SUSTAINABLE
BUSINESS
COP30

# Bioeconomy Working Group

## Booklet of Cases

OCTOBER 2025

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# Introduction & Methodology

# About this booklet

The ***SB COP Bioeconomy*** Working Group was created with a clear mission: to secure the enduring recognition and importance of the bioeconomy in the COP process. Our purpose has been to bring together actors across finance, policy, and business, identify the bottlenecks holding back scalable adoption, and to demonstrate that solutions to unlock the bioeconomy at scale exist

**This Booklet showcases many of these solutions,** reflecting the priorities of our Bioeconomy Working Group:

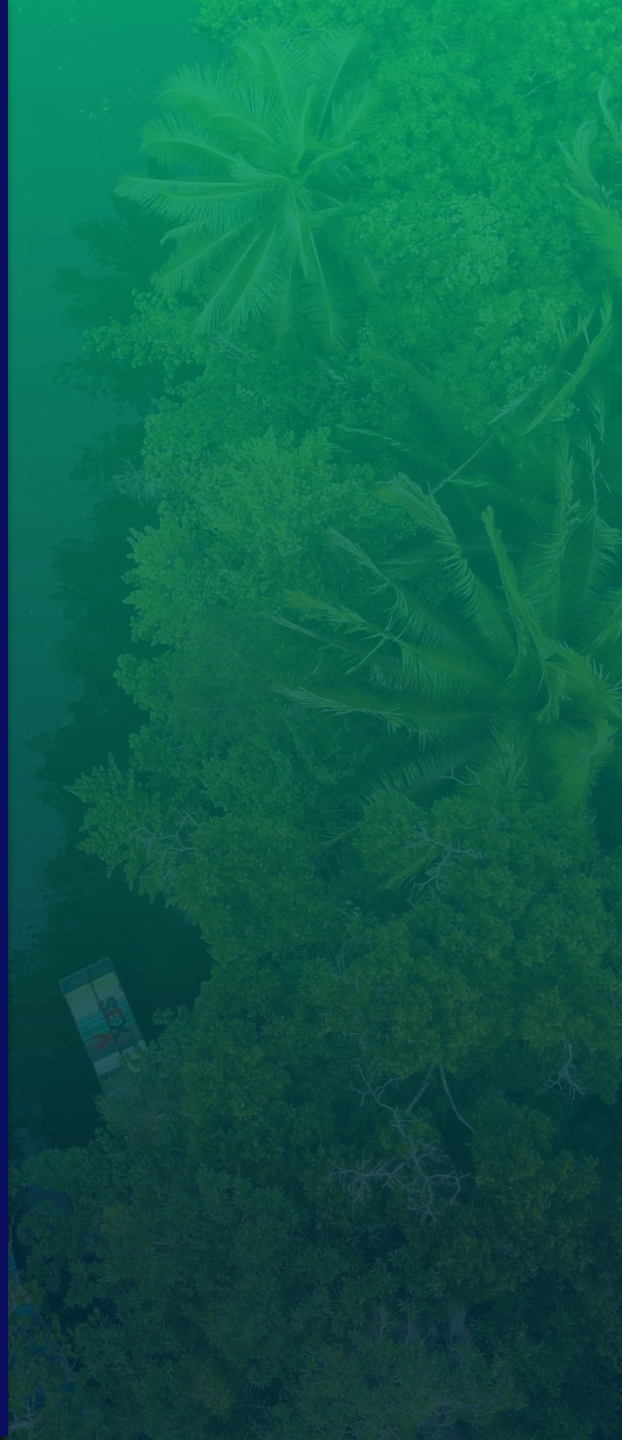
(1) Fostering convergence across the three Rio Conventions and ICCPR[1]
(2) Positioning the bioeconomy as a strategic pillar, mobilizing finance and technology

**What makes them powerful is not just novelty, but replicability**. They create jobs, strengthen livelihoods, protect ecosystems, and build resilient economies, all while addressing emissions, biodiversity loss, ecosystem degradation, and human rights challenges. Above all, they are scalable; if adopted widely, they could redefine how societies and economies interact with nature

**The cases presented here are not an end point, but the beginning of a living library**. They represent the first chapter of a bank of solutions that SB COP will continue to build and expand through future COPs. Over just five months, our Bioeconomy Working Group has mobilized over 30 institutions and more than 50 private-sector cases that prove the bioeconomy is not only actionable, but also transformative

**We hope you will find inspiration in these cases, and that they spark new ideas, partnerships, and action at the scale the world needs**

[1]International Covenant on Civil and Political Rights

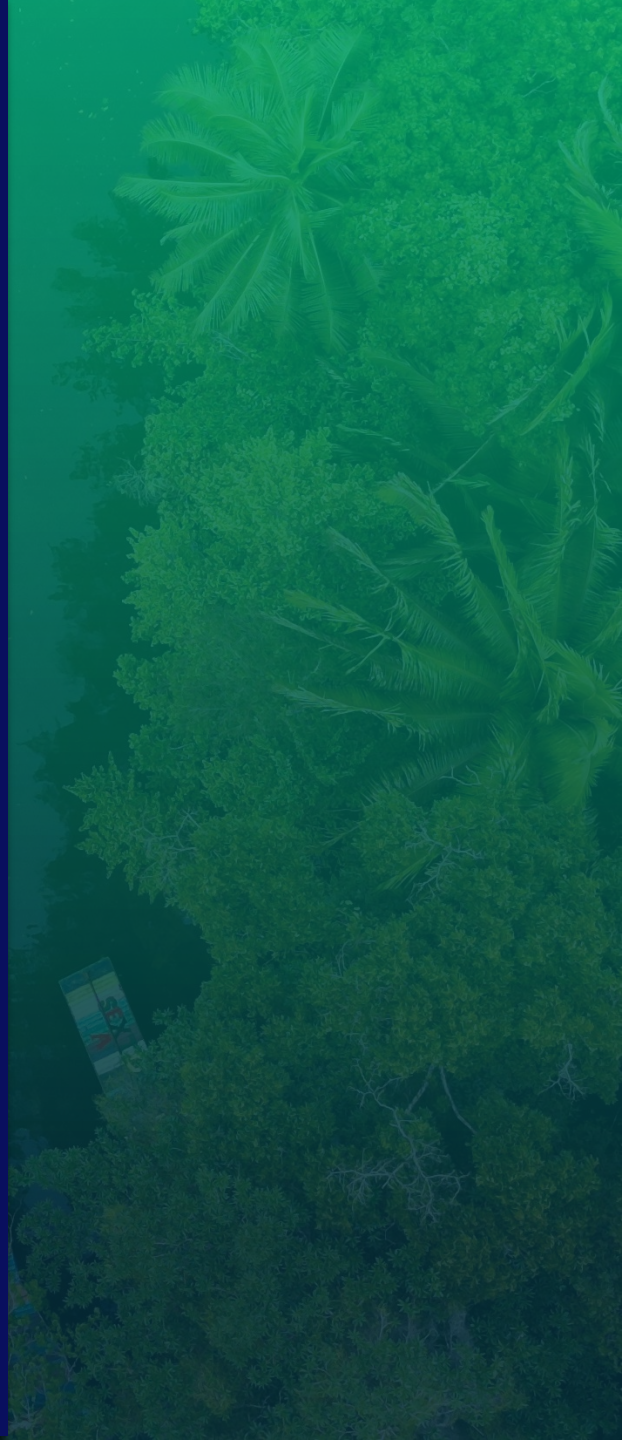


# Criteria for cases

**The SB COP launched a global call for cases to identify practical, scalable solutions that advance the goals of bioeconomy.** The response was overwhelming: dozens of submissions came from corporates, investors and NGOs across the world.

**From this pool, we applied a clear set of criteria to curate the portfolio featured here**

1. **Working Group alignment:** relevance to our vision of bioeconomy aligned with the core priorities of the Working Group — Showcasing solutions for climate, biodiversity, ecosystems and communities, mobilizing finance, and developing technologies
2. **Economic impact:** potential to generate sustainable jobs, livelihoods, and economic activity, while enabling private-sector profitability through proven returns or affordable cost structures
3. **$CO_2$ impact:** potential to reduce or avoid emissions, restore ecosystems, or enable adaptation to climate change
4. **Innovation:** introduction of innovative products, services, business models, or partnerships that unlock bottlenecks preventing bioeconomy to scale
5. **Scalability:** ability to expand beyond pilots and replicate across geographies and sectors



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# Overview of Cases

# Bioeconomy Working Group has received 59 cases from different regions and bioeconomy types

## Total


## Global reach


## Bioeconomy types[1]

*Non-exhaustive*

High-tech (10)

novonesis Givaudan darwin Bioprospecting Excellence

Advanced (14)

Braskem Borregaard CLARIANT NOVAMONT AJE

Nature-intensive (45)

SANCTU natura VALE IFC CNP OceanPact symrise dengo Nestlé MICHELIN SIEMENS BASF We create chemistry interelos INSTITUTO TERRASOS

1. Nature Finance (2024); BCG analysis

# Bioeconomy cases can be clustered into 3 strategic archetypes

## Innovation models

*Development of novel bio-based products, processes, or technologies*

## Transition models

*Transformation of production systems and supply chains*

## Enablers

*Approaches in finance, policy, or technology to scale bioeconomy*

# Cases highlights at a glance

## Priority 1 — Bioeconomy as a **solution for climate, biodiversity, land use and human rights**

### 11 Transition models
For over 9 types of distinct products

- Palm oil, Coffee, Açaí, Coconut, Vanilla, Peat, Castor crop, Rambutan, Rubber

**Solutions could be scaled to +79M hectares[1]**

### 07 Innovation models
Moving downstream

- NZ indigenous skincare treatment; banana-waste biotextiles; Amazon superfoods & beverages; Amazon-sourced biocosmetics; Carnauba wax for coating; exploitation of microalgae

### 07 Enablers
To help transition

- Tech-driven platforms
- Restoration & carbon removal programs
- Sustainable waste treatment & circularity mechanisms

## Priority 2 Finance — Mobilizing **Climate finance**

### 18 Enablers
To mobilize climate finance

- Sustainable debt instruments
- Tradable certificate, schemes & PES[3]
- Sustainable investment funds
- Blended finance instruments

**+ US$ 2 billion dollar of planned budget for financing bioeconomy[2]**

## Priority 2 Tech — Leveraging **Technology** in bioeconomy

### 10 Innovation models
From advanced bioeconomy to high-tech

- Bio-based chemicals to substitute fossil chemicals
- Strain engineering to improve process and performance

### 07 Enablers
To help transition

- Use of AI and databases
- Use of IoT and drones

1. Hectare estimates are derived from the global *harvested area* of nine plantation types worldwide; 2. Figure reflects the sum of planned budgets submitted by the 20 cases; 3. Payments for Ecosystem Services
Source: BCG analysis; FAOSTAT

# Extended list of 70 cases; aligned with Bioeconomy WG Priorities

## Priority 1

A4F—Industrial exploitation of microalgae
AJE — Amayu superfruits
BASF— Cocli palm oil
BASF— Mataviva
BASF— Pragati project
BASF—Sustainable rambutan
Beraca by Clariant — Sociobiodiversity prog.
Binatural — Baru nut shell
Busitema University — Banatex-EA
Caatinga association — Caatinga model
Genera—Genera bioeconomia
Hikurangi Bioactives—Kanuka oil
IFC—Coffee revival Uganda
Inst. Interelos—Arc of Biodiversity Açaí
La Flora—Kaigu peat bog
Michelin—Together for the Amazon
Natura—Agroforestry system for palm oil
Natura—Amazonian bioactives
Oceanpact—Mangrove conservation
Sanctu—Amazon regeneration platform
Sutas—Circular Bioeconomy Project
Symrise—Bridging the gap Amazon
Symrise—Bridging the gap coconut
Symrise—Bridging the gap vanilla
TCP—Troca solidária

## Priority 2 – Finance

Capitals Coalition—China Shengmu assessment
CNP Seguradora—Amazon connection
Dengo—Credit for life
Earthly Treasure—Tradable biodiversity units
GSS—Showcase of the Brazilian biodiversity
IDB—Amazon bioeconomy fund
IDB—Credit line BB Amazônia
IDB—Loan program MSMEs Suriname
IFC—Loan w/ biodiversity UoP
IFC—TIG reforestation fund
IFC/Natura—Amazônia Viva
Morphosis—Terrasos PPP Model
SWEN Capital—Blue Ocean Fund
Terrasos—Biodiversity units pilot
Vale—AMAZ Impact accelerator
Vale—Sustenta.bio
Zurich Insurance Group—Bioeconomy in action

