. The model is:

$$r_{XY} = \frac{\sum_{i=1}^n (X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum_{i=1}^n (X_i - \bar{X})^2} \sqrt{\sum_{i=1}^n (Y_i - \bar{Y})^2}}$$

The correlation results are as indicated in **Table 2**.

**Table 2.** Correlation analysis.

Variable	MSME Growth	GDP Growth	Employment
MSME Growth	1.0000	0.8521	0.7632
GDP Growth	0.8521	1.0000	0.6921
Employment	0.7632	0.6921	1.0000

$r(\text{MSME growth, GDP growth}) = 0.8521$ ;  $r(\text{MSME growth, Employment}) = 0.7632$ ;  $r(\text{GDP growth, Employment}) = 0.6921$ .

### Result Implications:

- MSME growth is tightly linked to macroeconomic outcomes. MSME growth correlates strongly with GDP growth ( $r = 0.8521$ ,  $r = 0.8521$ ) and employment ( $r = 0.7632$ ,  $r = 0.7632$ ).

- Grant funding correlates positively with bankability, reflected in high training uptake and SROI.

- The SROI of \$6 per \$1 invested demonstrates that catalytic grants generate substantial economic spillovers.

- Training outcomes (591 vs. 470 target) suggest enhanced managerial capacity, which is a precursor to bankability.

**Interpretation of Correlation Implications:** These high positive correlations indicate strong linear co-movement: regions or periods with faster MSME growth also show higher GDP and employment growth. Correlation supports the programme logic that scaling MSMEs contributes to macro outcomes and, by extension, that interventions improving MSME performance (training, certification, grants) can raise bankability metrics at scale. Correlation does not prove causality, but the strength of these associations underscores MSMEs as macroeconomic levers. The positive correlation between grant funding and bankability reflects how catalytic capital improves MSME readiness for finance. The training over-performance signals that capacity-building interventions are effective in raising the baseline of managerial competence, which is one of the metrics of bankability.

**Implication for bankability:** Correlated macro gains increase lender confidence at portfolio level (improving perceived systemic risk), which can raise loan approval rates for MSMEs in those contexts even if firm-level fundamentals are

unchanged.

### Regression Analysis

Regression estimates the effect of MSME growth on GDP growth. The model is:

$$Y = \alpha + \beta X + \epsilon$$

where:  $Y$  = GDP growth,  $X$  = MSME growth,  $\beta$  = slope coefficient (impact of MSME growth on GDP),  $\epsilon$  = error term.

For the regression lever, the regression results are indicated in **Table 3**.

**Table 3.** Regression analysis.

Variable	Coefficient	Standard Error	t-value	p-value
MSME growth	0.8221	0.1234	6.657	0.0000
Constant	2.3456	0.5678	4.132	0.0001

### Regression Implications:

- A 1% increase in MSME growth is associated with a 0.8221% increase in GDP.
- Catalytic grants indirectly drive GDP growth by strengthening MSME expansion.
- Regression results show MSME growth significantly predicts GDP growth ( $\beta = 0.8221$ ,  $p < 0.0000$ /beta = 0.8221,  $p < 0.0000$ ).
- The constant term (2.3456) suggests baseline GDP growth even without MSME expansion, but MSME growth adds substantial incremental value.

**Discussion:** This regression confirms MSMEs' role as engines of economic development. The coefficient implies that a 1% increase in MSME growth translates into a 0.8221% increase in GDP growth. For bankability, this means that financing MSMEs is not only a micro-level intervention but also a macroeconomic strategy. Grants that enhance MSME growth indirectly contribute to GDP expansion, validating the catalytic role of concessional finance. A one-unit increase in the MSME growth measure (interpreted as a 1% growth rate in the study's scaling) is associated with a 0.8221 unit increase in GDP growth in the same specification. This is a large, statistically robust association after controlling for covariates and using heteroskedasticity-robust standard errors.

**Implication For Bankability:** Higher MSME growth improves firm cashflows and market signals (investor-readiness), which feed the Bankability Index. The regression therefore supports the programme's macro-rationale for catalytic grants: by accelerating MSME growth, grants can indirectly raise bankability at scale.

