BDMG Regenerative Agriculture Fund

Instrument Design Report

FICS LAB

CLIMATE POLICY INITIATIVE

BDMG

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GAAS
GRUPO ASSOCIADO DE AGRICULTURA SUSTENTAVEL

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I. SUMMARY

A. INSTRUMENT PURPOSE

The Development Bank of Minas Gerais (BDMG) has designed the Regenerative Agriculture Fund (RA Fund). This financial instrument aims to support farmers in the state of Minas Gerais, Brazil, to transition to regenerative agriculture (RA)[1] practices. RA practices promote soil health, carbon sequestration, biodiversity, and water resource conservation, which strengthens resilience to climate change while maintaining high levels of productivity.

BMDG has developed this instrument via the FiCS Innovation Lab, with technical support from Climate Policy Initiative (CPI), *Grupo Associado de Agricultura Sustentavel* (GAAS), Sitawi, and WayCarbon (more information on these organizations is available in Annex I). With the design phase completed, BDMG is currently seeking funding to move the instrument into pilot implementation.

"Participation in the FiCS Lab is a strategic long-term investment. It strengthens the Bank's institutional capacity to design innovative financial solutions aligned with global sustainability and green transition agendas. By accessing the international network of development banks and investors, BDMG benefits from continuous learning, benchmarking of best practices, and the attraction of high-value partnerships."

– BDMG

This report presents one of the three novel climate finance instruments developed by PDBs through the FiCS Innovation Lab between 2025 and 2026. The instruments were designed to address key barriers to scaling climate finance in emerging markets, combining financial innovation with technical support and institutional capacity building.

B. CORE PROBLEM ADDRESSED

The RA Fund design features three pillars to address key barriers that hinder farmers' transition:

1. **A credit guarantee fund** to increase access to affordable credit for adopting RA practices.

1 Regenerative agriculture is a farming model that adopts practices focused on soil health, carbon sequestration, biodiversity promotion, and the conservation of water resources. As a result, it strengthens crop resilience to climate change while maintaining high levels of productivity

2. **Technical assistance** to increase knowledge for implementing RA practices.
3. **A production support fund** to cover potential losses in the early stages of transition.

The instrument also aims to promote gender equity by providing increased guarantee coverage for women farmers.

BDMG and other public development banks (PDBs) are well-positioned to address key challenges to RA uptake, which are a lack of access to knowledge and affordable financing, as well as high risk perception. PDBs have institutional and financial capacity, technical and monitoring infrastructure, and are aligned with national agricultural and sustainable finance frameworks. Crucially, they can leverage their strategic partnerships with farmer cooperatives, producer organizations, research institutions, and agribusinesses.

C. KEY INSIGHTS

- There is a clear opportunity to incentivize uptake of RA, as farmers value its environmental benefits and are interested in receiving payment-for-environmental-services despite limited direct financial returns.
- However, successful RA uptake requires fit-for-purpose financing and robust TA.
- Trust in financing vehicles and TA can be supported by strong PDB buy-in.

D. DESIGN PRINCIPLES

BDMG's RA Fund promises to be:

1. **Catalytic:** The Fund will use blended finance to de-risk lending to rural producer and enable both farmer's transition to RA practices, and over time, the mobilization of private capital through the guarantee structure, while enhancing climate resilience, social equity, economic stability, and accelerating carbon drawdown and emissions reduction.
2. **Innovative:** BDMG's guarantee coverage of RA credit will be a first for Brazil. There are currently no blended finance vehicles combined with collateral-free financing for RA adoption, while also promoting gender equity.
3. **Actionable:** The instrument is designed for deployment within existing institutional and market structures, building on BDMGs current credit lines, existing partnerships with credit cooperatives, and technical assistance networks. Its conservative risk parameters, and integration with existing policy frameworks support operational feasibility, financial sustainability, and long-term institutional adoption.
4. **Replicable:** This instrument has the potential to be replicated in other regions with regulatory alignment, strong PDB buy-in, a local technical diagnosis, and strong, context-appropriate partnerships adapted to meet regional needs.

II. CONTEXT

A. THE CHALLENGE

Agriculture is both central to Brazil's economy and a significant source of environmental pressure. Conventional production relies on chemical inputs and land-use expansion, which contribute to deforestation, degrade soil health, and increase greenhouse gases (GHGs). Agriculture and livestock account for approximately 27% of Brazil's GHG emissions, making more sustainable practices crucial to achieving the country's commitment to reducing carbon emissions by 53% by 2030. Soil degradation, declining fertility, and rising climate vulnerability are also increasing pressure on productivity.

Various barriers are hindering the adoption of regenerative agriculture practices. Current policy instruments, financial systems, technical support, and market incentives are geared toward conventional production. Better alignment is needed with regenerative practices, which have different risk profiles, transition timelines, and knowledge requirements. Regenerative agriculture also has uncertain short-term returns and minimal market differentiation. These challenges are particularly relevant to Minas Gerais, a leading agricultural region where agribusiness contributes roughly 23% of the state's GDP.

Brazil's agribusiness supply chains are highly integrated and built around conventional production. Upstream financing from input suppliers is often tied to the purchase of synthetic fertilizers and pesticides, reinforcing chemical-input production models. Downstream commodity markets rarely offer consistent price premiums for regenerative products, limiting incentives for producers to adopt practices that improve soil health and ecosystem resilience. For example, only 26 of 105 coffee producers using regenerative practices who were surveyed to inform this instrument had obtained higher prices for regenerative products.

Farmers have limited access to tailored finance and technical support for alternative production systems, particularly small- and medium-sized producers. Producers and financial institutions perceive regenerative agriculture as high-risk, limiting demand and supply for credit to fund such practices. Current financial products are not aligned with the transition risks of regenerative agriculture, which may involve temporary productivity declines or income variability.

Federal credit lines are largely institutionalized around conventional production models. Brazil's established rural credit system has historically supported conventional agriculture using synthetic inputs. Local credit cooperatives[2] also support conventional practices, which are seen as more profitable. Access to credit remains constrained for many producers: in the survey, 40% of respondents reported not having accessed credit, indicating significant barriers to entry. Among those who had access to financing, collateral-based lending is prevalent: approximately 42% rely on property, while 22% use crops and 22% depend on personal guarantors. These requirements create structural barriers for small and medium producers and limit access to finance for alternative production systems such as regenerative agriculture.

2 A credit cooperative is a financial institution that provides banking and lending services to its members, typically individuals or businesses that share a common economic activity or geographic area.

In addition, producers and financial institutions lack experience in implementing and monitoring regenerative systems. Regenerative techniques require specialized technical knowledge and ongoing monitoring of soil health and ecosystem performance. Most existing technical assistance is oriented toward input-prescription models rather than integrated soil management.

B. THE SOLUTION

BDMG's RA Fund takes a risk mitigation approach to financing regenerative agriculture. This initiative aligns with the bank's commitment to integrating climate resilience into agriculture finance and embedding sustainability into its core lending operations. The instrument is currently in an advanced design stage, with BDMG seeking funding partners to support pilot implementation.

The Fund will build on BDMG's existing RA program, LabAgroMinas, which has trained over 2,300 producers and disbursed USD 3.8 million to support the adoption of RA on more than 3,900 hectares of agricultural land since 2022. The approach supports both portfolio resilience and long-term rural development objectives.