## Priority 2 – Tech

ABIFINA—Monitoring patents w/ biodiversity
Bioverse—Geospatial intelligence
Borregaard—Advanced Lignin biochemicals
Braskem—I'm green
Givaudan—Sustainable Hyaluronic Acid
KAA TECH—AçaíBot
Natura—Greenventory
Nestlé—More intelligence, more cocoa
Novamont—Circular bioeconomy
Novonesis—From CO2 to protein
Novonesis—Healthier feeds at lower cost
Novonesis—Less waste, more taste
Novonesis—The hot topic of cold wash
Siemens—Tech4Amazonia
UFMG—Long-term bio
Vale—Jornada Amazônia platform
Volkswagen—Sugarcane plastics truck parts

1. Bank of America. 2. Amazonia Impact Ventures 3. Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping

# Portfolio of Cases (I/VII)

| Company name | Case name | Priority | Case objective | Page |
|---|---|---|---|---|
| A4F | Industrial exploitation of microalgae | Priority 1 | • Industrial exploitation of microalgae, in co-location with a chemical plant facility, recyclingo $CO_2$ and effluents into biomass | 25 |
| AJE | Amayu superfruits | Priority 1 | • Amazonian superfruits (e.g., aguaje, camu camu, aguaymanto, açaí) for beverages and shots | 26 |
| BASF | Cocli palm oil | Priority 1 | • Sustainable palm oil production with training and fair labor practices | 27 |
| BASF | Mataviva | Priority 1 | • Flagship initiative for forest restoration, improving water and soil, fostering biodiversity and supporting climate goals via carbon sequestration | 28 |
| BASF | Pragati project | Priority 1 | • Sustainable castor crop production, improving agricultural practices and ensuring responsible sourcing in the world's leading production region | 18 |
| BASF | Sustainable rambutan | Priority 1 | • Implementation of certified sustainable farming practices for organically grown rambutan and its by-products used as renewable feedstocks in the production of cosmetic ingredients | 29 |
| Beraca by Clariant | Sociobiodiversity program | Priority 1 | • Promote socioeconomic inclusion for agroextractive producers and biodiversity conservation through the bioeconomy, inspiring sustainable actions aligned with the COP30 climate agenda | 30 |
| Binatural | Baru nut shell | Priority 1 | • Replace firewood with agroforestry waste (baru nut shells) as renewable biomass | 31 |
| Busitema University | Banatex-EA | Priority 1 | • Transforming banana stem waste into textiles, energy, and fertilizer; creating jobs and reducing pollution | 32 |

# Portfolio of Cases (II/VII)

| Company name | Case name | Priority | Case objective | Page |
|---|---|---|---|---|
| Caatinga association | Caatinga model | Priority 1 | • Integrate bioeconomy and ecological restoration with innovative, replicable solutions aligned with global climate goals | 33 |
| Genera | Genera bioeconomia | Priority 1 | • Restoration of degraded land with native species using circular inputs (wastewater sludge and rock dust), generating agroforestry products and ARR/ERW carbon credits | 34 |
| Hikurangi Bioactives | Kanuka oil for eczema | Priority 1 | • Proven natural eczema treatment, that supports Maori communities, protects ecosystems, and models ethical biocommerce through Indigenous-led innovation and benefit-sharing | 35 |
| IFC | Coffee revival Uganda | Priority 1 | • Revitalization and expansion of coffee production through climate-smart agricultural practices, increasing farmer incomes and advancing gender equality | 36 |
| Inst. Interelos | Arc of Biodiversity Açaí hubs | Priority 1 | • Create productive hubs across the Amazon—anchored in sustainably managed açaí—that form a “Biodiversity Arc” to curb deforestation while diversifying value chains and household income | 37 |
| La Flora | Kaigu peat bog | Priority 1 | • Restore forests and raise farm productivity with agroforestry systems (SAFs) and improved grazing, combining conservation and income for resilient, low-carbon farming in the Amazon | 38 |
| Michelin | Together for the Amazon | Priority 1 | • Transformation of former peat extraction site into a Green Industrial Zone that combines wind energy, peatland restoration, and sustainable industry | 39 |
| Natura | Agroforestry system for palm oil | Priority 1 | • Transformation of former peat extraction site into a Green Industrial Zone that combines wind energy, peatland restoration, and sustainable industry | 22 |

# Portfolio of Cases (III/VII)

| Company name | Case name | Priority | Case objective | Page |
|---|---|---|---|---|
| Natura | Amazonian bioactives | Priority 1 | • Low-cost IoT devices for remote bioactive drying and AI-powered drones for precise, low-cost forest inventory | 40 |
| Oceanpact | Mangrove conservation w/ bees | Priority 1 | • Promote mangrove conservation and community resilience through meliponiculture, combining research and bioeconomy in Quilombo of Feital | 41 |
| Sanctu | Amazon regeneration platform | Priority 1 | • Technology-driven platform for design, financing, support, and market access to regenerate degraded Amazon land, helping farmers adopt sustainable practices | 23 |
| Sutas | Circular Bioeconomy Project | Priority 1 | • Establish a food–energy–waste–soil nexus, linking agriculture, renewable energy, waste management, and soil regeneration into one integrated system | 42 |
| Symrise | Bridging the gap Amazon | Priority 1 | • Community-led consolidation of Amazon value chains (Brazil nuts, açaí, cupuaçu, andiroba, copaíba, among others), reducing waste and transport through local pre-processing | 43 |
| Symrise | Bridging the gap coconut | Priority 1 | • Coconut-growing community empowerment through regenerative agriculture,<br>• diversified income streams, and farm productivity increase | 44 |
| Symrise | Bridging the gap vanilla | Priority 1 | • Vanilla-growing community empowerment through regenerative agriculture,<br>• diversified income streams, and child protection measures | 45 |
| TCP | Troca solidária | Priority 1 | • Recyclable waste is exchanged for food and hygiene items to improve food security and ensure the proper disposal of over 570 tons of waste | 46 |

# Portfolio of Cases (IV/VII)

| Company name | Case name | Priority | Case objective | Page |
|---|---|---|---|---|
| Capitals Coalition | China Shengmu assessment | Priority 2-Finance | • Measure and value Shengmu's impacts and dependencies across natural, social, human, and produced capitals to improve decision-making, investment, and well-being | 48 |
| CNP Seguradora | Amazon connection | Priority 2-Finance | • Strengthening sustainable production chains in Amazonas with five community associations | 49 |
| Dengo | Credit for life | Priority 2-Finance | • Implement a results-based scheme (PCSAF) to remunerate environmental services in cabruca cocoa systems, with continuous MRV and an outcome-based financing structure | 19 |
| Earthly Treasure | Tradable biodiversity units | Priority 2-Finance | • Scalable, IPLC-led finance mechanism that monetizes ecosystem stewardship via tradable Biodiversity Units (BUs), anchoring private portfolios in a nature-positive asset class | 50 |
| GSS | Showcase of the Brazilian biodiversity | Priority 2-Finance | • Connect socio-biodiversity projects with corporate sponsors through an online platform that ensures compliance, transparent monitoring, and measurable impact | 51 |
| IDB | Amazon bioeconomy fund | Priority 2-Finance | • Multi-country investment fund that mobilizes private and public capital to support innovative bio-businesses in Amazonia | 52 |
| IDB | Credit line BB Amazônia | Priority 2-Finance | • Credit program to expand financing for bio-businesses and sustainable infrastructure across bioeconomy value chains in Brazil's Legal Amazon | 53 |
| IDB | Loan program MSMEs Suriname | Priority 2-Finance | • Credit and technical assistance program to expand MSME2 access to productive investments, with emphasis on bio-businesses | 54 |
| IFC | Loan w/ biodiversity UoP | Priority 2-Finance | • Loan to support Produbanco's on-lending for SMEs biodiversity-focused projects stimulating economic activity, creating jobs, and protecting Ecuador's natural resources | 55 |

# Portfolio of Cases (V/VII)

| Company name | Case name | Priority | Case objective | Page |
|---|---|---|---|---|
| IFC | TIG reforestation fund | Priority 2-Finance | • Sustainability-linked loan provided by IFC to support the BTG Pactual Timberland Investment Group's Latin America Reforestation Strategy | 56 |
| IFC/Natura | Amazônia Viva | Priority 2-Finance | • Blended finance instrument to improve credit access for sustainable agro-extractive producers | 57 |
| Morphosis | Terrasos PPP Model | Priority 2-Finance | • Demonstrate how long-term adaptation and ecosystem resilience can be financed entirely through private capital using a biodiversity credit model anchored in national compliance | 21 |
| SWEN Capital | Blue Ocean Fund | Priority 2-Finance | • Support early-stage companies delivering ocean-related climate and biodiversity innovations through equity investments with performance-linked impact metrics | 59 |
| Terrasos | Biodiversity units pilot | Priority 2-Finance | • Biodiversity habitat bank to generate and sell certified biodiversity units through community partnerships, private investment, and tech-enabled monitoring | 60 |
| Vale | AMAZ Impact accelerator | Priority 2-Finance | • Accelerator program for impact businesses in the Amazon to develop sustainable solutions for the sociobioeconomy | 61 |
| Vale | Sustenta.bio | Priority 2-Finance | • Multi-stakeholder initiative funded through philanthropic grants to strengthen sociobiodiversity production in Amazon protected areas | 62 |
| Zurich Insurance Group | Bioeconomy in action | Priority 2-Finance | • Corporate strategy to achieve net-zero operations by 2030 by investing in early, science-based carbon removal (CDR) solutions, funded through an internal carbon price | 63 |

# Portfolio of Cases (VI/VII)

| Company name | Case name | Priority | Case objective | Page |
|---|---|---|---|---|
| ABIFINA | Monitoring patents w/ biodiversity | Priority 2 Tech | • Database with Brazilian patents for medicines using native and exotic biodiversity as active ingredients, identifying patent holders, species used, and their applications | 64 |
| Bioverse | Geospatial intelligence | Priority 2 Tech | • Geospatial intelligence tools to help forest cooperatives harvest and sell non-timber forest products | 65 |
| Borregaard | Advanced Lignin for biochemicals | Priority 2 Tech | • Borregaard ASA's biorefinery turning wood waste into sustainable biochemicals that replace petroleum products across multiple industries | 66 |
| Braskem | I'm green | Priority 2 Tech | • Bio-based polyethylene and expanded portfolio of plant-based chemicals, which deliver fossil-equivalent performance, using sugarcane ethanol | 67 |
| Givaudan | Sustainable Hyaluronic Acid | Priority 2 Tech | • Strain engineering, precision fermentation and process optimization to deliver low-impact Hyaluronic Acid production | 20 |
| KAA TECH | AçaíBot | Priority 2 Tech | • Low-cost, portable robot ("AçaíBot") that climbs palms, cuts and collects açaí clusters to increase yields and incomes | 68 |
| Natura | Greenventory | Priority 2 Tech | • Transform the native tucumã palm into a bioeconomy asset by building a sustainable value chain that supplies high-performance cosmetic ingredients | 69 |
| Nestlé | More intelligence, more cocoa | Priority 2 Tech | • Chatbot providing free technical assistance 24/7 for farmers as part of Nestlé sustainability initiative, which works with 100 cocoa farms to boost productivity and profitability | 70 |
| Novamont | Circular bioeconomy | Priority 2 Tech | • Promote a circular bioeconomy model through territorial regeneration and environmental protection, developing bio-based, biodegradable, and compostable products | 71 |

# Portfolio of Cases (VII/VII)

| Company name | Case name | Priority | Case objective | Page |
|---|---|---|---|---|
| Novonesis | From CO2 to protein | Priority 2 Tech | • Electrochemical processes to convert CO2 into acetate and transformation into protein through fermentation, for human consumption | 72 |
| Novonesis | Healthier feeds at lower cost | Priority 2 Tech | • Improve poultry feed efficiency and farm economics with a biosolution that removes bacterial cell debris in the gut, enhancing nutrient absorption and reducing feed required | 73 |
| Novonesis | Less waste, more taste | Priority 2 Tech | • Enable effective cold-water laundry with enzyme biosolutions that cut surfactants and energy use while maintaining (or improving) cleaning performance | 74 |
| Novonesis | The hot topic of cold wash | Priority 2 Tech | • Reduce food waste in bread and yogurt by extending shelf life: enzymes keep bread moist/elastic longer, and bioprotective cultures inhibit mold/yeast in yogurt—maintaining fresh taste with fewer discards | 75 |
| Siemens | Tech4Amazonia | Priority 2 Tech | • Enable scalable, resilient innovation for the Amazon using digital and tech solutions to cut $CO_2$, improve circularity and energy efficiency, and boost local economies by closing the implementation gap | 76 |
| UFMG | Long-term bio | Priority 2 Tech | • Microbial-based biological solution to reduce post-harvest losses in fruits and flowers, extending their shelf life and commercial viability in a sustainable way | 77 |
| Vale | Jornada Amazônia platform | Priority 2 Tech | • Open innovation platform and programs (Genesis, Synapse, Synergy) to foster Amazon bioeconomy by mobilizing talent, creating startups, and attracting industry/investors | 78 |
| Volkswagen | Sugarcane plastics truck parts | Priority 2 Tech | • Produce parts of vehicles using renewable materials in order to reduce carbon foot print and fossil fuel dependance. 1st component produced was the AdBlue tanks using polyethylene from sugar cane | 79 |