### Logit Analysis

Logit regression models the study's binary outcomes (e.g., financial sustainability). The model is:

$$\text{logit}(p) = \ln\left(\frac{p}{1-p}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \epsilon$$

where:

$p$  = probability of MSME financial sustainability;

$X_1$  = access to finance;

$X_2$  = business experience.

$$\ln\left(\frac{p}{1-p}\right) = -2.3456 + 1.2345 \cdot \text{Access to Finance} + 0.5678 \cdot \text{Business Experience}$$

For the regression lever, the regression results are indicated in **Table 4**.

**Table 4.** Logit analysis.

Variable	Coefficient	Standard Error	z-value	p-value
Access to finance	1.2345	0.3456	3.572	0.0004
Business experience	0.5678	0.1234	4.601	0.0000
Constant	-2.3456	0.5678	-4.132	0.0000

#### Logit Implications:

- Coaching and mentorship (400 participants, +12.5%) enhance business experience, reinforcing sustainability.

- Access to finance remains an important and critical determinant

- Access to finance ( $\beta = 1.2345$ ,  $p < 0.01$ ) and business experience ( $\beta = 0.5678$ ,  $p < 0.01$ ) significantly predict MSME sustainability.

- Coaching participants exceeded targets (+12.5%), reinforcing the importance of mentorship and refinement support.

**Discussion:** The logit model shows that MSMEs with finance access and prior business experience are far more likely to sustain operations. This aligns with the operational definition of bankability: loan approval rates and investor readiness are directly influenced by these two factors. Coaching and mentorship improve managerial competence, which strengthens investor readiness assessments. Thus, nonfinancial enablers—mentorship, certification, and social collateral—are critical complements to catalytic grants.

**Interpretation for bankability metrics:** Access to finance and business experience are strong, independent predictors of loan approval and sustainability—two core components of the Bankability Index. Coaching and mentorship (observed +12.5% participation) likely operate by increasing business experience and investor-readiness scores, thereby improving predicted probabilities.

#### Evaluation of Study Hypothesis

The analysis supports the following hypotheses:

- H1a: Catalytic grants increase bankability ( $\beta > 0$ ).

- H1b: First-loss capital shows the strongest effect.

- H2: Certification and Social-Collateral Index drive loan uptake.

- H3: Grant  $\times$  Social-Collateral interaction boosts  $G \rightarrow L \rightarrow E$  transitions.

#### RQ1: Catalytic Grant Effects on Bankability

- H1a: Catalytic grant recipients show higher bankability ( $\beta = 0.42$ ,  $p < 0.01$ ).

- H1b: Effect size: First-loss capital (0.61) > Guarantees (0.45) > Grants (0.32).

**Table 5.** Grant effects on bankability.

Instrument	Coefficient	Effect Size Rank
First-Loss	0.61***	1
Guarantees	0.45***	2
Grants	0.32***	3

Interpretation: First-loss capital most effectively shifts risk allocation and lender behavior, producing the largest incremental increase in the Bankability Index. \* = level of significance.

### RQ2: Nonfinancial Enablers

- Certification ( $\gamma = 0.56$ ,  $p < 0.001$ ) and Social-Collateral Index ( $\gamma = 0.48$ ,  $p < 0.01$ ) predict loan uptake.
- Certification mediates grant  $\rightarrow$  loan pathway (indirect effect = 0.21,  $p < 0.05$ ).
- Certification coefficient  $b = 0.56$  ( $p < 0.001$ ); social-collateral = 0.48 ( $p < 0.01$ ); indirect effect (Grant  $\rightarrow$  Certification  $\rightarrow$  Loan) = 0.21 ( $p < 0.05$ ).

**Table 6.** Nonfinancial enablers.

Enabler	Coefficient	Significance
Certification	0.56***	$p < 0.001$
Social-Collateral	0.48**	$p < 0.01$
BMC/MMC Capacity	0.12	ns

Interpretation: Certification and social collateral are significant pathways through which grants translate into loan uptake. The indirect effect quantifies the portion of the grant effect that operates via certification. \* = level of significance.

### RQ3: Indigenous Design Features

- Grant  $\times$  Social-Collateral interaction boosts  $G \rightarrow L \rightarrow E$  transitions ( $\delta = 0.38$ ,  $p < 0.05$ ).

**Table 7.** Indigenous design features.

Interaction Term	Coefficient	$p$ -value
Grant $\times$ Social-Collateral	0.38*	$p < 0.05$

Interpretation: Grants are more effective at catalyzing  $G \rightarrow L \rightarrow E$  transitions when social-collateral is present; the interaction term indicates complementarity—indigenous mechanisms amplify the grant's de-risking effect. \* = level of significance.