The initiative is also aligned with Brazil's Sustainable Taxonomy, the Federal ABC+ Program (Low Carbon Agriculture), and the Climate Action Plan of Minas Gerais. It is designed to be compatible with emerging national carbon market regulations and existing agricultural finance frameworks. Positioning this instrument within these broader policy frameworks ensures coherence between state-level financial innovation and national and international climate and development objectives.

C. THEORY OF CHANGE

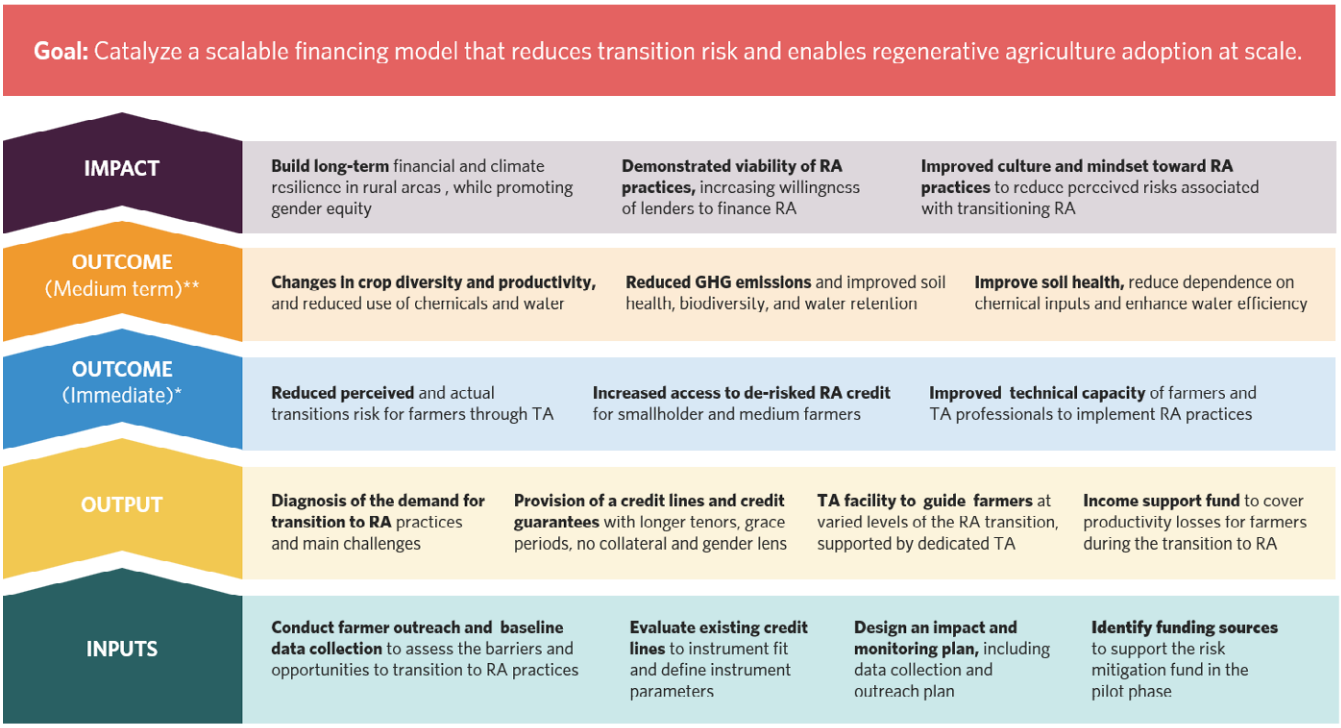
The RA Fund is designed to enable coffee, cattle, and soybean producers in Minas Gerais to adopt regenerative agriculture at scale. Financing RA uptake aims to strengthen the economic and climate resilience of producers, improving soil health, water retention, and reducing GHG emissions—while also increasing their productivity and incomes.

This will be achieved through the financing mechanisms described below and enabled through coordinated action by key stakeholders in the state's agricultural ecosystem. It will be supported by a tailored Measurement, Reporting, and Verification (MRV) plan.

The BDMG RA Fund aims to achieve the following climate benefits:

1. **Mitigation:** Avoided GHG emissions, carbon sequestered in the soil, and the share of land under regenerative management.
2. **Adaptation:** Improved soil health, enhanced water retention, and strengthened biodiversity conservation.

Figure 1. Theory of Change



*within three-five years
**post 5 years

III. INSTRUMENT STRUCTURE AND STRATEGY

A. INSTRUMENT INTRODUCTION

The RA Fund combines guarantees to improve farmers' access to credit, technical assistance to support their adoption of regenerative practices, and a production fund to cover potential losses during their transition to RA in the coffee, cattle, soybean and corn sector.

Agricultural producers accessing loans through partner credit cooperatives may apply to enroll in the RA Fund. BDMG will assess the technical eligibility of the agricultural projects receiving credit lines, including their compliance with environmental criteria and maintain technical oversight.

B. INSTRUMENT MECHANICS

The Fund has three interlinked mechanisms, as shown in Figure 2: a credit guarantee, structured technical assistance, and a production support fund.