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# Portfolio of Cases

## Awards

# Pragati project

## *BASF, India*

## Objective

**Sustainable castor crop production, improving agricultural practices and ensuring responsible sourcing in the world's leading production region**

*Mature, generating stable results*

## Stakeholders

- **BASF** as partner
- **Arkema** as partner
- **Jayant Agro-organics** as partner
- **Solidaridad Network India** for community engagement and training
- **Traditional communities & farmers** as producers

## Implementation

| Step | Period |
|---|---|
| 1 Launch and expansion of the project | **05/16 – Ongoing** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Land covered | Hectares | **9,000** |
| Farmers certified | # | **8,000** |
| Productivity: yield increases | Percentage increase | **+57%** |
| Water savings | Percentage reduction | **33%** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Transforms castor farming into a sustainable value chain that **reduces environmental impact, promotes efficient resource use, and delivers tangible social and economic benefits to farming communities** |
| **Economic impact** | • **Increases yields by 57% while ensuring sustainable and stable supply of castor crop, improving the income and climate resilience of at least 8,000 families** |
| **$CO_2e$ impact** | • **Promotes sustainable land use through Sustainable Castor Caring for Environmental & Social Standards** |
| **Innovation** | • **Pioneer the 1st project that aimed at sustainable castor farming in India**, ensuring environmental, social, and economic standards |
| **Risks** | • *No relevant risks identified in the project implementation* |
| **Scalability** | • Demonstrates a **scalable blueprint for similar initiatives, leveraging a partnership model that unites organizations, NGOs, and producers**, while emphasizing the need for careful adaptation to local climatic, environmental, and social contexts |

**External links:** BASF Press release; Arkema ; CASTOR SuCCESS

# Credits for Life

## *Dengo Chocolates, Brazil*

## Objective

**Implement a results-based scheme (PCSAF) to remunerate environmental services in cabruca cocoa systems, with continuous MRV and an outcome-based financing structure**

*Implemented, generating first results*

## Stakeholders

- **Dengo** as market anchor & project sponsor
- **ECAM** for community engagement & field implementation
- **ReSeed** for digital MRV, traceability & transparency
- **Impact Not a Bank** for structuring support
- **Global Forest Bond / KPMG** for structuring / field data assurance
- **Smallholder producers & local communities** as direct beneficiaries

*Enabler*

dengo

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Producer mobilization, baseline & diagnostics | **2023 - 2024** | ✓ |
| 2 | Eligibility assessments, onboarding & contracts | **2024 - 2025** | ✓ |
| 3 | MRV in operation and first crediting/payments | **2025 - 2026** | ≈ |
| 4 | Scaling to ~3,000 producers/ 75,000 ha | **2025 - 2028** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Enrolled area | Hectares | **2,815** |
| Families engaged | # | **104** |
| Avoided emissions | $tCO_2e$ | **1,006,115** |
| Share to producers | % | **80%** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • **Mobilizes climate finance** to conserve the Mata Atlântica Forest and promotes cabruca agroforests; improves rural livelihoods and **recognizes biodiversity and carbon services with an inclusive, smallholder-first design** |
| **Economic impact** | • Directs **75–80% of returns to producers** over time via direct payments and technical assistance; reduces income volatility and strengthen the cacao value chain |
| **$CO_2e$ impact** | • **Avoids ~1 $MtCO_2e$** in Stage 1, and **pursues a total of ~10 $MtCO_2e$ of avoidance and removals over 20 years** as the program scales |
| **Innovation** | • Implements **continuous MRV with ReSeed** (digital registry and blockchain traceability), **deploy outcome-based financing** (Outcome Bond structure), and **standardize field + remote data** to cut transaction costs |
| **Risks** | • Key risks include **land-tenure clarity, certification/MRV timelines and costs, carbon-price volatility, policy changes, and smallholder adoption capacity**; mitigate via accompaniment, transparent MRV, and diversified revenue |
| **Scalability** | • Scales to ~3,000 producers and ~75,000 ha in southern Bahia, and **replicates across other cacao/agroforestry landscapes using the same MRV and payment logic** |

**External links:** RESEED; IBRD ; BIOECONOMIA ; VERRA

Givaudan

# Sustainable hyaluronic acid production

## *Givaudan, France*

## Objective

**Strain engineering, precision fermentation and process optimization to deliver low-impact Hyaluronic Acid production**

*Mature, generating stable results*

## Stakeholders

- **Givaudan International** as project leader and producers
- **Bio-refinery network** for agricultural biomass upcycling (Beetroot, wheat), CO2 capture, energy co-generation (bio-methane & biomass), ferti-irrigation partners and water management

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | R&D strain engineering | **2020-2022** | ✓ |
| 2 | Industrial scale up | **2022-2023** | ✓ |
| 3 | Industrial production | **2023** | ✓ |
| 4 | Commercialization | **2024** | ✓ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| GHG | % reduction | **92%** |
| Acidification and eutrophication of water | % reduction | **95%** |
| Non-renewable energy usage | % reduction | **90%** |
| Water consumption | % reduction | **75%** |

## Key aspects

**WG alignment**

- **Reduces the product's climate impact using biotechnology**; upcycles locally harvested agricultural by-products through a bio-refinery; and protects biodiversity and workers via responsible sourcing and social practices

**Economic impact**

- Streamlines production steps, eliminates energy-intensive phases, and increases fermentation yields to **lower manufacturing costs** and **achieves R&D payback in under two years**

**$CO_2e$ impact**

- Cuts **$CO_2$ emissions by 92%,** reduces non-renewable energy use by 90%, and lowers water use by 75% through precision fermentation

**Innovation**

- **Pioneers precision fermentation, and advanced strain engineering** to deliver a 10× more sustainable version of this cosmetic ingredient

**Risks**

- *No relevant risks identified in the project implementation*

**Scalability**

- Adopts a cutting-edge biotech approach and bio-refinery network to **reduce global hyaluronic-acid manufacturing emissions by >90% while sustaining ~40% presence in skincare applications worldwide**

**External links:** Givaudan Active Beauty unveils PrimalHyal™ 50 Life | Givaudan

# Terrasos' PPP model for ecosystem resilience

## *Morphosis Solutions, Colombia*

## Objective

**Demonstrate how long-term adaptation and ecosystem resilience can be financed entirely through private capital using a biodiversity credit model anchored in national compliance**

*Implemented, generating 1st results*

## Stakeholders

- **Morphosis Solutions S.A.** as private equity investor
- **Terrasos** as project owner and developer, habitat bank operator, and risk-bearing asset manager
- **Land Degradation Neutrality (LND) Fund managed by Mirova** as debt providers for project finance
- **Partnerships 4 Forest (p4f)** - UK gov program for derisking grant capital
- **IDB Lab** as early-stage investor
- **Colombian Ministry of environment** for biodiversity offset regulations and habitat banks registry
- **Private landowners** for land via 30-year usufruct or title transfer agreements

*Enabler*

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Stakeholder engagement and gov. scheme for habitat bank | **12/24 – 03/25** ✓ |
| 2 | Identify areas and sign binding agreements w/ prop. owners | **01/25 – 10/25** ≈ |
| 3 | Secure 50% of biodiversity units in offtake commitments | **10/25 – 12/25** |
| 4 | Management, monitoring & evaluation plan | **01/26 – 03/26** |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Ecosystem restoration | Hectares | **>2,000 restored; >3,000 enrolled in national registry** |
| Biodiversity protection | # threatened species protected | **+1500** |
| Employment | # jobs created | **+150** |
| Expected revenue | US$ | **50M** |

## Key aspects

**WG alignment**
- **Mobilizes private climate finance** to restore 6,000+ ha for adaptation, protect biodiversity, and enable income for local landowners

**Economic impact**
- Delivers **reliable, risk-adjusted returns to private investors** without public funding; **generate service income and dividends from biodiversity conservation**; and **sell credits to compliance buyers**

**$CO_2e$ impact**
- Reduces emissions by **restoring land in an adaptation-first model with mitigation co-benefits**, and measure carbon-sequestration change using **Terrasos' in-house protocols**

**Innovation**
- **Assumes full balance-sheet risk** during restoration in a vertically integrated model, and **use the TEBU framework** to ensure higher integrity and adaptation benefits beyond regulatory minimums

**Risks**
- Key risks include **regulatory shifts, ecosystem degradation or delayed restoration, market volatility in credit demand, natural disasters, and balance-sheet exposure from upfront capital deployment**

**Scalability**
- Scales via **PPPs for nature using biodiversity credit markets** to deliver adaptation outcomes with carbon co-benefits, and **expand through compliance frameworks, MDB financing, and supply-chain investment**

**External links:** Unlocking-Natures-value-in-Colombia ; Biodiversity Credit Issuance Protocol – Terrasos; Terrasos | Initiative 20x20

# SAF dendê: Agroforestry system for palm oil

## *Natura, Brazil*

## Objective

**Palm oil with agroforestry-based sourcing, restoring soil, cutting carbon, and supporting Amazon communities**

*Implemented, generating 1st results*

## Stakeholders

- **Natura** as the anchor buyer and financier
- **Third parties' partners** for operationalization
- **CAMTA[1] and Cooperatives** for coordination and technical knowledge
- **Traditional communities & farmers** as producers
- **Financial institutions** as financiers
- **State government** for land tenure, regularization & training
- **NGOs** for agroforestry expertise, land mapping

1. Cooperativa Agrícola Mista de Tomé-Açu

*Transition model*

natura

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Research - technical feasibility | **2007 – 2020** | ✓ |
| 2 | Proof of concept, evaluation and MVP | **2020** | ✓ |
| 3 | Initial expansion phase – 650ha | **2021 – 2024** | ✓ |
| 4 | Accelerated implementation–MoU signed with CAMTA for 2,000 ha | **2024 – 2035** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Agroforestry implemented | Hectares | **650** |
| Smallholder's income | Avg income increase in % | **+40%** |
| Carbon sequestration | $tCO_2e$ /hectare/ year | **~6** |

## Key aspects

**WG alignment**
- Links climate, biodiversity, land use, and human rights by **conserving forests, securing livelihoods, and scaling sustainable bioeconomy practices**

**Economic impact**
- **Increases ~40% farmer incomes compared to monoculture while ensuring sustainable and stable supply of deforestation-free palm oil,** lets intermediaries profit via carbon and crops, and **boost investors' IRR through carbon finance**

**$CO_2e$ impact**
- Generates higher incomes for local communities, **reducing pressure for deforestation in agriculture**, **removes up to 6 tons of $CO_2e$ per hectare** p.a., based on carbon stock modeling in agroforestry systems

**Innovation**
- Produces regenerative palm oil through agroforestry, **blending native species with high-value crops, using carbon modeling, payments for ecosystem services modeling and scalable design**

**Risks**
- Key risks include **unclear land tenure, high upfront costs, limited skilled labor, weak market demand, reversals, environmental insecurity, and policy delays**

**Scalability**
- Demonstrates a **replicable agroforestry model that, when widely adopted, transforms palm supply chains at scale** through sustainable practices, stable supply, and enhanced value creation

**External links:** Relatorio-IntegradoNatura-e-Co-2024.pdf

# The Amazon regeneration platform

## *Sanctu, Brazil*

## Objective

**Technology-driven platform for design, financing, support, and market access to regenerate degraded Amazon land, helping farmers adopt sustainable practices**

*Under implementation*

## Stakeholders

- **Sanctu** as main verticalized platform, providing project, credit, technical assistance and sales
- **Farmers** as the main producers, following Sanctu's protocols and tools
- **Corporate buyers** for purchasing bioproducts or high-integrity carbon credits
- **Lenders** to finance land transformations (e.g., private pockets, funds, BNDES, blended)