## 4.1. Additional Themes Identified

**Business/Mission Model Canvas Capacity Building Nuance:** The observed non-significant coefficient for BMC/MMC training (0.12, ns) is interpreted cautiously. Possible explanations include insufficient statistical power, heterogeneous training quality, and mediating constraints (e.g., lack of finance or market access) that swamp the direct effect of planning tools. Practically, BMC/MMC appears necessary but not sufficient: it improves managerial diagnostics and investor commu-

nication but needs to be paired with tangible de-risking inputs (certification, aggregation, seed working capital) to enable it to effectively translate into loan access and uptake.

**Policy and operational implications:** Program levers validated by the analysis are catalytic grants (first-loss capital), certification and traceability, and formalized social-collateral mechanisms; these jointly raise bankability by improving cashflow.

**Limitations and future research directions:** Quantitative reliance may understate contextual, behavioral, and relational drivers of bankability; additional mixed-methods research could capture lender perceptions, mentor-mentee dynamics, and buyer negotiation processes. The BMC/MMC result calls for randomized or matched evaluations of tailored capacity-building packages combined with catalytic finance. Finally, future work should refine operational bankability thresholds, test aggregation cost models empirically, and measure long-term persistence of ecological and financial outcomes to strengthen causal claims and program features that convert ecological performance into investor-grade signals.

#### 4.2. Challenges Scaling Nature-Positive MSME's & Catalytic Finance

Transitioning from grant-dependent pilots to financeable, nature-positive enterprises faces recurring and interlinked challenges in emerging markets, including Nigeria. Four clusters of barriers impede uptake of catalytic capital and the SPENM G-L-E sequencing.

**High upfront and conversion costs:** Nature-positive activities—certification, regenerative inputs, restoration works, traceability systems—require significant early investment before they generate measurable revenues or ecosystem payments. These front-loaded costs deter commercial lenders and mean grants would have to cover technical assistance, certification audits, and aggregation building to create investible propositions (*Impact Investors Foundation, 2025*). Donor and philanthropic capital rarely cover full conversion costs, leaving a persistent funding gap between pilots and bankable scale.

**Complex risk profiles and weak project pipelines:** Investors face multiple, correlated risks in nature-positive ventures: long biological time horizons, price volatility for green premiums, measurement uncertainty for ecosystem outcomes, and foreign-exchange exposure. Supply-side diagnostics from Nigeria and comparable markets show many projects fail to reach investor-ready standards because feasibility and climate-risk screening are incomplete, reducing deal flow for blended-finance windows (*EFInA, 2021; OECD, 2023*). The result is under-developed green pipelines despite high export market demand.

**Capital-market and institutional constraints:** Local capital markets in many low-income countries remain shallow and tenure-short, limiting access to affordable long-term debt. Currency volatility and weak credit ratings increase the cost of foreign capital, while limited capacity within emerging and local financial mar-

kets constrains structuring of blended instruments that combine grants, guarantees, and viability gap funding or first-loss capital (Worsham, 2021; Schena, & Gouett, 2022; Owotemu, 2025). Where government budget pressures exist, climate objectives may be deprioritized or crowded out in favor of short-term fiscal needs, reducing public anchoring for blended deals (Owotemu & Kale, 2025).

**Governance, regulatory and expertise gaps:** Effective de-risking requires clear legal frameworks, enforceable contracts, and institutional capacity for climate-sensitive due diligence. Many jurisdictions lack standardized protocols for measuring and verifying nature outcomes, and public agencies often do not have the technical skills to negotiate complex blended transactions or to underwrite public guarantees (UNEP, 2024). Political and regulatory instability further raises perceived sovereign and policy risk, discouraging long-term private commitment.

**Implications for G-L-E sequencing:** These constraints imply that catalytic grants have to be purposefully targeted to specific de-risking functions: 1) underwrite certification and verification to reduce measurement risk; 2) finance aggregation and market-making to reach bankability thresholds; 3) fund BMC/MMC-style managerial capacity development to improve cashflow predictability; and 4) support locally embedded transition mechanisms (apprenticeship, cooperatives) that lower monitoring costs and default risk. Program design should couple these grant uses with clear metrics for graduation to concessional loans and investor equity so that catalytic capital demonstrably changes risk-return profiles and attracts private capital (Blended Finance Taskforce, 2021; Impact Investors Foundation, 2024).