Figure 2. BDMG RA Fund Instrument Mechanics

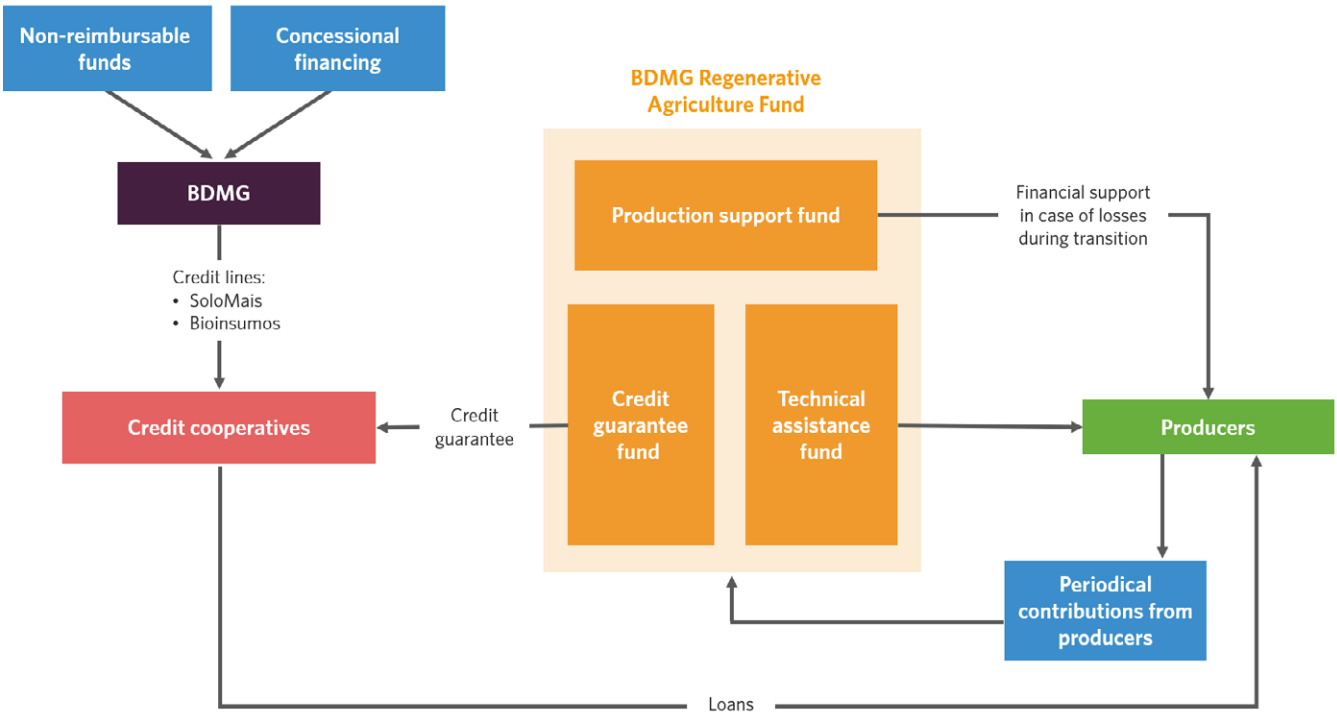


Table 1. Summarize instrument components, barriers addressed, and beneficiaries

	Tailored Credit Lines	Credit Guarantee Fund	Technical Assistance Fund	Production Support Fund
What it is	Existing concessional RA credit lines offered by BDMG through local credit cooperatives	A guarantee facility that de-risks cooperative lending to RA producers	A technical support facility that provides training, mentoring and implementation support to RA producers	A conditional income buffer for RA producers that cushions temporary transition-related income losses
Barriers addressed	▪ Limited access to transition-aligned finance ▪ Rigid conventional lending structures	▪ Perceived default risk during transition ▪ High collateral requirements	▪ Technical and implementation risks ▪ Knowledge gaps ▪ Cultural resistance	▪ Short-term income volatility risk ▪ Early-stage yield volatility during the RA transition
Beneficiaries	Rural producers (small, medium, and large-scale)[3]	Direct: Credit cooperatives Indirect: Rural producers	Rural producers and field-level TA professionals	Rural producers (small, medium, and large).

HOW EACH COMPONENT WORKS:

1. **RA credit lines:** BDMG already offers two credit lines to rural producers' RA practices via local credit cooperatives—SoloMais (promoting soil restoration) and Bioinsumos (investment projects in production infrastructure for biological inputs for own use). The interest rates are subsidized by BDMG, with extended maturities of up to 60 months.
2. **Credit guarantee fund:** Under the proposed fund, BDMG will guarantee cooperatives' loans extended to RA producers, reducing their credit risk and enabling them to provide financing without the need to present physical collateral. To promote gender equity, the guarantee will cover up to 100% of credit lines to women and up to 80% for men.
3. **Technical assistance fund:** TA will be provided to producers to support the adoption of RA practices. This will include structured workshops and mentoring sessions to equip farmers and technical staff with knowledge and tools to implement, monitor, and evaluate RA practices. An engagement bonus for technicians who directly assist farmers in the field will incentivize implementation of the guidance received. Mentor consultants will also receive a productivity bonus at the end of the credit period if productivity gains are verified.
4. **Production support fund:** The Fund's producer stabilization mechanism, funded through non-reimbursable resources, provides financial support to producers in the event of income losses during their transition to RA. This will be disbursed based on predetermined triggers such as proven crop failure or decreases in gross agricultural revenue resulting from the transition to RA, but not losses resulting from climate-related or other macroeconomic events. Over time, this component may evolve into a broader payment-for-environmental services model that links producer incentives to outcomes such as soil carbon sequestration or ecosystem restoration, as monitoring systems mature and producers consolidate the adoption of RA practices.

3 Small producer: up to BRL 500,000 (five hundred thousand reais); (CMN Resolution No. 4,929, Article 1)
Medium producer: above BRL 500,000 (five hundred thousand reais) and up to BRL 3,000,000 (three million reais); (CMN Resolution No. 5,102, Article 1)
Large producer: above BRL 3,000,000 (three million reais). (CMN Resolution No. 5,102, Article 1)

Participation in the RA Fund entails all three components; producers cannot selectively join individual mechanisms.

GOVERNANCE STRUCTURE

The Fund governance structure will divide strategic oversight, operational management, and fiduciary control.

- **As Program Manager**, BDMG will be responsible for operational coordination, monitoring of supported projects, and alignment with institutional and donor objectives.
- **A Fund Manager** will be responsible for financial management functions including accounting and fiduciary administration.
- **A Strategy Committee** will provide oversight as the deliberative body approving fund regulations, budgets, financial statements, and approve admission of new members, as well as periodically assessing performance and impact.
- **An Advisory Committee** will provide technical and strategic recommendations, drawing on expertise in regenerative agriculture and financial structuring.

Data and monitoring systems will form a critical operational backbone of the instrument (see Section 4B).

C. MARKET ADDITIONALITY AND SUITABILITY

The instrument is specifically tailored to the structured characteristics of Minas Gerais' agricultural economy. The market for the instrument was identified through dedicated field-level research and structured target market surveys conducted in Minas Gerais. The research assessed producer characteristics, credit access constraints, perception of regenerative agriculture, and transition-related risks. Findings from the target market research confirmed that although interest in regenerative practices is increasing, producers perceive significant financial uncertainty during the transition phase. Collateral requirements and limited availability of specialized technical support further constrain adoption. Please refer to the Annex for specific results of the survey analysis.

The Fund is designed to serve producers across different scales. Small and medium-sized producers often face the greatest barriers to credit access due to collateral requirements and limited buffers, while larger producers control more extensive land areas and therefore represent significant potential for environmental impact. Accommodating multiple producer profiles supports social inclusion objectives with environmental scale. Over time, increasing participation of smaller producers may require further adjustments to credit equalization mechanisms to support affordability and accessibility.

The instrument's additionality lies in its ability to address multiple market failures simultaneously. Existing financial products do not adequately absorb transition risk, nor do they integrate structured technical support into credit delivery. By reducing collateral constraints, buffering temporary productivity losses, and embedding technical mentoring within the financing structure, the Fund aims to lower barriers to the adoption of RA practices that traditional credit instruments have not been able to overcome.

IV. INCUBATION AND IMPLEMENTATION

A. ROLES AND RESPONSIBILITIES

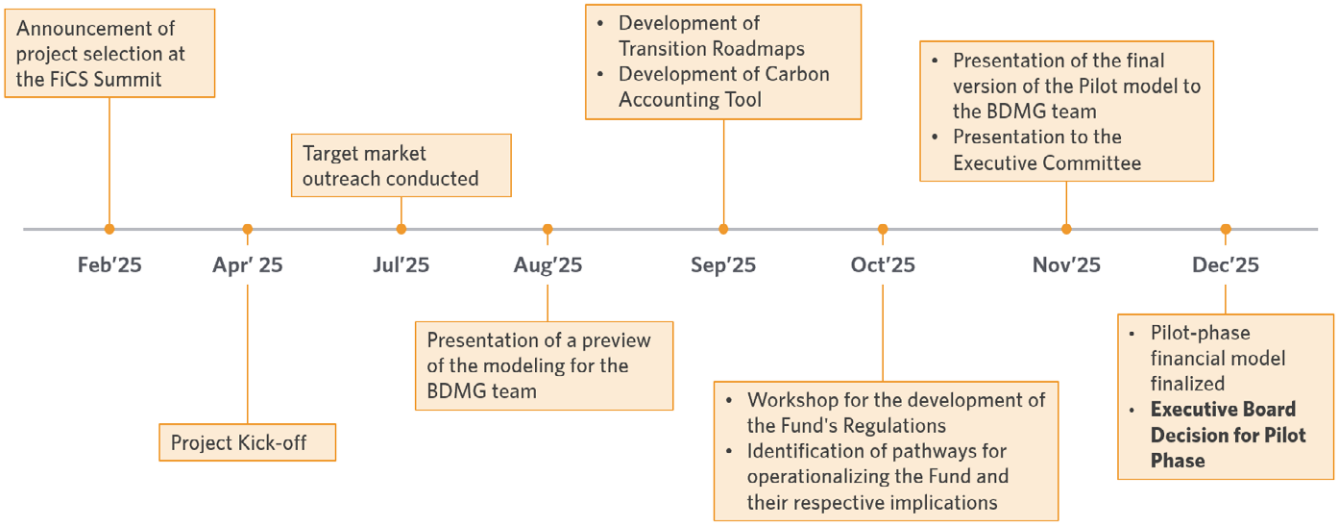
Figure 3 highlights the roles in the incubation process of BDMG, CPI, and the three development partners—GAAS, WayCarbon, and Sitawi.