1. Current projection

*Enabler*

SANCTU

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Pilot - Onboard 1st 3 farms | **10/23 – 07/24** ✓ |
| 2 | Pilot - Reach 10 farms (1,000 ha) | **03/25 – 07/25** ✓ |
| 3 | 1st sale (30 ton of pumpkins) | **03/25 – 07/25** ✓ |
| 4 | Reach 1,000 farms (100,000 ha) | **01/29 – 07/29** ≈ |
| 5 | Reach 60,000 farms (6 million ha) | **01/35 – 07/35** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Regeneration of degraded land | Hectares | **1.000** |
| Families engaged | # | **10** |
| Income increase per family | Multiplier vs. avg R$ 1,000/month | **10x**[1] |
| Economic return | IRR per farm | **30%**[1] |

## Key aspects

**WG alignment**
- Aligns through **economic development, sustainable livelihoods, and ecosystem restoration**, using **technology** and **climate finance capital**

**Economic impact**
- **Boosts family income 10x** for 60,000 families that live below UN's poverty line, diversifying their income to regenerative cattle, agroforestry, and carbon projects

**$CO_2e$ impact**
- Achieves **30 million $tCO_2e$ q. in high-integrity credits (ARR and REDD) by 2040** using satellite data and AI for accurate CO2 measurement and reporting (less than 10% of total revenues)

**Innovation**
- Unifies **fintech, agtech, and marketplace platform powered by AI**, delivering world-class tools to farmers

**Risks**
- Key risks include **severe climate events, lack of off-takers, product price volatility, regulatory shifts, and the degree of producer engagement with the project**

**Scalability**
- **Achieves** a 30% IRR for every US$ 60K invested per farm, enabling scale without depending solely on patient capital, regenerating and protecting an area larger than Espírito Santo state

**External links:** Sanctu • Nurture & Prosper

SUSTAINABLE
BUSINESS
COP30

# Portfolio of Cases

**Fostering convergence across the three Rio Conventions and ICCPR**

# IDEAL - Industrial Exploitation of microalgae

## *A4F, Portugal*

## Objective

**Industrial exploitation of microalgae, in co-location with a chemical plant facility, recycling $CO_2$ and effluents into biomass**

*Implemented, generating 1st results*

## Stakeholders

- **A4F** as project leader and operator
- **LusoAmoreiras** as private investor
- **Green Aqua Póvoa** as local partner and community engagement
- **HYCHEM (former SOLVAY Portugal)** as industrial partner and resource provider
- **Government and public bodies** as financiers

*Innovation model*

a4f algae for future

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Technical foundations from FP7 R&D project BIOFAT | **2011 – 2016** | ✓ |
| 2 | BIOFAT.PT funded and implemented (stage 1) | **2017** | ✓ |
| 3 | Initial operation/exploitation plan | **2018 – 2019** | ✓ |
| 4 | Prep. of replication business cases and client acquisition | **2020 – 2022** | ✓ |
| 5 | Ongoing preparation to expand to BIOCLUSTER | **2023 – 2028** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Local employ-ment created | # (FTE) | **43** |
| $CO_2$ removal | Tons/ year | **2,000** |
| Production capacity | Tons of biomass /year | **270** |
| Sales | US$/ year | **5.5 M** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • **Transforms industrial effluents into biomass,** reducing carbon emissions, revitalizing a decommissioned site without expanding farmland, creating over 43 jobs |
| **Economic impact** | • Leverages a co-location model that **cuts operating costs, achieving a positive NPV and attractive IRR,** with annual sales of US$ 5.5M from a US$ 24.5M investment |
| **$CO_2$e impact** | • **Captures and recycle ~2,000 tons of CO2e/year** through large-scale microalgae cultivation |
| **Innovation** | • Pioneers an **industrial symbiosis model** that co-locates Europe's largest microalgae biorefinery with a chemical plant |
| **Risks** | • Key risks include **operational risks in scaling complex bioprocesses, alongside market and price volatility** in underdeveloped microalgae markets across certain regions |
| **Scalability** | • Demonstrates a **replicable model that can cut millions of tons of $CO_2$ annually through large-scale industrial symbiosis**, while produce high-value biomass without additional land use |

**External links:** a4f.pt/en; Algatec – Algatec; GALERIA – Algatec

# AMAYU superfruits

## *AJE, Peru*

## Objective

**Developing sustainable value chains for Amazonian superfruits (e.g., aguaje, camu camu, aguaymanto, açaí) in beverages and shots**

*Mature, generating stable results*

## Stakeholders

- **AJE** as project leader and operator
- **National Service of Natural Protected Areas** for governance guidance
- **British Embassy of Peru** for technical support
- **Traditional communities & farmers** as producers

*Innovation model*

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Design of sustainable business strategy | **2016** | ✓ |
| 2 | Development of sustainable value chains | **2017 - 2019** | ✓ |
| 3 | Market launch of AMAYU beverages | **2019–2020** | ✓ |
| 4 | International showcasing at COP26–28 | **2021–2023** | ✓ |
| 5 | Long-term scaling with biodiversity monitoring | **2024–2025** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Forest conservation | Hectares | **4.5 million** |
| Community empowerment | Families | **+250** |
| Sustainable sourcing | Kg of native fruits purchased | **+2.4 million** |
| Product innovation | # products launched | **8** |

## Key aspects

**WG alignment**
- Showcases how **Amazonian biodiversity can be good for livelihoods, and conservation**, while creating sustainable value and economic empowerment for communities in the Global South

**Economic impact**
- Leads with an **investment of US$ 1 million to develop a commercial portfolio of 8 biodiversity-based beverages**, and provides formal income opportunities for over 250 families from 25 communities

**$CO_2e$ impact**
- Contributes to the **preservation 4.5 million hectares of forest** in the Pastaza Fan, contributing to safeguarding part of Peru's 3.5 billion tons of carbon stocks and reducing risks of deforestation-linked emissions

**Innovation**
- Maintains AMARUMAYU, a business unit dedicated to connecting indigenous superfruits with global markets, **supported by fair trade mechanisms and conservation-linked branding**

**Risks**
- Key risks include **illegal mining, logging, and drug trafficking in low-governance areas**

**Scalability**
- Demonstrates a **replicable model across tropical forest countries l**inking biodiversity conservation with profitable superfruit value chains

**External links:** Video

# Cocli project

## *BASF, Colombia*

## Objective

**Sustainable palm oil production with training and fair labor practices**

*Implemented, generating 1st results*

## Stakeholders

- **BASF** as the program leader and financier
- **Solidaridad Network** as implementation support partner
- **Traditional communities & farmers** as producers

## Implementation

| Step | Period |
|---|---|
| 1 Launch and expansion of the project | **10/24 – Ongoing** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Farmers trained | # | **865** |
| Sustainability index monitoring | # producers | **1,577** |
| Improve land management | Hectares | **117,291** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Transforms palm oil into a **sustainable value chain that protects biodiversity, promotes fair labor, and delivers social and economic benefits to farming communities** |
| **Economic impact** | • **Increases yields by 10% while ensuring sustainable and stable supply of palm oil, improving the income and climate resilience of at least 300 families** |
| **$CO_2e$ impact** | • **Promotes sustainable land use through RSPO[1] certification standards**, which include strict criteria against deforestation and conversion of high carbon stock or high conservation value areas |
| **Innovation** | • **Integrates various disciplines (training, technology, community engagement)** to create scalable and replicable solution |
| **Risks** | • *No relevant risks identified in the project implementation* |
| **Scalability** | • Demonstrates a **replicable model already implemented successfully in other regions worldwide to deliver sustainable palm oil supply chains** and strengthen smallholder climate resilience |

1. Roundtable on Sustainable Palm Oil

**External links:** BASF and Solidaridad join forces to strengthen the sustainable palm oil supply chain - Revista Cultivar

# MataViva: 40 years of forest regeneration and biodiversity protection

***BASF, Brazil***

## Objective

**Flagship initiative for forest restoration, improving water and soil, fostering biodiversity and supporting climate goals via carbon sequestration**

*Mature, generating stable results*

## Stakeholders

- **BASF** as project creator, main funder, and long-term implementer
- **Eco+ Foundation (NGO)** as technical supervisor and sustainability project developer
- **Smallholder farmers & traditional communities** as seed suppliers, producers, and knowledge holders
- **Brazilian government (regulators under the Forest Code and Atlantic Forest Law)** for compliance and enabling frameworks



## Implementation

| Step | | Period |
|---|---|---|
| 1 | Mapping of local needs/ ecosystems/smallholders and workers | **01/14 – 06/14** ✓ |
| 2 | Launch of the project | **07/14 – 07/25** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Trees planted | # native trees | **1.3 million** |
| CO2 Offset | tCO2 | **210,000** |
| Restored area | Hectares | **875** |
| Biodiversity | # plant species<br># animal species<br># water spring | **+180**<br>**+150**<br>**5** |

## Key aspects

**WG alignment**
- **Restores riparian and Atlantic forests** in compliance with BASF's Forest Protection Policy, **supporting biodiversity, water resources, and climate goals**

**Economic impact**
- **Generates carbon credits by offsetting $CO_2$**, strengthening local value chains, reducing environmental risks and costs, and enhancing BASF's reputation in global rankings like CDP

**$CO_2$e impact**
- Plants and conserves over 1.3 million native trees since 1984, helping **capture $CO_2$ and achieving an offset of around 210,000 tons** across MataViva sites

**Innovation**
- Pioneers one of the **first corporate forest regeneration programs**, creating a replicable model that integrates biodiversity, carbon markets, and business networks while supporting institutional communication and new opportunities

**Risks**
- *No relevant risks identified in the project implementation*

**Scalability**
- **Demonstrates a proven model which was later implemented across 7 South American sites**, with strong potential to expand into other regions and industries

**External links:** Brazil; Fundação Eco+; biodiversidad; BASF presenta "Bosque BASF"; Diário de Jacareí

# Sustainable Rambutan: a longstanding responsible sourcing project

## *BASF, Vietnam*

## Objective

**Implementation of certified sustainable farming practices for organically grown rambutan and its by-products used as renewable feedstocks in the production of cosmetic ingredients**

*Mature, generating stable results*

## Stakeholders

- **BASF** as anchor buyer and financier
- **Academia / Research institutions** as research and innovation partners
- **Traditional communities & smallholder farmers** as producers

*Transition model*

BASF

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Mapping of local needs/ ecosystems/smallholders and workers | **01/14 – 06/14** ✓ |
| 2 | Launch and expansion of the project | **07/14 – 07/25** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Develop new cosmetic ingredients | # | **3** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Transforms rambutan cultivation into a certified sustainable value chain that **supports biodiversity, fair labor, and community welfare** |
| **Economic impact** | • **Increases farmer incomes and working conditions while ensuring a stable, sustainable supply of rambutan**, enhancing livelihoods and creating new opportunities for women and rural communities in Vietnam |
| **$CO_2e$ impact** | • **Promotes sustainable agriculture through Ecocert-certified organic rambutan cultivation**, which ensures environmentally responsible farming practices and **achieves zero-waste use of rambutan by-products** |
| **Innovation** | • Develops **three COSMOS-approved cosmetic actives from rambutan by-products (NEPHORIA™, NEPHYDRAT™, RAMBUVITAL™)** |
| **Risks** | • *No relevant risks identified in the project implementation* |
| **Scalability** | • Demonstrates a **replicable model already implemented successfully in other regions, building on BASF's Argan program experience** |

**External links:** Rambutan; Cuidados Pessoais & Cosméticos; A Sustainability Story; The Rambutan Program

# Sociobiodiversity Enhancement Program®

## *Beraca by Clariant, Brazil*

## Objective

**Promote socioeconomic inclusion for agroextractive producers and biodiversity conservation through the bioeconomy, inspiring sustainable actions aligned with the COP30 climate agenda**

*Mature, generating stable results*

## Stakeholders

- **Beraca by Clariant** as lead & off-taker
- **Cooperatives & associations** as suppliers and guardians of the biodiversity
- **Corporate clients (global)** as market access/off-takers
- **NGOs & academia** for innovation and Sustainability researchers
- **Public sector & certifiers** as regulation & organic/ABS compliance