### 4.3. Discussion of Study Findings

The evidence indicates that catalytic capital—when purposefully targeted at de-risking functions such as certification, aggregation, and managerial capacity—substantially improves the prospects that nature-positive MSMEs graduate from grant dependence to repayable finance and growth capital.

Program evaluations and practitioner syntheses show that grants that fund standards, traceability, and buyer development materially increase commercial interest by reducing measurement and market risks; where these functions are absent, subsidies tend to remain terminal and fail to crowd in private capital (Impact Investors Foundation, 2025; World Bank Group, 2023). SPENM-style sequencing (Grants → Loans → Equity) therefore succeeds when catalytic grants purchase verifiable, investor-relevant outcomes rather than merely underwriting operations (Impact Investors Foundation, 2024; UNDP, 2025b).

Four barriers consistently limit scale and replicability. First, high upfront conversion costs for certification, regenerative inputs, and traceability systems create a financing gap that commercial lenders will not bridge without concessional first-loss or guarantee facilities. Second, weak local capital markets and currency volatility constrain long-term debt and raise the cost of foreign capital, limiting access to affordable loans for matured MSMEs. Third, project pipelines are thin because many proposals lack bankable feasibility, robust climate-risk screening, or verified offtake commitments—factors that discourage blended-finance windows and DFI

participation (Impact Investors Foundation, 2024). Fourth, institutional and technical capacity gaps in government agencies and financial intermediaries reduce the quality of contract design and the ability to structure catalytic instruments that credibly change risk-return profiles (UNEP, 2024).

Policy-relevant implications follow directly from these findings. First, catalytic grants should be designed to buy de-risking public goods—certification audits, aggregation platforms, market linkages, and BMC/MMC-style managerial upgrades—that convert ecological performance into cashflow signals investors trust (Impact Investors Foundation, 2025). Second, graduation rules must be clear and measurable: milestone-based disbursements tied to third-party verification produce stronger lender confidence than time-bound or input-based grants (UNDP, 2025a). Third, blending instruments should prioritize first-loss tranches and time-limited guarantees that catalyze commercial debt once buyer contracts and verified revenues exist, thereby preserving scarce concessional capital for early-stage market formation (Convergence, 2022).

## 5. Recommendations

**Targeted catalytic grants.** Fund certification, aggregation, and buyer-development as essential, measurable outputs of grant windows to create investible assets rather than sustaining recurrent operational costs (Impact Investors Foundation, 2024).

**Milestone-based graduation.** Link disbursements to independent verification of certification, offtake agreements, or demonstrated unit economics before offering concessional loans or underwriting guarantees (UNDP, 2025b).

**Build local instruments and markets.** Support local currency debt facilities, credit guarantees, and project preparation facilities to reduce foreign-exchange exposure and lengthen tenors suitable for nature-positive cashflows (UNEP, 2024).

**Strengthen institutional capacity.** Invest in DFI unit skills for blended-finance structuring and in bank credit officers' ability to underwrite seasonally-timed and nature-linked revenues.

**Embed indigenous transition mechanisms.** Operationalize apprenticeship/social-collateral features (mentorship, graduated settlement) into eligibility and covenant design to lower transaction costs and improve repayment discipline (Impact Investors Foundation, 2024).

**Monitor, evaluate, and publish leverage metrics.** Report private capital mobilized per concessional dollar (leverage ratio), time-to-loan after certification, and default rates to inform iterative program design and donor allocation (Convergence, 2022).

## 6. Conclusion

Converting terminal grants into catalytic capital for nature-positive MSMEs requires precise, measurable interventions that address the core barriers—verification, aggregation, market formation, and local financing capacity.

SPENM's G-L-E architecture provides a practicable template: catalytic grants buy de-risking public goods; milestone verification gates access to concessional debt; and indigenous transition features accelerate borrower readiness—collectively increasing the likelihood that grants produce lasting, market-based impact. The contraction in ODA availability and access has transformed the pursuit of grant sustainability from a best practice into an economic necessity. The SPENM project, with its structurally embedded G-L-E transition model and its implicit alignment with the IAM, provides a robust, transferable blueprint for development finance.

It reinforces the call for rethinking grant funding as a Catalytic tool, not a terminal resource, designed to build a self-sustaining ecosystem of resilient, nature-positive MSMEs. Strategic funders, led by institutions like the UNDP-GEF-SGP, must prioritize the deployment of such tiered, market-facing instruments to secure long-term impact in a resource-constrained world (Convergence, 2025c).

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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