Figure 3. Stakeholder roles in the incubation process

Stakeholder	Core Role	Key Contributions
BDMG	PDB leading the initiative	• Instrument proponent • Development partners integration • Solution co-development
CLIMATE POLICY INITIATIVE	Strategic support & project coordination	• Operational Secretariat • Technical analysis and validation of deliverables • Contributions to solution design • Stakeholder interface
GAAS	Technical assistance design and delivery	• Transition roadmap • Technical inputs for the model • Activation triggers
WAY CARBON	Carbon monitoring and impact measurement	• Potential for carbon sequestration in soil • Impact monitoring tool
sitawi	Financial modeling and structuring	• Financial modeling of the instrument

The Regenerative Agriculture Fund has been approved by BDMG's Board for pilot implementation. The instrument is now transitioning from design to execution, with BDMG seeking funding partners to support the pilot phase. Implementation will follow the phased approach outlined in Section C, beginning with resources mobilization and project set-up.

Figure 4. Instrument Development Process



Following completion of the incubation phase milestones, the Fund's implementation will be guided by the key milestones below:

B. INCUBATION PATHWAY

An iterative and evidence-based instrument incubation pathway combined analytical modeling, technical framework development, and structured stakeholder engagement. This process sought to align financial architecture, agronomic feasibility, and market demand through four stages: i) market outreach, ii) development of transition roadmaps, iii) financial modeling, and iv) development of a soil carbon verification tool. For detailed descriptions of each deliverable listed below, please refer to Annex II.

I. MARKET OUTREACH

Targeted market outreach to credit cooperatives and producers validated demand, tested assumptions, and informed instrument refinement. This involved structured surveys of target markets and field engagement. A survey of more than 100 coffee producers showed that many are experimenting with regenerative practices but face knowledge, technical, cultural, and financial barriers. Their challenges include productivity risk during the transition, collateral requirements, and misalignment between credit terms and agronomic timelines emerging as the main constraints. Surveyed producers expressed strong interest in combined guarantee and income support, as well as payment for environmental services. Credit cooperatives confirmed that guarantee coverage of around 80% would be needed to waive real collateral and that smaller producers would require longer tenors and attractive terms. These findings prompted the formal incorporation of technical assistance as a core pillar of the instrument and the adjustment of credit conditions to better reflect market realities.

II. RA ROADMAPS

Tropical Regenerative Agriculture Roadmaps for key production systems in Minas Gerais have been developed to provide agronomically sound and regionally adapted pathways for adopting regenerative practices. These roadmaps, covering coffee, soybean, maize, and livestock, establish a staged transition process for producers to progressively restore soil functions while maintaining profitability and reducing production risks. Early stages focus on restoring soil health through permanent soil cover, crop rotation, no-till systems, and reduced reliance on synthetic inputs. Later stages integrate more complex systems such as crop-livestock integration, ecological monitoring, and biological pest management. The roadmaps incorporate agronomic transition timelines with financial considerations to help reduce uncertainty. They also include technical benchmarks for eligibility criteria, technical assistance delivery, and impact monitoring. More broadly, they offer a structured and replicable framework for development banks seeking to link regenerative agriculture practices with climate-aligned credit deployment.

III. FINANCIAL MODELING

Financial modeling established a fund architecture capable of reducing farmers' transition risk while preserving credit discipline. This model estimates the minimum capitalization required to sustain the three integrated components of the instrument during the pilot phase: i) the credit

guarantee fund, ii) the technical assistance facility, and iii) the production support fund, while calibrating pricing parameters, risk allocation, and portfolio resilience under transition-related uncertainty. The model simulates loan-level amortization across maturities of 36, 48, and 60 months, incorporating default assumptions, recovery dynamics, and component-level cash flows to estimate expected losses, activation frequency, and reserve adequacy.

An annual credit portfolio of BRL 10 million in the pilot phase would correspond to approximately 20 operations with an average ticket of BRL 500,000.

- **The guarantee mechanism** covers 80% of loans for male borrowers and 100% for women-managed properties, resulting in an average coverage ratio of 86% assuming 30% female participation. Default rates are conservatively modeled at 10%, well above the historical 1–2% reported by cooperatives, and are applied to the outstanding loan balance rather than only overdue installments. This structure incorporates a 20% stop-loss threshold, a 40% security buffer, and a recovery rate of 25%.
- **The production support mechanism** is triggered by transition-related productivity losses, assumed to affect up to 20% of producers with yield reductions of up to 10%.
- **Technical assistance** costs decline over time as producers gain autonomy.

These parameters allow estimation of the capital required to maintain solvency under conservative stress conditions while preserving incentives for credit discipline and successful transition. Sensitivity analysis indicates that the model is primarily influenced by default rates, guarantee activation frequency, recovery rates, productivity loss events, and portfolio concentration.

In the post-pilot phase, scaling is projected to occur through increased portfolio volume to reach approximately BRL 50 million annually, while maintaining the core risk architecture. Based on lessons from the pilot, some parameters may be adjusted, including a reduction in the stop-loss threshold (from 20% to 15%), a lower expected activation rate of the production support mechanism (from 20% to 10%), and the introduction of a dedicated support buffer (increasing from 0% to 20%). Evidence generated during the pilot will inform recalibration of risk parameters and the potential introduction of a layered capital structure that enables mezzanine and senior participation while preserving first-loss protection. This approach would allow the instrument to evolve from a publicly supported risk mitigation mechanism into a blended finance platform capable of mobilizing private capital while maintaining conservative prudential safeguards.

IV. MONITORING, REPORTING, AND VERIFICATION FRAMEWORK

The instrument incorporates a comprehensive MRV framework to provide climate integrity, support impact reporting, and inform risk management decisions. This framework combines geospatial pre-processing, operational-level monitoring, and standardized data collection systems to generate consistent and comparable metrics across the portfolio. Baseline Soil Organic Carbon (SOC) stocks are derived from MapBiomas soil and land-use data and property boundaries from the Rural Environmental Registry, complemented by laboratory analyses of soil characteristics.

Regenerative practices are categorized into standardized operational classes, such as no-till, cover crops, crop rotation, agroforestry, and improved pasture, to enable consistent monitoring

of changes in soil carbon and estimation of annual and cumulative carbon removals at both project and portfolio levels. The methodology adopts a conservative approach, focusing on the 0-30 cm soil depth and requiring standardized sampling protocols to ensure reliability of *ex-post* measurements. Governance of the monitoring system assigns responsibilities across producers, technical assistance providers, and BDMG, enabling systematic data collection and validation.

Together, these elements strengthen the instrument's MRV framework, aligns with internationally recognized methodologies, support climate impact reporting, and future integration with results-based mechanisms. Further detail on the data and monitoring systems is provided in Annex II.