*Innovation model*

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Mapping demand & onboarding suppliers | 01/25 – 02/25[1] ✓ |
| 2 | Community diagnosis & preparation | 03/25 – 03/25[1] ✓ |
| 3 | Standards, Supplier Guide rollout & training | 04/25 – 12/25[1] ✓ |
| 4 | Organic certification & long-term purchase agreements | 01/26 – 01/29[1] ✓ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Organic production | Hectares | **1,830,000** |
| Families benefited | # | **14,000** |
| Companies engaged globally | # | **300** |
| Waste diverted from landfills | t | **1,370** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Advances **standing-forest bioeconomy, organic production, and community inclusion** |
| **Economic impact** | • Reaches **14k families** and **300 companies**; long-term purchase guarantees and organic markets strengthen local incomes |
| **$CO_2e$ impact** | • Generates socioeconomic inclusion for agroextractive communities, **reducing pressure for deforestation in agriculture**, while diverting **1,370 t** of waste from landfill/incineration |
| **Innovation** | • Promotes direct community sourcing with **long-term purchase guarantees under a 4-pillar model (people, biodiversity, profitability, ethics), embedded in the core business** |
| **Risks** | • Key risks include **variation in the harvest of sociobiodiversity products, combined with changes in rainfall patterns and other climate impacts, as well as logistical and operational difficulties** |
| **Scalability** | • Demonstrates a replicable model already **applied successfully with 14,000 families, and highlights its scalability across 11 states in Brazil and communities at different stages of organizational maturity** |

1. Indicative timeline — program has run for 25+ years

**External links**: Beraca Sustainability Webpage; ENAP Repository

# Baru Nut Shell

## *Binatural, Brazil*

## Objective

**Replace firewood with agroforestry waste (baru nut shells) as renewable biomass**

*Mature, generating stable results*

## Stakeholders

- **Binatural** as project leader and implementer
- **Local cooperatives (Copabase & informal farmer networks)** as biomass suppliers, community partners, and packaging producers
- **Smallholder farmers & traditional communities** as producers of baru nut shells and key partners in agroforestry practices
- **Private sector buyers & agro-industries** as adopters of renewable biomass and market enablers

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Scientific validation | 04/23 – 04/24 ✓ |
| 2 | Market & Pricing | 05/24 – 05/24 ✓ |
| 3 | Storage & Packaging solutions | 05/24 – 06/24 ✓ |
| 4 | Supply & contracts | 06/24 – 08/24 ✓ |
| 5 | Continuous use & Support | 08/25 – 08/26 ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Zero landfill disposal | Tons of waste avoided | 100 |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Aligns fossil/native wood fuel substitution with agroforestry residues to **cut emissions, support biodiversity, and foster a local circular economy** |
| **Economic impact** | • Reduces boiler fuel costs, create new markets for agro-waste, and ensure **stable revenue streams for family farmers** |
| **$CO_2e$ impact** | • **Lower deforestation pressure** by substituting firewood, **reduce carbon footprint**, and **avoid methane from waste in landfills** |
| **Innovation** | • Introduces the **first industrial-scale use of baru nut shells as biomass**; scale a circular economy model using existing infrastructure |
| **Risks** | • Key risks include **market acceptance, long-term farmer engagement, and logistics (storage, packaging, seasonality)** |
| **Scalability** | • Demonstrates a **replicable model for industries through low CAPEX, fast payback, and high-impact feasibility** |

# BANATEX-EA
## *Busitema University, Uganda*

## Objective

**Transform banana stem waste into textiles, energy, and fertilizer; creating jobs and reducing pollution**

*Under implementation*

## Stakeholders

- **Busitema University** for research, coordination of the program and technical expertise
- **Government of Uganda** for financial support
- **Traditional communities** and farmers as suppliers and producers
- **SMEs** as offtakers

*Innovation model*

BUSITEMA UNIVERSITY
Pursuing excellence

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Contracting banana farmers | 09/24 – 07/26 ≈ |
| 2 | Research and training | 09/24 – 07/26 ≈ |
| 3 | Installation of processing equipment | 09/24 – 10/25 ≈ |
| 4 | Marketing and refining product | 11/24 – 09/26 ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Registered producers | # people | **140** |
| Reduction of farm waste | Tons | ***TBD*** |
| Gender equity involvement | Participation rate of women | **50%** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Converts agricultural waste into valuable products, while leveraging **innovative technologies for sustainable textile bioproduction** |
| **Economic impact** | • Transforms low-cost agricultural waste into **high-value textile inputs**, with affordable processing, growing global demand for sustainable fibers, and addressing existing cotton deficits |
| **$CO_2e$ impact** | • Introduces better fiber extractors utilizing **electricity instead of diesel; reduce methane gas emissions in farms**; utilize rainwater and underground water harvest to **reduce municipal water extension** |
| **Innovation** | • Develops **IP-based banana fiber technology** to enable efficient and cost-effective fiber extraction |
| **Risks** | • Key risks include **climate change effects on banana production, impact on compost needed for regeneration, market uptake, weak regulatory landscape** |
| **Scalability** | • Demonstrates a **replicable model that scales circular production that reduces emissions** by converting banana waste into fiber, replacing synthetics and cutting waste burning |

**External links:** Banatex-EA ; SMEP; Breakthrough Fibre Innovation; Busitema News; SCIDEV; ChimpReports

# The Caatinga model for the world

## *Caatinga Association, Brazil*

## Objective

**Restoration program in Caatinga's biome that combines forest restoration with innovative technologies and community training to strengthen the sustainable carnauba value chain**

*Implemented, generating first results*

## Stakeholders

- **Associação Caatinga** as project lead and implementer
- **Celeo Redes & Grupo Boticário** as private sponsors/off-takers enablers
- **VBIO.eco, FIEC & Sindcarnaúba** as governance, market and coordination partners
- **UFRN (Federal University of Rio Grande do Norte)** as scientific partner (elongated-root seedlings)
- **Local/traditional communities & smallholders** as producers and beneficiaries
- **Public sector** as regulatory and Benefit-Sharing Law (13.123/2015) support



## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Diagnosis, planning & articulation | **2022 – 2024** | ✓ |
| 2 | Training & awareness | **2022 – 2024** | ✓ |
| 3 | Social tech & restoration (20 ha, elongated-root seedlings) | **2022 – 2024** | ✓ |
| 4 | Monitoring, communication & replication | **2022 – 2024** | ✓ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Area restored | Hectares | **20** |
| Native seedlings planted | units | **20,000** |
| $CO_2$ removal | $tCO_2$ | **3,719 $tCO_2$** |
| Straw for crafts | units | **10,000** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Demonstrates how **ecosystem restoration and sustainable value chains can simultaneously deliver climate mitigation, biodiversity recovery, and community rights** |
| **Economic impact** | • **Generates** new income via improved carnaúba management, craft straw use, and higher-quality powder (solar dryer) |
| **$CO_2$e impact** | • **Delivers** long-term carbon gains from 20 ha restored and enhanced ecosystem resilience; **project** 3,719 $tCO_2$ over 30 years |
| **Innovation** | • **Applies** elongated-root seedlings (for higher survival in drought) and a solar carnaúba dryer that boosts quality, adds value, and enables circular use of whole straw for crafts |
| **Risks** | • Key risks include **low seedling survival in droughts, market fluctuations for carnaúba, community engagement and financing continuity** |
| **Scalability** | • Demonstrates a **replicable model in semiarid regions with low-cost, adapted technologies and documented methods** (model community, training, videos) |

**External links:** Caatinga - restauration Project; Caatinga - Carnauba project

# Driving large-scale, profitable restoration

## *Genera Bioeconomia, Brazil*

## Objective

**Restore degraded land with native species using circular inputs (wastewater sludge and rock dust), generating agroforestry products and ARR/ERW carbon credits**

*Under implementation*

## Stakeholders

- **Genera Bioeconomia** as project leader
- **Aegea** as industrial partner providing wastewater sludge for fertilization
- **Local mining company** as industrial partner providing rock dust for ERW
- **UNEP** as academic partner developing carbon credit methodology (FINEP project)
- **Angel investors** as initial financiers (Phase 1 funding)
- **Venture capital & impact investors** as financiers for scale-up (Phase 2)
- **Local / Traditional Communities** as land stewards and cultural knowledge partners

1. Enhanced Rock Weathering; 2. Current projection

*Enabler*

GENERA

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Validate business model and acquire first farm | **2023 – 2024** | ✓ |
| 2 | Execute MVP | **2024** | ✓ |
| 3 | Build team & partner with Aegea/miner/Unesp | **2024 – 2025** | ≈ |
| 4 | Close seed round and build nursery + clonal garden | **2025** | ≈ |
| 5 | Expand land acquisition and production | **2025 – 2026** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Land under management | Hectares | **200** |
| Land in pipeline | Hectares | **100,000** |
| ARR seques-tration at scale | tCO2 | **700,000[2]** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • **Restores degraded pasture into native-species agroforestry to enhance biodiversity** |
| **Economic impact** | • Reduces emissions via ARR sequestration and ERW, with biochar valorizing residues; **treating one hectare with 50-100 tons of rock dust can sequester 10-40 tons of CO2 annually** |
| **$CO_2e$ impact** | • Reduces emissions via ARR sequestration and ERW, with biochar valorizing residues; **treating one hectare with 50-100 tons of rock dust can sequester 10-40 tons of CO2 annually** |
| **Innovation** | • Combines **agroforestry, ERW, and biochar with circular inputs (ETE sludge, rock dust)** for soil health and yield |
| **Risks** | • Key risks include **seedling availability and fertilizer costs, workforce qualification, demand and pricing of biodiversity products and climate risks** |
| **Scalability** | • Demonstrates a **replicable model leveraging Manaus Free Trade Zone incentives and standardized MRV to scale across Amazonas** |

**External links:** Genera; PAPERMARK

# Kanuka oil

## *Hikurangi Bioactives, New Zealand*

## Objective

**Proven natural eczema treatment, that supports Maori communities, protects ecosystems, and models ethical biocommerce through Indigenous-led innovation and benefit-sharing**

*Under implementation*

## Stakeholders

- **Hikurangi Bioactives** as producer
- **Kanuka Charitable Trust** as NGO for community engagement and biodiversity protection
- **Traditional communities and farmers** as suppliers (e.g., Māori land trusts and indigenous peoples)

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Initial research & investments | 2016 – 2017 | ✓ |
| 2 | Harvesting & extraction trials | 2017 – 2019 | ✓ |
| 3 | Clinical trial results & IP licensing | 2018 – 2024 | ✓ |
| 4 | Quality management system | 2021 – 2025 | ≈ |
| 5 | First orders & US launch | 2025 – 2026 | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Local employ-ment created | # FTE | **15** |
| Sust. harvesting compliance | % of harvesters compliant | **100%** |
| Decarbonized oil production | % produced w/ no fossil fuels | **50%** |

## Key aspects

**WG alignment**
- Aligns through **indigenous leadership, climate resilience, and ethical biocommerce**

**Economic impact**
- Builds a **value-added Indigenous-led industry with rapid setup and early returns**, including commercial arrangements that **ensure 2/3 of royalties flow to nature and communities of origin**

**$CO_2e$ impact**
- Reduces $CO_2e$ impact as largest kanuka oil producer **transitions from using natural gas and diesel to wood pellets for energy in oil extraction**, representing around half of the production

**Innovation**
- Pioneer a **clinically validated natural eczema product and scalable processing systems rooted in Indigenous innovation**

**Risks**
- Key risks include **market shifts, supply issues, governance conflicts, weak IP or regulation, and unsustainable growth, which threaten revenue, equity, ecosystems, and long-term viability of the kanuka industry**

**Scalability**
- Proves scalability through **cultivation with low-emissions land use, native reforestation, and local processing**, promoting nature-based solutions and sustainable biotrade

**External links:** Kānuka Oil for Eczema – Hikurangi Bioactives; Ha Kanuka; RNZ; NZ Herald; Manaaki Whenua

# Nespresso coffee reviving origins

## *IFC, Uganda*

## Objective

**Revitalization and expansion of coffee production through climate-smart agricultural practices, increasing farmer incomes and advancing gender equality**

*Implemented, generating 1st results*

## Stakeholders

- **Nespresso** as the anchor buyer
- **Agri Evolve Uganda** as the farmer's support
- **Kyagalanyi Coffee** as Processor & Exporter
- **IFC** as financer and oversight
- **Traditional communities & farmers** as producers
- **KIT Institute** for research and evaluation

*Transition model*

IFC

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Project initiation and financing approval | 01/21 – 01/22 ✓ |
| 2 | Farmer training and capacity-building | 01/22 – 06/25 ✓ |
| 3 | Capacity enhancement for sust. standard compliance (EUDR) | 01/22 – 06/25 ✓ |
| 4 | Advisory support, monitoring, and technical guidance | 01/21 – 12/26 ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Farmers trained | # | **2,253 (55%women)** |
| Productivity: yield increases | Metric tons / hectare | **2.3** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • **Restores soil productivity** to improve quantity/quality of coffee yields, **improved livelihoods, enhanced gender equality,** increased local economic resilience through premium coffee production |
| **Economic impact** | • **Improves yields, quality, and premium pricing; aligned profitability** for Nespresso and expansion of supply **complying with European Union Deforestation Regulation** |
| **$CO_2e$ impact** | • Generates higher incomes for local communities, **reducing pressure for deforestation in agriculture and enhancing soil carbon capture with regenerative agriculture** |
| **Innovation** | • Pioneer the integration of **climate-smart coffee farming** transforming **compliance with EU deforestation rules from a cost burden into a market advantage** for smallholder farmers |
| **Risks** | • Key risks include **climate variability, market fluctuations, uncertain farmer adoption rates, and policy or regulatory changes** |
| **Scalability** | • Scales highly across **agricultural commodities and regions**; leverage proven model building on experiences and lessons from a **previous IFC-Nespresso project with smallholders and coffee sustainability practices in Ethiopia** |