C. IMPLEMENTATION PATHWAY

PILOT IMPLEMENTATION

1. **Resource Mobilization and project set-up:** The first phase focuses on securing non-reimbursable resources and establishing institutional foundations for the Fund. This includes defining the fund management structure and finalizing its operating manual and regulations to ensure transparency and institutional continuity. BDMG aims to establish a commercial partnership for an external organization to manage the Fund, but may host it internally through a dedicated account if required to do so by resource providers.
2. **Governance and operationalization**: Once resources are secured, governance bodies—including the Strategic Committee, Advisory Committee, and Program Manager—will be formally established and operational responsibilities defined. This phase activates the Fund's management structure and prepares the institutional arrangements required for implementation.
3. **Pipeline development and delivery readiness**: Implementation partners will be selected and the first pipeline of projects prepared. This includes selecting the pilot credit cooperative through which credit operations will be channeled. Using a single intermediary during the pilot will enable BDMG to closely monitor portfolio performance, coordinate TA delivery, and identify operational adjustments. During this phase, TA mentors will be hired and training delivered to prepare partners for operational rollout.
4. **Launch and early implementation**: The Fund will launch and begin credit operations. Outreach activities, including field days and awareness campaigns, will support producer engagement and pipeline development. Early portfolio performance and the effectiveness of TA will be monitored as the first operations are deployed.
5. **Monitoring and learning:** Following launch, the pilot phase will run for approximately 18 months to observe portfolio performance, including default behavior, guarantee activation, and effectiveness of the income-support mechanism. Data generated during this period will inform adjustments to financial parameters, operational procedures, and governance arrangements. The lessons from the pilot phase will guide the transition to the post-pilot stage, where the instrument may scale through additional credit cooperatives and a larger capital structure.

POST-PILOT SCALE-UP

Figure 5. The scale-up strategy is structured around seven pillars.

Instrument refinement	Consolidated evidence from the pilot will inform recalibration of the instrument's financial and operational parameters. Demonstrated risk reductions and validated transition outcomes will be central to attracting broader capital participation.
Blended finance	The Fund will evolve toward a layered-capital stack, comprising first-loss or subordinated capital, mezzanine participation, and a senior tranche, with different risks for varying investor appetites.
Scale via existing credit lines	Integrating the RA Fund with BDMG's existing credit lines and partner credit cooperatives can enable expansion without creating parallel infrastructures.
Strategic scope expansion	Incremental expansion across productive sectors will prioritize value chains with higher technical readiness, established agribusiness engagement, and regions where BDMG has an operational and credit track record.
Strengthened governance	Governance arrangements may evolve along with scale and investor profiles (BMDG-hosted or standalone entity). In either governance committees, transparency rules, and accountability frameworks will be formalized to meet institutional and investor standards.
Incentive mechanisms and value-chain engagement	Incentive mechanisms may evolve from production-support buffers to payments for environmental services. Engagement with anchor companies, traders, and buyers could introduce value-chain co-financing models for technical assistance and monitoring.
Institutionalization of MRV	Scaling requires institutionalization of MRV systems. Standardized economic, environmental, and agronomic indicators, combined with transparent communication of results, can maintain investor confidence and policy alignment.

D. POTENTIAL RISKS AND CHALLENGES

Key Risk Category	Challenge	Addressing the Challenge
PDB institutional constraints	Internal operational limitations for the direct management of the Fund	▪ Structure the Fund in a modular manner, allowing for the outsourcing of critical operational functions (account management, back office)
	Limited initial institutional capacity to absorb new processes, especially during the pilot phase	▪ Phase implementation, with a reduced scope during the pilot
Target market appetite	Fluctuating appetite for credit from producers influenced by commodity prices, climate conditions, and input costs	▪ Gradual diversification of crops, regions, and farmer profiles
	Initial resistance to the adoption of RA practices	▪ Clear communication of financial and risk-mitigation benefits ▪ Training and awareness-raising activities for the target audience
	Changes in cooperatives' willingness to offer more complex operations	▪ Coordination with TA providers and local partners to reduce adoption barriers

Key Risk Category	Challenge	Addressing the Challenge
Legal hurdles	Regulatory uncertainties related to the Fund's legal structure	• Early involvement of BDMG's legal team in the instrument's design
	Tax-related issues associated with managing resources off the Bank's balance sheet	• Comparative assessment of institutional alternatives (Fund housed within BDMG vs. standalone legal entity) • Use of national guarantee fund precedents as benchmarks
	Complexity in procurement processes for fund managers and service providers	• Flexible contractual arrangements, including clauses allowing for adjustments over time
Funding challenges	The need for pre-seed funding – the relatively small ticket size of the BDMG project poses challenges in securing non-reimbursable funding from DFIs and MDBs	• Target fundraising efforts toward organizations with an appetite for smaller ticket sizes • Present a phased fundraising approach (pilot + post-pilot) to organizations preferring larger ticket sizes
	Slower-than-expected fundraising pace relative to scaling needs	• Communication based on pilot evidence and risk-mitigation metrics
	Difficulty aligning risk–return–impact expectations among different funders	• Diversification of funding sources (public funds, international cooperations, DFIs, private sector).
Impact monitoring	Difficulty in collecting standardized field-level data	• Define simple, scalable key indicators from the outset
	Operational costs associated with MRV	• Combine the use of self-reported data, sampling approaches, and secondary data
	Risk of loss of credibility with funders if impacts are not clearly demonstrated	• Technical partnerships to support MRV • Alignment with nationally and internationally recognized frameworks
Instrument sustainability	Excessive reliance on public or concessional resources in the long term	• Gradual evolution of incentive structures (e.g., payments for environmental services instead of direct production support) • Periodic review of the guarantee fee and other financial parameters • Increased engagement of the agribusiness value chain (buyers, traders, anchor companies)

E. EXPECTED CLIMATE AND SOCIAL IMPACT

The AR Fund aims to enable investments in agro-innovation that result in high productivity levels while contributing to soil regeneration, improving water retention and biodiversity, and reducing GHG emissions.

A detailed framework of quantitative and qualitative impact metrics was compiled and adapted to the RA Fund. For each indicator, the framework specifies the data collection method, collection frequency and methods, project- and program-level impacts, and the actors responsible for collection and monitoring. The metrics are adapted from multiple sources, including the SBTi, Green Climate Fund impact reporting guidelines, Global Goal on Adaptation indicators, and research on impact indicator frameworks from the CPI-led Climateshot Investor Coalition. They are also aligned with the Brazil Sustainable Taxonomy and Sustainable Development Goals 5, 8, 13 and 15.

Key metrics include GHG emissions avoided, reductions in chemical fertilizer use, land area under RA management, productivity, production costs, and women's inclusion. The indicative climate (mitigation and adaptation) and social impact potential of the RA Fund are as follows:

- Climate impact:
    - **700 tons CO_2** sequestered in soil per year in the pilot phase, from a conservative perspective.
    - Under conservative assumptions, each BRL 50 million disbursed annually would correspond to **~4,000 tCO_2e** sequestered in soils per year, over 10 years of recurring financing, this could amount to **~200,000 tCO_2e sequestered**.
    - More than **40,000 hectares of RA** were implemented with the support of the credit lines, considering both the pilot and post-pilot phases.

- Social impact:
    - Expand **access to credit for 1,000+ smallholder and medium producers** in the post-pilot phase in Minas Gerais
    - **Promote financial inclusion** of **women producers** for the implementation of RA practices

BDMG has centralized the MRV process, collecting baseline data from rural producers at credit approval, including self-reported data and soil analysis reports, data from remote sensing devices, information provided by credit cooperatives and data from technical partners and external platforms (e.g., public databases and environmental monitoring systems), and structuring them into a centralized database of project indicators. Projects are then monitored annually through standardized forms, updated soil analyses and satellite data to track changes in key indicators over time. Although the financial on-lending of the credit is carried out by credit cooperatives, the technical supervision of the projects and impact monitoring are the direct responsibility of BDMG. The aggregated monitoring results will be incorporated in BDMG's annual Sustainability Report.

BDMG will play a central role in impact oversight, in coordination with the instrument's technical partners. More broadly, the bank also has in-house tools to assess climate and socioeconomic impact of its credit operations:

- **An impact scoring system** that estimates how much a financing operation contributes to regional development.
- **A GHG Calculator**, which estimates emissions, removals, and reductions.
- **Carbon Footprint:** measures carbon emissions in line with Partnership for Carbon Accounting Financials (PCAF) and the Paris Agreement
- **Heat Map:** assesses physical climate risk across BDMG's portfolio, highlighting sectors and regions with high exposure to climate hazards

For carbon monitoring, WayCarbon has developed an Excel-based carbon accounting tool for BDMG, aligned with international best practices, to calculate carbon removals from the adoption of RA practices. The tool uses reliable public data sources (e.g., MapBiomas, the National GHG

Inventory, and the FLAG GHG Protocol) to set a baseline for soil carbon content and estimate removals before implementation, then quantify verified removals post-project implementation.

For the pilot phase, priority metrics were shortlisted to be robust and data-driven while remaining cost-effective and feasible for producers to implement. In the pilot phase, the framework will rely on self-reported data and incorporate additional metrics and third-party verification at a more advanced stage. Results from the pilot phase will inform the post-pilot model, including adjustments to credit lines, guarantee fund, and TA support.

V. REPLICATION AND CATALYTIC POTENTIAL

The RA Fund is designed as a replicable model for development banks seeking to finance regenerative agriculture in contexts where agricultural production plays a central economic role and where producers face transition-related risks that traditional credit instruments do not address. The core replicable element of the instrument lies in its risk-mitigation architecture, which combines catalytic first-loss capital, conservative stop-loss parameters, integrated technical assistance, and a transition-linked production support mechanism. Together, these components reduce perceived credit risk while aligning financial incentives with agronomic transition timelines.

Replication is particularly relevant in countries with organized agricultural value chains—such as coffee, grains, or livestock, and in regions undergoing land-use transition where soil degradation and climate vulnerability threaten productivity. In these contexts, public development banks are well-positioned to coordinate financial innovation, technical assistance, and compliance with environmental regulations within a single platform.

Some conditions for successful replication include:

1) **Institutional and financial capacity**. It is important that the development bank has sufficient institutional capacity to manage rural credit operations and risk-sharing mechanisms. This includes the ability to structure and oversee guarantee facilities, calibrate portfolio-level risk parameters, administer fiduciary processes, and maintain governance integrity. A supportive regulatory environment that permits the operation of the guarantee funds is also essential to support legal certainty and financial soundness.

2) **Technical and monitoring infrastructure.** A credible technical ecosystem must support producers throughout the transition to regenerative practices. This entails access to qualified extension services, project preparation support, and field-level monitoring. In parallel, standardized impact and risk monitoring systems are a critical backbone to support transparency, accountability and climate integrity.

3) **Strategic partnerships.** Effective replication depends on strong partnerships across financial, technical, and value-chain actors. Financial intermediaries, such as credit cooperatives or rural banks, are essential for outreach and distribution, while producer organizations, research institutions, and agribusinesses help support pipeline development and technical credibility. Engagement with donors (including Development Financial Institutions) and impact investors further strengthens the instrument's blended-finance potential and scalability.

4) **Policy and strategic alignment.** Alignment with national agricultural and sustainable-finance frameworks enhances institutional legitimacy and reduces policy risk. Instruments that reinforce existing public policy priorities benefit from regulatory coherence and long-term viability. Policy alignment also facilitates integration with complementary incentive mechanisms, including payment for environmental services or emerging carbon-market frameworks.

Private sector participation is embedded in the instrument at both the operational and capital-structure levels. Credit cooperatives act as financial intermediaries responsible for loan origination, portfolio monitoring, and recovery procedures, leveraging existing distribution networks to reach producers. In the post-pilot phase, the credit guarantee mechanism is expected to enable the progressive mobilization of private capital through a layered structure comprising a catalytic first-loss tranche and potential mezzanine and senior tranches. As the pilot generates empirical evidence on portfolio performance, such as default rates, guarantee activation, and uptake patterns, the instrument can transition toward a blended finance platform capable of attracting private investment while maintaining prudent risk management.

Pipeline development further illustrates catalytic potential. In the Cerrado region, for example, discussions with organized producer groups such as Expocacer – currently managing approximately 10,000 hectares of regenerative coffee with plans to double this by 2030 – demonstrate tangible demand for structured financing solutions. While not all producers require credit, a subset of medium and large-scale producers seek access to additional partner cooperatives and reinforcing relationships with established producer networks to build a scalable pipeline.

Table 2 summarizes which aspects of the RA Fund are adaptable versus fixed, to support replication of the instrument.

Table 2. Adaptable vs Fixed Aspects of the BDMG Instrument

Adaptable	Fixed
▪ **Target market:** priority crops, value chains and producer segments (small, medium, large scale) ▪ **Financial parameters:** guarantee coverage, loan tenors, grace periods, pricing/interest rates ▪ **Capital mix:** source and type of resources contributed to the Fund ▪ **Fund Incentives:** options such as payments for ecosystem services (PES) ▪ **RA framework:** RA roadmap and taxonomy tailored to regional contexts ▪ **Partnership model:** institutional roles and arrangements with technical and financial partners	▪ **Core risk mitigation and risk-sharing logic:** Blended finance structure combining credit, a credit guarantee, TA and a production support fund or PES ▪ **Non-reimbursable guarantee fund:** to reduce collateral requirements and expand access to affordable credit ▪ **Link to existing credit lines:** Integration between the Fund and existing credit lines ▪ **Governance and accountability:** principles of governance, transparency and monitoring ▪ **Core objective:** support the transition to regenerative agriculture

VI. KEY LESSONS LEARNED

The key challenges and opportunities identified through the instrument incubation process are listed below. These include findings from the target market survey administered to more than 100 small, medium, and large coffee producers in the state of Minas Gerais:

1. Farmers identified financing constraints, high collateral requirements and potential yield volatility as major obstacles to adopting RA practices
2. Knowledge and training were cited as the most significant early-stage challenge in transition to RA practices, with the TA component being the most critical element for risk mitigation
3. Existing credit lines vary significantly in rates, tenors, and ticket sizes, creating gaps for flexible, transition-oriented RA financing
4. Federal agricultural credit lines are highly competitive and often exhausted quickly, with limited access in Minas Gerais
5. Farmers do not receive price premiums for adopting RA, despite experiencing soil, water, and biodiversity gains
6. Farmers are willing to participate in Payment for ecosystem services (PES) schemes[4]
7. Among these, strong PDB buy-in emerged as a critical factor for the instrument's overall success.

4 Payment for ecosystem services (PES) schemes compensate farmers for practices or outcomes that deliver measurable environmental benefits (e.g., carbon, water, biodiversity).

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VIII. ANNEXES

ANNEX I.