1. European Union Deforestation Regulation

**External links:** Nespresso Press Release; IFC Press Release; Disclosure

# Biodiversity Arc in the Amazon (Arco da Biodiversidade)

## *Instituto Interelos, Brazil*

## Objective

**Create productive hubs across the Amazon, anchored in sustainably managed açaí, that form a "Biodiversity Arc" to curb deforestation while diversifying value chains and household income**

*Under planning*

## Stakeholders

- **Instituto Interelos** as project lead and convener
- **Local/traditional communities & smallholders** as producers and hub operators
- **Cooperatives & associations** as coordination and market linkage
- **Academia/research institutions** as technical and training partners

*Enabler*

interelos INSTITUTO

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Territory selection & baseline assessments | **01/26 – 08/26** |
| 2 | Community mobilization & collective agreements | **04/26 – 08/26** |
| 3 | Hub setup: org strengthening, infra & logistics; tech solutions; rural education | **06/26 – 12/27** |
| 4 | Assisted operations of agro-industries; M&E; scale & replication of hubs | **01/27 – 01/29** |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Families impacted | # | **4,300** |
| Income per family | R$/year | **11,200** |
| States covered | # | **3** |
| Program duration | Months | **48** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Tackles drivers of deforestation through **standing-forest economies (açaí-led hubs), social inclusion, and rural education** |
| **Economic impact** | • **Generates economic impact by targeting 4,300 families with an average R$11,200/year additional income**, while shared infrastructure lowers costs and improves market access |
| **$CO_2e$ impact** | • **Reduces $CO_2e$ impact indirectly by decreasing pressure to clear forests** and by supporting conservation through profitable, sustainable value chains |
| **Innovation** | • **Introduces** innovation via an arc-of-hubs model anchored in açaí as a "pull product," combined with shared processing/logistics and alternating rural education to build human capital |
| **Risks** | • Key risks include low cooperative adherence, Amazon logistics, policy/regulatory instability, limited skilled labor, and market pressures |
| **Scalability** | • Demonstrates a **replicable model across Amazon biomes, using philanthropic funding with potential blended-finance mechanism to enable expansion** |

**External links:** Interelos-A-cadeia-de-acai-5-compactado

# 4 returns in Kaigu peat bog

## *Laflora, Latvia*

## Objective

**Transformation of former peat extraction site into a Green Industrial Zone that combines wind energy, peatland restoration, and sustainable industry**

*Under implementation*

## Stakeholders

- **Laflora Ltd** as project developer
- **Governmental energy company** as anchor investor and financier
- **Municipality of Jelgava & Jelgava County Municipality** for land-use and community
- **Ministry of Economics & Zemgale Planning Region** for policy alignment, regulatory support
- **Riga Technical University & Latvian University** as academic partners
- **UPB Ltd, MUUD Ltd, Gakon Netafim** for industrial technology
- **LDDK, Business Europe** for private-sector coordination
- **CSR Latvia, LTRK** for sustainability standards
- **AS Latvenergo** as an energy sector stakeholder

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Wind Park Construction | 2024 – 2026 ≈ |
| 2 | Green Industrial Area Planning & Certification | 2021 – 2030 ≈ |
| 3 | Peatland Restoration Plan & technology shift | 2022 – 2050 ≈ |
| 4 | Greenhouse Complex | 2026 – 2030 ≈ |
| 5 | New Product Research | 2024 – 2027 ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Restoration of peat bog area | Hectares | **650** |
| GHG emissions offset by wind power[1] | kt $CO_2e$ | **474.06 (2030); 3,216.97 (2050); 6,245.92 (2075)** |
| Installed renewable energy capacity | MW | **108.8** |

## Key aspects

**WG alignment**
- Aligns by **reducing GHG emissions, creating renewable energy and jobs, and repurposing degraded peatlands for climate and biodiversity benefits** through strong local stakeholder engagement

**Economic impact**
- Delivers **scalable and diversified sustainable revenue with risk-adjusted returns** in line with industry benchmarks, supported by **policy incentives and public-private partnerships (NPV €30–50M, IRR 10–18%, payback 10–15 years)**

**$CO_2e$ impact**
- Reduces emissions by recultivating peatlands to **halt peat oxidation and restore carbon sinks**, achieving long-term climate neutrality with wind power alone **offsetting 474.06 kt by 2030**

**Innovation**
- Combines wind energy development with large-scale peatland restoration to transform landscapes into climate assets by **integrating renewable production, nature-based solutions, carbon removals, and a scalable, investable green industrial zone**

**Risks**
- Key risks include **potential delays in permitting, regulatory approvals, legislative or political changes, and public opposition to wind turbines or land-use changes**

**Scalability**
- Creates a **replicable land-use transformation** that supports the Paris Agreement and can be **adapted to other peatlands and industrial zones globally**

1. Current projection

**External links:** LAFLORA 30 ; PLUS Change; Interreg Baltic Sea Region; ScienceDirect; MDPI; ACS

# Together the Amazon

## *Michelin, Brazil*

## Objective

**Rubber value chain strengthening through fair compensation and payment for ecosystem services**

*Mature, generating stable results*

## Stakeholders

- **Michelin** as project leader and anchor buyer
- **WWF** as technical partner
- **Memorial Chico Mendes** as implementation support
- **Traditional communities & farmers** as producers
- **IMAFLORE / Rede Origens** for certification and sustainability standards
- **Conexsus** to structure financial mechanism

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Partnership Formalization | **2019** | ✓ |
| 2 | Diagnosis & Strategy Development | **2020** | ✓ |
| 3 | Community Engagement & Infrastructure | **2021 – 2027** | ≈ |
| 4 | First Harvest & Scaling | **2022 – 2024** | ≈ |
| 5 | Expansion to Full Scale | **2025 – 2027** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Forest Conservation | Hectares | **105,000** directly<br>**269,000** indirectly |
| Families engaged | # | **600** |
| Native rubber produced | Tons | **354.5** |

## Key aspects

**WG alignment**
- Links climate, biodiversity, land use, and human rights by **conserving forests, securing livelihoods, and scaling sustainable bioeconomy practices**

**Economic impact**
- Generates R$4.95M in direct purchases for 600 families (2022–24), and **use zero-interest blended finance and philanthropic funds** to ensure low costs and scalable, profitable supply chains

**$CO_2$e impact**
- Generates higher incomes for local communities, **reducing pressure for deforestation in agriculture;** protects **105,000 ha directly and 269,000 ha indirectly**, in a way the project prevents major carbon releases, offering a sustainable alternative to industrial rubber

**Innovation**
- Combines **digital infrastructure, fair payment for ecosystem services, and traditional tapping knowledge** to build a pioneering, community-led, low-carbon supply chain

**Risks**
- Key risks include **climate change impacts, deforestation threats to >105,000 ha, limited community engagement, remote logistics, and unstable regulations**

**Scalability**
- Leverages abundant rubber resources globally and a **replicable model to scale this approach beyond the Amazon**, boosting conservation and livelihoods across all rubber regions

**External links:** WWF Brasil

# Tucumã: Beyond the thorns, health, beauty, and opportunity

## *Natura Cosmetics, Brazil*

## Objective

**Transform the native tucumã palm into a bioeconomy asset by building a sustainable value chain that supplies high-performance cosmetic ingredients**

*Mature, generating stable results*

## Stakeholders

- **Natura** as project leader, main investor and anchor buyer
- **Local cooperatives (APOBV, CAMTAUA, COFRUTA, COOMAC, IRITUIA, CART)** as suppliers, and community managers
- **Smallholder farmers & traditional communities** as producers and knowledge holders
- **Brazilian government (FINEP & regulators)** for early-stage R&D funding and legal compliance



## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | R\&D & safety design | **2017 – 2020** | ✓ |
| 2 | Community partnerships & training | **2018 – 2025** | ✓ |
| 3 | Supply-chain & production | **2017 – 2025** | ✓ |
| 4 | Scaling & long-term sustainability | **2021 – 2025** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Supply delivered | Tons | **1,000** |
| Families with new income | # | **300** |
| Avg. cooperative income (2019) | R$/cooperative | **120k–360k** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Conserves standing forests via **community-led value chains, empower women, and strengthen inclusive local economies** |
| **Economic impact** | • Generates **new income streams for ~300 families, increase cooperative revenues (R$120k–R$360k per coop in 2019), and ensure reliable ingredient supply** powering Natura product lines |
| **$CO_2e$ impact** | • Generates higher incomes for local communities, **reducing pressure for deforestation in agriculture** providing **incentives for forest regeneration and management** in degraded areas |
| **Innovation** | • **Converts a low-value fruit into a high-performance cosmetic active** through pioneering R&D, improve harvesting tools and PPE, optimize cold-chain/logistics, and strengthen the community-first supply model |
| **Risks** | • Key risks include **unclear land tenure, high upfront costs, scarce skilled labor, weak or volatile market demand, risk of reversals, environmental insecurity, and policy delays** |
| **Scalability** | • **Demonstrates a replicable model across other Amazon species/regions**, strengthen cooperatives and standardize quality, and support efficient, data-informed, Paris-aligned resource management |

**External links:** NATURA; CLAUDIA; Allure Best of Beauty; Tucumã

# Meliponiculture for mangrove

## *OceanPact, Brazil*

## Objective

**Promote mangrove conservation and community resilience through meliponiculture, combining research and bioeconomy in Quilombo of Feital**

*Under implementation*

## Stakeholders

- **OceanPact Maritime Services** as funder and implementer
- **Brazilian National Petroleum Agency (ANP) & Energy company** as R&D-clause funders
- **Universities & research institutes** as scientific partners (pollination, honey/propolis analyses)
- **NGOs / civil society** as governance and training partners
- **Quilombo of Feital community** as participants, hive keepers and product owners
- **SMEs/market channels** as commercialization partners
- **Public authorities (environment/coastal)** as permitting and oversight bodies

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Community mobilization & meliponary installation (60 colonies) | **2025** ✓ |
| 2 | Training in meliponiculture & entrepreneurship | **2025 – 2026** ≈ |
| 3 | Scientific research & monitoring of pollination | **2025 – 2027** ≈ |
| 4 | Brand launch & commercialization of mangrove bee products | **2026 – 2027** |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Bee colonies | # | **60 (target)** |
| Community trained | # | **30** |
| Scientific output | Publications | **1 peer-reviewed paper planned** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Aligns with Paris Agreement and biodiversity goals by **linking blue carbon storage with community-led conservation** |
| **Economic impact** | • **Provides alternative income** via commercialization of honey, propolis, and derived mangrove products |
| **$CO_2e$ impact** | • Strengthens **mangrove pollination, enhancing regeneration and carbon sequestration** in blue carbon ecosystems |
| **Innovation** | • Integrates stingless bee bioeconomy with mangrove conservation, using **pollen analysis as a novel ecological monitoring tool** |
| **Risks** | • Key risks include **losses due to climate or predators, limited community engagement, and delays in research or product commercialization** |
| **Scalability** | • **Replicable model for other mangrove and coastal communities worldwide**, combining biodiversity protection and local bioeconomy |

# Sütas Circular Bioeconomy Project

## *Sütas Group, Turkey*

## Objective

**Integrated circular bioeconomy system turning dairy farm and factory waste into renewable energy (biogas) and organic fertilizers**

*Mature, generating stable results*

## Stakeholders

- **Sütaş Group** as project lead, operator and core investor
- **Turkish Government** as regulator and provider of incentives (State Aid 2012/3305; Law 5346 on Renewables)
- **Ministry of Energy and Natural Resources**
- **EBRD & Private Banks** as lenders and co-financiers
- **Research institutions** as R&D partners
- **Cooperatives & SMEs** as supply-chain partners and service providers
- **Traditional communities and smallholder farmers** as feed suppliers and fertilizer users
- **NGOs / Civil society** as climate partners

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Pilot anaerobic digestion & feasibility studies | **2006 – 2011** | ✓ |
| 2 | Biogas plants commissioning (Bursa, Aksaray, Tire, Bingöl) | **2013 – 2022** | ✓ |
| 3 | Fertilizer production & soil regeneration | **2017 – 2024** | ✓ |
| 4 | Scaling integrated food–energy–waste–soil nexus | **2024 – ongoing** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| $CO_2e$ avoided | Metric tons | **~4M $tCO_2e$** |
| Organic waste processed | % | **100%** |
| Energy self-sufficiency | % | **92%** |
| Fertilizer produced | Metric tons | **750,000** |

## Key aspects

**WG alignment**
- Aligns with Paris climate targets through **renewable energy, waste valorization, and soil regeneration**

**Economic impact**
- **Reduces energy costs, improves crop yields, generates revenues from carbon credits, and supports climate-resilient dairy production**

**$CO_2e$ impact**
- **Avoids nearly 4M $tCO_2e$ in 12 years, equivalent to sequestration of 2.3M ha of pine forest**

**Innovation**
- Introduces Turkey's **first and largest co-digestion system tailored for dairy**, **reuses thermal energy onsite** within an integrated food–energy–waste–soil nexus nexus

**Risks**
- Key risks include **high upfront costs, dependence on regulatory incentives, and operational complexity of multi-site integration**

**Scalability**
- **Demonstrates a replicable model across dairy and agri-food industries**, delivering emissions reduction and soil restoration benefits in 2–4 years

**External links:** SUTAS WEBSITE.

symrise

# Bridging the gap – Amazon

## *Symrise, Brazil*

## Objective

**Community-led consolidation of Amazon value chains (Brazil nuts, açaí, cupuaçu, andiroba, copaíba, among others), reducing waste and transport through local pre-processing**

*Under implementation*

## Stakeholders

- **Symrise and Natura** as the anchor buyers, supply chain integrators and financiers
- **GIZ** as funding partners and for technical cooperation
- **NGOs** for local training and consultancy partners
- **Traditional communities & farmers** as producers
- **Local authority** for compliance

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Kick-off | **09/24 – 12/24** ✓ |
| 2 | Agro-industries regularization, waste characterization, | **01/25 – 06/26** ≈ |
| 3 | Waste recovery & trainings | **02/26 – 05/26** ≈ |
| 4 | Scale-up – waste management & educational program | **02/26 – 05/26** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Vegetal residue Reduction | % of reduction | **40%** |
| Wild collection mapping | Hectares | **20,000** |
| Women & youth participation | % applying training in work | **80%** |
| Forest preserved | Hectares | **60,000** |

## Key aspects

**WG alignment**
- Develops value chains, technology, and machinery for Amazon communities, engages youth, highlights women's roles, and promotes forest preservation through **sustainable use and implementation of regenerative agroextractive practices**

**Economic impact**
- **Increases volume**, with the inclusion of families and communities in the supply chain, improve raw material quality to **increase yield and industrial production, and reduce transportation costs of inputs**

**$CO_2e$ impact**
- Generates higher incomes for local communities, **reducing pressure for deforestation in agriculture; reduces transportation of raw materials by up to 75%** after implementing pre-processing in communities (transport only dried almonds vs. whole fruit)

**Innovation**
- **Adds value for cooperatives via pre-processing**, enable it with **new community-adapted machinery** that is easy to maintain, and use boat engines in areas without electricity

**Risks**
- Key risks include **insufficient infrastructure and high costs in the Amazon**, and address **structural challenges** to the participation of women and youth in rural environments

**Scalability**
- Demonstrates a **replicable model already implemented successfully across 28 communities,** and showcase the **scalability of actions across different regions (4 states) and varying levels of community maturity**

1. Cooperativa Agrícola Mista de Tomé-Açu

**External links:** Case Study – Symrise, Natura and GIZ in Brazil – develoPPP; Cosméticos Sustentáveis da Amazônia

# Bridging the gap – Coconut

## *Symrise, Philippines*

## Objective

**Coconut-growing community empowerment through regenerative agriculture, diversified income streams, and farm productivity increase**

*Under implementation*

## Stakeholders

- **Symrise and Absolute company** as the anchor buyers and financiers
- **GIZ & NGOs** for technical expertise, training, and OHS[2] support
- **Traditional communities & farmers** as producers
- **Local authority** for access to services & compliance

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Kick-off | **03/25 – 04/25** ✓ |
| 2 | Program implementation among 500 coconut farmers | **05/25 – 03/28** ≈ |
| 3 | Scaling up – share and learn at sector wide level | **01/28 – 07/28** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Farmers part of the program | # | **500**[1] |
| Farm yield | Avg increase in % | **+20%** |
| Smallholder's income | Avg increase in % | **+15%** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Advances **climate-smart coconut farming and income diversification through intercropping, composting, mulching, reforesting ageing trees, and protecting pollinator habitats, while boosting farmer incomes, safety, and community resilience** |
| **Economic impact** | • **Increases 15% net household incomes while increasing farm yield by 20% to ensure sustainable and stable supply of coconut**, and align profitability while meeting growing client demand for products linked to improved farmer livelihoods and nature protection |
| **$CO_2e$ impact** | • Generates higher incomes for local communities, introducing **regenerative agriculture practices, while setting up baseline calculation of carbon footprint of current coconut production and establish reduction plan in 10 farms pilot** |
| **Innovation** | • Establishes demo farms to **experiment regenerative agriculture practices and integrated Occupational Health & Safety practices in traditional coconut farming** |
| **Risks** | • Key risks include **insufficient infrastructure and high costs** |
| **Scalability** | • Demonstrates a **replicable model already implemented successfully**, with potential to reduce emissions through large-scale regenerative agriculture when scaled across multiple companies |

1. Current projection; 2. Occupational Health and Safety

symrise

# Bridging the gap – Vanilla

## *Symrise, Madagascar*

## Objective

**Vanilla-growing community empowerment through regenerative agriculture, diversified income streams, and child protection measures**

*Under implementation*

## Stakeholders

- **Symrise and Unilever** as anchor buyers and financiers
- **NGO - Save The Children, OSDRM (Aga-Khan Foundation), Bondy, RuralCap and Nitidae** for local support
- **Traditional communities & farmers** as producers
- **Local authority** for compliance

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Kick-off | **04/2024 – 06/2024** | ✓ |
| 2 | Program implementation among 5,000 vanilla farmers | **06/2024 – 03/2028** | ≈ |
| 3 | Scaling up – share and learn at sector wide level | **01/2028 – 07/2028** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Regen. Ag. implemented | Hectares | **5.000**[1] |
| Child rights improved | # | **+25,000 (50% female)** |
| Smallholder's income | Avg increase in % | **+20%** |

## Key aspects

| | |
|---|---|
| **SB COP alignment** | • Integrates **regenerative agriculture, boosts farmers' incomes, and strengthens climate resilience through reforestation, diversified livelihoods, and deforestation-free supply chains** |
| **Economic impact** | • **Increases 20% net household incomes while ensuring sustainable and stable supply of premium deforestation-free vanilla,** and align profitability through higher product value, stable supply, and cost-efficient, scalable implementation |
| **$CO_2e$ impact** | • Reduces carbon emission on the global value chain, reducing pressure for deforestation in agriculture, while **delivering climate-smart farm** advisory services adapted to household typologies and supporting collective approaches to resilience and adaptation to climate change |
| **Innovation** | • **Tailors farmer typology-based support**, increase child rights understanding and improve protection issues for over 25,000 children & youth & local stakeholders, and **test climate-resilient vanilla varieties in agronomic research centers** |
| **Risks** | • Key risk include **political instability** |
| **Scalability of impact** | • Demonstrates a **replicable model already implemented successfully**, with potential to reduce emissions through large-scale regenerative agriculture when scaled across multiple companies |

1. Current projection

# Troca Solidária

## *Terminal de Contêineres de Paranaguá, Brazil*

Enabler

### Objective

**Recyclable waste is exchanged for food and hygiene items to improve food security and ensure the proper disposal of over 570 tons of waste**

*Mature, generating stable results*

### Stakeholders

- **TCP – Terminal de Contêineres de Paranaguá** as project leader, financer, and implementer
- **Acquaplan Tecnologia e Consultoria Ambiental** as technical consultant
- **Associação de Catadores e Recicladores da Ilha dos Valadares** as community partner
- **Local / traditional island communities** as participants exchanging recyclables for food and hygiene items

### Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Partnership with the Association | **2015** | ✓ |
| 2 | Alignment with the Municipal Secretariat of Environment | **2015** | ✓ |
| 3 | Presentation of the project to the community | **2015** | ✓ |
| 4 | Project launch | **2015** | ✓ |

### Indicators

| KPI | Unity | Current values |
|---|---|---|
| Total recyclable waste collected | Tons | **+ 570** |
| Community engagement | # participants | **+900** |
| Number of campaign points established | Campaign points / communities | **8/6** |
| $CO_2e$ emissions avoided | Tons | **~855** |

### Key aspects

| | |
|---|---|
| **SB COP alignment** | • Aligns by **reducing GHG emissions, fostering strong community engagement, and promoting circularity** |
| **Economic impact** | • Ensures food security for traditional island communities and proper waste management, while avoiding a profit-driven approach for the private sector, it **secures long-term business continuity, regulatory goodwill, and a stronger sustainability profile** |
| **$CO_2e$ impact** | • Recycles 570 tons of waste to **reduce $CO_2e$ emissions by approximately 855 tons**, based on a study conducted by the Packaging Technology Center |
| **Innovation** | • Pioneers a **creative solution in southern Brazil with the "floating market"** (boat market) to address community challenges in areas accessible only by boat and without selective collection systems |
| **Risks** | • Key risks include **significant increases in the prices of goods that supply the market** |
| **Scalability of impact** | • Demonstrates a **replicable model for other coastal and riverside communities** that face challenges in waste management and food security |

**External links:** Troca Solidária na Ilha dos Valadares; 65 toneladas de materiais recicláveis; Mercado flutuante

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# Portfolio of Cases

## Positioning the bioeconomy as a strategic pillar – Finance

# China Shengmu's biodiversity and multi-capital assessment

## *Capital coalitions, China*

## Objective

**Measure and value Shengmu's impacts and dependencies across natural, social, human, and produced capitals to improve decision-making, investment, and well-being**

*Mature, generating stable results*

## Stakeholders

- **Shengmu** as corporate implementer and data owner
- **Capitals Coalition** as framework provider and convenor
- **GoldenBee Consulting** as environmental economics and valuation partner
- **Public authorities (environment & labor)** as regulatory and compliance bodies
- **Local/traditional communities & smallholder** farmers as upstream suppliers and community beneficiaries

1. The Economics of Ecosystems and Biodiversity; 2. Sustainable Development Goals; 3. Kunming-Montreal Global Biodiversity Framework

*Enabler*

CAPITALS COALITION

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Define objectives, scope & baseline | **2020–2021** | ✓ |
| 2 | Measure & value 33 impacts and dependencie | **2020–2021** | ✓ |
| 3 | Monetize results & validate with KPIs | **2021** | ✓ |
| 4 | Apply findings: integrate into risk mgmt & strategy | **2021–2022** | ✓ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| $CO_2e$ & air emissions | Tons / RMB | **1.65M** |
| Waste & manure use | Tons | **4.3M (430k tons fertilizer avoided)** |
| Desert restoration | RMB benefit | **677.2M** |
| Community benefits | RMB value | **260M** |

## Key aspects

**WG alignment**
- **Applies the Natural Capital Protocol and TEEB[1] framework**, aligns with the Paris Agreement, SDGs[2], and GBF[3]

**Economic impact**
- Generates **significant cost savings and mobilizes RMB 19.8 million in ecosystem services**, improving company profitability and resilience

**$CO_2e$ impact**
- Reduces GHG and waste gases, reuses 4.3 million tons of manure, and **sequesters major carbon via desert restoration**

**Innovation**
- Pioneers a **multi-capital framework that integrates natural, social, human, and produced capital** into corporate decisions

**Risks**
- Key risks include **exposure of negative impacts through transparent reporting**, but these are transformed into opportunities via mitigation actions

**Scalability**
- **Replicates the framework globally across agri-food sectors**, embeds data-driven risk, and enhances impact management

**External links:** Capital Coalition Assessment

# Amazon Connection

## *CNP Assurances BU Latam, Brazil*

## Objective

**Strengthening sustainable production chains in Amazonas with five community associations**

*Implemented, generating 1st results*

## Stakeholders

- **CNP Seguradora** as main sponsor and project lead
- **CNP Latam** as financial contributor
- **IDESAM (NGO)** for technical execution and local expertise
- **Community associations** for implementation and coordination
- **Indigenous peoples and local/traditional communities** as direct beneficiaries and producers
- **Small and Medium Enterprises (SMEs)** as participants in sustainable value chains