ABOUT FICS FINANCIAL INNOVATION LAB

Finance in Common (FiCS), the Inter-American Development Bank (IDB), and the Climate Policy Initiative (CPI) have partnered to operationalize the FiCS Financial Innovation Lab, with CPI as its secretariat. The FiCS Lab aims to help public development banks (PDBs) address barriers to climate finance by sharing best practices, developing standardized approaches to climate instruments, and providing technical support to move ideas from inception to implementation.

Based on the FiCS final communiqué of September 2023, the vision of the FiCS lab is to bring together PDBs around an action-oriented platform to accelerate the implementation of climate finance and the broader agenda of the 2030 Sustainable Development Goals. The mission of the FiCS Lab is to be a platform that fosters innovation and collaboration among PDBs in mobilizing private capital and expanding climate finance, particularly in emerging markets and developing economies.

ABOUT CPI

CPI is an analysis and advisory organization with deep expertise in finance and policy. Our mission is to help governments, businesses, and financial institutions drive economic growth while addressing climate change. CPI has eight offices around the world in Austria, Brazil, India, Indonesia, South Africa, the United Kingdom, and the United States.

CPI is known as a leader in tracking sustainable investment trends, identifying innovative business models, and supporting the solutions that can drive a transition to a low-carbon, climate-resilient economy. We are unique in our focus on finance, our ability to get the right people to the table, and our analytical rigor.

ABOUT BDMG

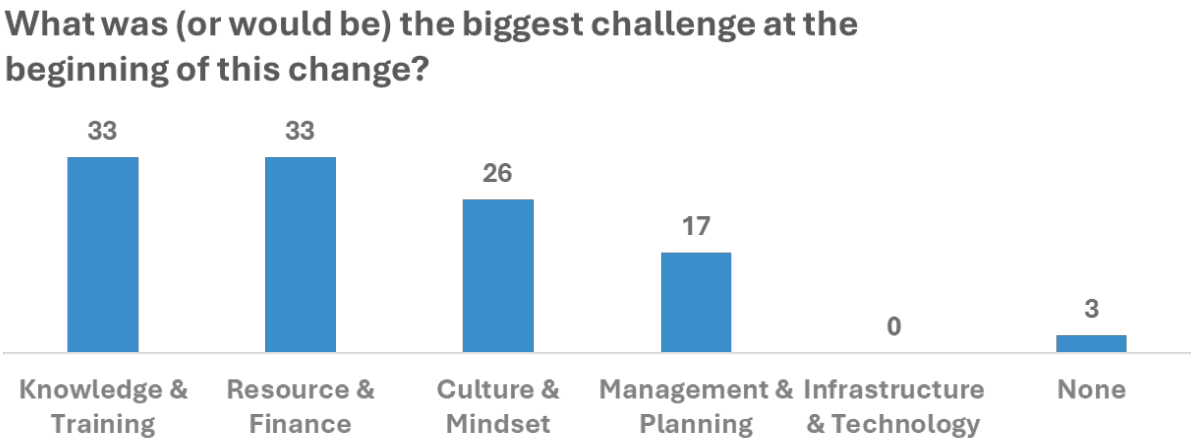
The Development Bank of Minas Gerais (BDMG) is the development bank of the State of Minas Gerais, Brazil, with a mandate focused on promoting sustainable, inclusive, and long-term economic development. Founded in 1962, BDMG is part of the state's economic development system and is linked to the Secretariat of Economic Development (SEDE) of Minas Gerais. BDMG focuses on financial innovation, climate finance, support to the productive sector, and the strengthening of strategic value chains for the state.

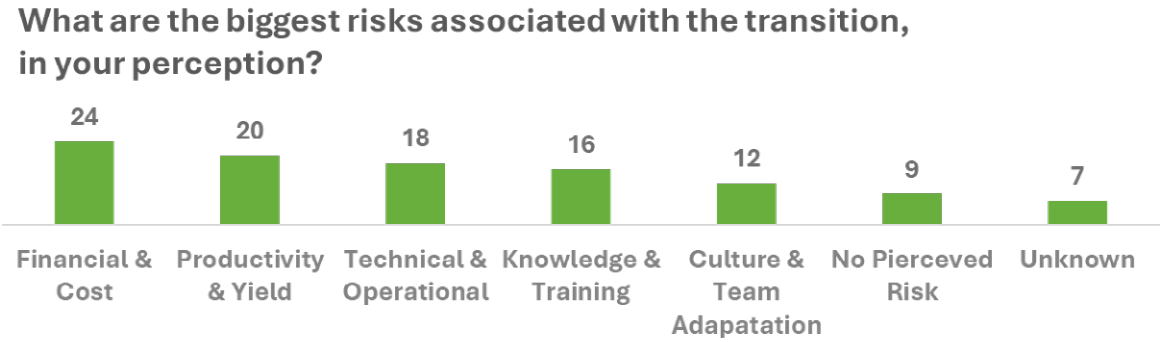
ANNEX II. FULL DESCRIPTION OF MAIN DELIVERABLES TO INFORM INSTRUMENT DESIGN

TARGET MARKET OUTREACH

Outreach combined structured target market surveys with field-level engagement activities, including producer outreach campaigns and technical field days. These events played a critical role in validating the potential pipeline of projects and testing the suitability of the risk mitigation architecture.

Survey results to over 100 producers revealed that many are already experimenting with regenerative practices but face significant knowledge, financial, cultural and technical barriers. Productivity risk during the transition period emerged as one of the primary concerns, followed by collateral requirements and misalignment between credit terms and agronomic timelines. Importantly, producers expressed string support for a combined guarantee and income-support mechanism, confirming the need for integrated risk mitigation rather than standalone credit.





The research highlighted strong interest in participating in payment-for-environmental services (PES) schemes, suggesting potential evolution of the income-support mechanism in the post-pilot phase toward more structured environment incentives.

One significant outcome of stakeholder engagement was the formal inclusion of the technical assistance mechanism as a central pillar of the instrument. Initially conceived primarily as a financial de-risking tool, the Fund evolved into a tri-partite structure in which technical assistance is recognized as a primary risk-mitigation factor, reinforcing both financial and agronomic performance.

Engagement with credit-cooperatives provided complementary insights. Cooperatives confirmed that high guarantee coverage (approximately 80 percent) would be necessary to replace real collateral. They emphasized the importance of longer tenors and more attractive rate structures to expand access for small producers. These consultations directly informed adjustments to credit conditions and strengthened the economic realism of the instrument.

DEVELOPMENT OF TRANSITION ROADMAPS

During the incubation period transition roadmaps for Tropical Regenerative Agriculture were developed across priority production systems, including coffee, soybean, maize, and livestock (dairy and beef). The objective of these roadmaps was to provide agronomically sound and regionally adapted pathways for restoring soil ecological functions, such as nutrient cycling, water retention, and functional biodiversity, while maintaining or improving farm profitability and reducing production risk.

The roadmaps were designed to reflect regional heterogeneity within Minas Gerais and varying levels of technological intensity across production systems. They recognize a staged transition process: beginner, intermediate, and advanced. This allows producers to progress incrementally based on measurable ecological and economic indicators. This phased approach reduced transition uncertainty and aligned financial timelines with agronomic realities.

Table A1: Technological intensity gradient by production system and region

Production system	Technology adoption		
	Less intense	Semi-intensive	More Intense
Coffee		Southern Minas	Triângulo Mineiro
Soybean			Northwest of Minas
Corn			Northwest of Minas
Dairy		Pompéu (Central)	Passos (Southwest)
Beef cattle rearing	Southern Minas	Northern Minas	Triângulo Mineiro

At the beginner stage, the priority is restoration of soil function. Core practices include permanent soil cover, crop rotation and intercropping with service species (such as legumes and deep-rooted plants), minimization of soil disturbance through no-till systems, biological or plant-based decompaction strategies, and correction of chemical constraints in deeper soil layers. The input model begins to shift away from high-solubility synthetic fertilizers and broad-spectrum pesticides toward regionally sourced organic fertilizers, remineralizers, bio inputs, and more selective crop protection methods.

At the intermediate stage, producers consolidate soil restoration gains through integrated fertility management and enhanced biological activation. Improvements in water infiltration, landscape design (including swales and ecological corridors), and controlled traffic systems are introduced to stabilize productivity. Pest management increasingly relies on biological control, resistant varieties, and cultural practices, with progressive reduction of chemical herbicides and pesticides.

At an advanced stage, production systems integrate crops, livestock, and perennial components to strength nutrient cycling and resilience. Continuous ecological monitoring becomes central, with farms tracking soil organic matter, microbial activity, aggregate stability, infiltration rates, and nutrient-use efficiency. In livestock systems, emphasis is placed on pasture regeneration, rotating grazing, and improved biological soil activation.

Across all stages, the adoption of precision input application, monitoring systems, and standardized operational procedures enhances management efficiency and traceability. The transition is intentionally gradual and pilot-based to support economic viability while promoting measurable improvements in soil carbon stocks, water retention, productivity stability, and cost reduction.

These roadmaps serve multiple functions within the instrument's architecture. They provide technical eligibility benchmarks, guide the delivery of technical assistance, clarify the temporal dimension of transition risk, and establish measurable indicators that align agronomic practice with financial structuring. More broadly, they offer a replicable framework for development banks seeking to connect regenerative agriculture principles with structured credit deployment in climate-exposed regions.

TOOL FOR ESTIMATING CARBON SEQUESTRATION IN SOIL

To support climate-impact integrating public geospatial datasets with laboratory-verified soil sampling. Baseline Soil Organic Carbon (SOC) stocks are derived from MapBiomas Solo Collection (0-30 Cm depth), combined with land-use maps (collection 9) and property boundaries from Rural Environmental Registry (CAR). These datasets are complemented by laboratory analyses measuring organic matter, bulk density, clay content, and sum of bases, either directly measured or estimated using pedotransfer functions.

Regenerative practices are mapped into simplified operational classes, including no-till systems, cover crops, crop rotation, integrated crop-livestock-forestry systems (ILPF), agroforestry systems (SAF), and improved or rotational pasture to maintain methodological consistency and operational usability. Outputs include annual and cumulative removals (tCO2e) at both the operation and portfolio levels, changes in soil carbon stocks (change in SOC), and soil-texture-based classifications indicating improvements in soil health.

The tool adopts a conservative methodological approach. Limiting analysis to the 0-30 cm soil depth ensures alignment with international guidance and feasibility in tropical soils, albeit capturing only part of total soil carbon. SOC changes require multi-year comparison due to natural variability, and ex-post estimates are considered valid only when soil sampling follows standarized protocols and preferred analytical methods, such as dry combustion. Practices that reduce emissions without directly increasing SOC fall outside the tool's scope.

Governance of the monitoring system assigns shared responsibilities, producers and cooperatives submit annual soil analyses; technical assistance teams oversee sampling quality; and BDMG validates and consolidates results proportionally to its financed share. Over time, the system may evolve to incorporate deeper soil measurements, remote sensing integration, and advanced digital soil mapping.

This tool strengthens the Fund's MRV integrity, aligns with methodologies recognized by institutions such as Embrapa, FAO and Verra, and supports climate-impact reporting and portfolio dashboards.

FINANCIAL MODELING

The financial model was developed to determine the minimum capital required to sustain the three integrated components of the instrument during the pilot phase: i) the Credit Guarantee Fund; ii) the technical assistance facility and iii) the production support fund, Beyond capital adequacy, the modeling exercise aimed to calibrate pricing parameters, define risk allocation across stakeholders, and assess the interaction between credit and default risk and transition related productivity volatility.

The framework simulates loan-level amortization using the SAC amortization system across 36, 48, 60-month maturities. It applies annual default assumptions, incorporates recovery dynamics, and consolidates component-level cash flow to estimate expected losses, activation frequency, fund utilization, and reserve sufficiency under conservative stress conditions.

PILOT PHASE CALIBRATION

The pilot phase is structured around an annual credit volume of BRL 10 million, corresponding to approximately 20 operations per year with an average ticket size of BRL 500,000. Loans have maturities between three and five years and include a one-year grace period.

The Guarantee Fund provides 80% coverage for men producers and 100% coverage for women-managed properties. Assuming 30% female participation, this results in a weighted average guarantee coverage of 86%. The total guaranteed exposure under the pilot structure is BRL 8.6 million.

Default is modeled conservatively at 10% annually- significantly above the 1-2% historical default rates reported by partner credit cooperatives. When default occurs, the model assumes coverage of the outstanding loan balance rather than only overdue installments, increasing prudential reserve requirements. A 20% stop-loss ratio caps systemic exposure, while 40% security buffer provides additional protection against unexpected shocks. Recovery is assumed at 25% per year.

The production support mechanism is triggered by productivity declines associated with transition to regenerative practices. The model assumes that up to 20% of producers may experience yield losses of up to 10% annually. Each producer may access support only once per cycle, limiting moral hazard and preserving incentive alignment. Losses are converted into monetary terms based on crop price assumptions and weighted by average coverage.

Technical assistance costs are modeled as declining over time, reflecting increasing producer autonomy. Year 1 involved monthly mentorship, transitioning to lower-frequency engagement

in subsequent years. Performance-based and engagement-based bonuses are included to align technical support with measurable agronomic outcomes. Although treated as an operational cost, technical assistance functions as a primary risk mitigation mechanism by improving farm performance and reducing default probability. Together, these calibrated assumptions allow estimation of the minimum capitalization required to maintain solvency under conservative stress conditions while preserving incentives for credit discipline and transition performance.

KEY SENSITIVITIES

The pilot is most sensitive to five parameters: i) default rate, ii) activation frequency of guarantees, iii) recovery rate, iv) productivity loss frequency, and v) portfolio concentration. Sustained default rates above the 10% stress assumption would materially increase capital requirements. Conversely, lower realized defaults, consistent with credit cooperatives' historical performance, would generate additional buffer capacity. The interest rate movements could also affect sustainability, as idle cash earns financial income equivalent to 90% of the Selic rate.

POST-PILOT SCALING LOGIC

In the post-pilot phase, scaling is driven primarily by increased portfolio volume rather than relaxation of structural safeguards. Annual credit deployment is projected to increase to approximately BRL 50 million, with operations per year and an average ticket of BRL 1 million. Importantly, core architectural parameters, average coverage, stop-loss ratio, activation assumptions, and recovery dynamics are expected to be preserved.

Empirical evidence from the pilot phase will inform recalibration of default assumptions, capital buffers and tranche structuring. Demonstrated portfolio stability is expected to support the introduction of a layered capital structure, enabling mezzanine and senior participation while maintaining catalytic first-loss protection.

By maintaining conservative risk parameters during scale-up, the instrument transitions from a purely public risk-mitigation mechanism to a blended finance platform capable of mobilizing private capital without diluting prudential safeguards.

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