*Enabler*

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Technical assistance and logistical support | 06/24 - 06/25 ✓ |
| 2 | Structural improvements and installation of photovoltaic syst. | 08/24 - 03/25 ✓ |
| 3 | Agroforestry planting in Uatumã | 03/25 - 04/25 ✓ |
| 4 | Improved management and organizations | 06/24 - 06/25 ✓ |
| 5 | Market research | 01/25 - 06/25 ✓ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Value chains developed | # | 4 |
| Capacitation | # of trained people | 691 |
| Cost reduction | Avg reduction in oil mill prod. costs | -20% |
| Economic development | Value marketed by organizations (US$) | 500,000 |

## Key aspects

**WG alignment**
- Aligns with community-based bioeconomy, **linking environmental impact, productive inclusion, and long-term development**

**Economic impact**
- Contributes to community well-being through a **philanthropic approach without immediate financial returns**

**$CO_2e$ impact**
- Reduces $CO_2e$ emissions by fostering **sustainable production practices**

**Innovation**
- Promotes innovation through **photovoltaic systems, efficient machinery, and local management systems**

**Risks**
- Key risks include **scalability, community engagement, and long-term funding needs**

**Scalability**
- **Enables wider adoption by multiple companies**, supporting sustainable resource management aligned with the Paris Agreement

**External links:** Publicações - CNP Seguradora; Exame

# Scalable investment model for indigenous climate finance

## *Earthly Treasure, Suriname*

## Objective

**IPLC-led finance mechanism that monetizes ecosystem stewardship via tradable Biodiversity Units (BUs), anchoring private portfolios in a nature-positive asset class**

*Under implementation*

## Stakeholders

- **Earthly Treasure / The Landbanking Group** as platform developer, issuer and convener
- **Alalapadu & wider Sipaliwini IPLCs** as rights holders, stewards and local monitors
- **BioTara** as policy/dialogue partner
- **SGS & scientific partners** as MRV/verification and method advisers
- **Government of Suriname** as regulator
- **Foundation Le Grammont; Legacy Landscape Fund, Rainforest Trust (pending)** as early finance

*Enabler*

THE LANDBANKING GROUP

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | FPIC, governance & community contracts | **11/24 – 11/25** | ✓ |
| 2 | Training & baseline (hardware install; monitoring) | **02/25 – 07/25** | ✓ |
| 3 | Data analysis & BU issuance on Landler platform | **08/25 – 10/26** | ≈ |
| 4 | Expansion to Sipaliwini communities; annual payouts & community projects | **11/25 – 07/29** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Hectares protected | Hectares | **250,000** |
| $CO_2e$ stored | $MtCO_2$ | **91–184** |
| Local monitors | # | **25 employed/ trained** |
| Ecological integrity | Score | **>0.8 baseline** |

## Key aspects

**WG alignment**
- **Mobilizes climate finance** to protect Amazonian rainforests and supports indigenous stewardship; strengthens community resilience and values ecosystem services through a rights-based, people-first approach

**Economic impact**
- Creates a **recurring revenue stream (≥80% of BU proceeds to IPLCs)** and seasonal jobs for local monitors, strengthening community governance

**$CO_2e$ impact**
- Protects 250,000 hectares that currently **store ~91–184 million tons of $CO_2e$ and sequesters ~0.75–1.5 million tons of $CO_2e$ per year**, while expansion targets 775,000 hectares

**Innovation**
- Combines advanced MRV (eDNA, camera traps, bio-acoustics, remote sensing) with **tradable Biodiversity Units** on the Landler platform—creating a **nature-equity asset class**

**Risks**
- Key risks include **external extractive pressure, demand uncertainty for Biodiversity Units, community withdrawal, governance capture, and policy instability**

**Scalability**
- Implements a five-year phased plan with MRV, training, and issuance that **replicates across Sipaliwini (#775,000 hectares) and other countries**, while outcome-based finance attracts private portfolios

**External links:** Earthly treasure Website; Conservation Solutions (TLG); Suriname proposal

# VBIO.eco – Showcase of Brazilian Biodiversity

## *GSS, Brazil*

Enabler

GSS BRASIL PROTEGENDO O AMBIENTE

## Objective

**Connect socio-biodiversity projects with corporate sponsors through an online platform that ensures compliance, transparent monitoring, and measurable impact**

*Implemented, generating first results*

## Stakeholders

- **GSS Carbono e Bioinovação (VBIO.eco)** as platform operator and technical assistance provider
- **Corporate sponsors** as financiers and impact purchasers
- **NGOs / associations / cooperatives** as project proponents and implementers
- **Indigenous peoples & local/traditional communities** as project leaders and beneficiaries
- **Universities/research bodies** as monitoring and MEL partners
- **Public sector (Law 13.123/2015)** as compliance and benefit-sharing authority

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Platform concept & launch (COP22 & first version) | **2016 – 2019** | ✓ |
| 2 | First benefit-sharing & voluntary support projects | **2019 – 2023** | ✓ |
| 3 | Monitoring framework (MEL) & supply chain studies | **2023 – 2024** | ✓ |
| 4 | New platform restructuring & scale-up | **2025 – 2026** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Families benefited | # | **5,100** |
| Projects supported | # | **75** |
| Native area restored | Hectares | **1,076.6** |
| Native area conserved | Hectares | **5,909** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Strengthens **socio-biodiversity chains**, supports **fair benefit-sharing**, and **contributes to climate and restoration goals** |
| **Economic impact** | • **Mobilizes over US$ 3 million**, reduces transaction costs for companies, and enables shared funding for projects |
| **$CO_2e$ impact** | • **Restores and conserves more than 7,000 hectares of native areas, and protects 150 native species across 6 Brazilian biomes** |
| **Innovation** | • Provides a **digital platform with impact monitoring, transparent reporting, and technical support** to scale socio-biodiversity finance |
| **Risks** | • Key risks include **dependence on continuous funding rounds, limited corporate engagement, and vulnerability to climate change** |
| **Scalability** | • **Expands across Latin America (Peru, Colombia)** with potential to engage more sponsors and communities |

**External links:** VBio Website

# Amazon Bioeconomy Fund

***Inter-American Development Bank, Amazonian countries***

## Objective

**Unlocking private capital by valuing bioeconomy products and services with climate mitigation and adaptation results in Amazonia**

*Under implementation*

## Stakeholders

- **Green Climate Fund (GCF)** as anchor financier and enabler
- **IDB** as fund manager
- **National Governments & NDBs[2]** as co-financiers & executors
- **Civil Society, NGOs, Academia, Indigenous organizations** as implementation partners
- **SMEs & Smallholder Farmers** as direct beneficiaries
- **Women & Youth** as target beneficiaries

1. Current projection; 2. National Development Banks

*Enabler*

IDB Inter-American Development Bank

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Fund approval & design | **2020 – 2021** | ✓ |
| 2 | First GCF disbursement | **2022** | ✓ |
| 3 | Mid-term evaluation | **2026** | ≈ |
| 4 | End of implementation | **2029** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Direct beneficiaries | # | **191,952[1]** |
| Emissions avoided/reduced | $tCO_2e$ /year | **6.2 M[1]** |
| Resources to be leveraged | US$ | **719.1 M[1]** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • **Elevates bioeconomy to the COP spotlight by financing inclusive, low-carbon value chains** that cut emissions, curb deforestation, restore biodiversity, and uphold Indigenous and human rights |
| **Economic impact** | • **Leverages ~US$ 719 million by de-risking** early-stage ventures and attracting sustained private investment, **building on a fund envelop of US$ 598 million** |
| **$CO_2e$ impact** | • **Avoids or reduces 6.2 million $tCO_2e$ emissions annually** by conserving ecosystems and supporting sustainable production |
| **Innovation** | • Innovates with **financing instruments (loans, grants, equity, technical cooperation)** for financing solutions for bio-businesses |
| **Risks** | • Key risks include **linked to multi-country governance, early-stage ventures, and enabling policy gaps** |
| **Scalability** | • Demonstrates a **replicable model** as a *"lighthouse for conservation finance"*, creating **replicable mechanisms across Amazonia or other biodiversity-rich and climate-vulnerable regions** |

**External links:** IDB; IDB | Amazon Bioeconomy Fund

# BB Amazônia

***Inter-American Development Bank, Brazil***

## Objective

**Credit program to expand financing for bio-businesses and sustainable infrastructure across bioeconomy value chains in Brazil's Legal Amazon**

*Under implementation*

## Stakeholders

- **Banco do Brasil (BB)** as executing financial institution
- **IDB** as finance provider and technical cooperation partner
- **Indigenous Peoples, Local/Traditional Communities, SMEs, Smallholder Farmers, Women** as target beneficiaries

*Enabler*

IDB Inter-American Development Bank

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Investment loan approval (IDB) | **2025** ✓ |
| 2 | Credit disbursement & program implementation | **2025 – 2029** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Land under management | Hectares | **8,600**[1] |
| Emissions avoided/reduced | $tCO_2e$ | **867,800**[1] |
| Bio-businesses benefited | # | **11,700**[1] |

## Key aspects

| | |
|---|---|
| **WG alignment** | • **Elevates bioeconomy to the COP spotlight by financing inclusive, low-carbon value chains** that cut emissions, curb deforestation and restore biodiversity |
| **Economic impact** | • Leverages ~US$ 160 million through a financing structure that combines a **US$ 150 million credit line for sub-projects with a US$ 8.8 million investment grant for risk mitigation and US$ 1.5 million in technical cooperation** |
| **$CO_2e$ impact** | • **Avoids 867,800 $tCO_2e$ by conserving forests and managing 8,600 hectares sustainably** |
| **Innovation** | • **Pioneer a blended-credit model that channels BB's portfolio analytics, risk-mitigating grants, covenants** to finance bio-business assets and infrastructure and MRV-backed sustainability |
| **Risks** | • Key risks include **elite capture, land-tenure conflicts, and deforestation leakage; manage credit defaults, FX and policy shifts; prevent greenwashing** |
| **Scalability** | • Demonstrates a **replicable model to other biodiversity-rich and climate-vulnerable regions** by blending credit lines with de-risking instruments and technical cooperation through partnerships between local financial institutions and multilateral banks |

1. Current projection

**External links:** IDB; IDB

# Financing program for productive and sustainable development

***Inter-American Development Bank, Suriname***

## Objective

**Credit and technical assistance program to expand MSME[2] access to productive investments, with emphasis on bio-businesses**

*Under implementation*

## Stakeholders

- **National Development Bank of Suriname (NOB)** as public intermediary and executing financial institution
- **IDB** as finance provider and technical cooperation partner
- **MSMEs** as direct beneficiaries of loans

*Enabler*

IDB Inter-American Development Bank

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Investment loan approval (IDB) | **2024** | ✓ |
| 2 | Disbursement period | **2025 - 2029** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Land under management | Hectares | **2,092[1]** |
| Emissions avoided/reduced | $tCO_2e$ | **50,736[1]** |
| Bio-businesses benefited | # MSMEs | **100[1]** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Mobilizes blended climate finance to scale bioeconomy MSMEs, deploys sustainable value chains, and **delivers climate, biodiversity and land use benefits** |
| **Economic impact** | • De-risks credit via NOB to lower borrowing costs, boosts MSME productivity, and demonstrates **viable bio-business models** |
| **$CO_2e$ impact** | • **Reduces ~50,736 tons of $CO_2e$** by financing forest-positive MSMEs with de-risked credit and technical assistance, and supports sustainable harvesting, processing, and restoration |
| **Innovation** | • Innovates with **blended finance (loan, grant, technical assistance) to de-risk bio-business lending**, equips NOB with risk tools, and attracts private finance to forest-positive outcomes |
| **Risks** | • Key risks include **credit and foreign exchange risks, limited bankable pipeline, NOB capacity gaps, regulatory shifts, land/tenure safeguards, and climate/commodity shocks** |
| **Scalability** | • Demonstrates **a replicable model for other forest-rich regions**, as it combines **standardized MSME credit mechanisms, blended finance instruments, and institutional capacity-building** |

1. Current projection; 2. Micro, Small and Medium Enterprises

**External links:** IDB; IDB

# Produbanco - Loan with Biodiversity UoP

## *IFC, Ecuador*

## Objective

**Investment in Produbanco to drive sustainable growth in Ecuador through biodiversity, climate-smart agriculture, and SME financing, especially women-owned**

*Under planning*

## Stakeholders

- **IFC** for providing loan and credit insurance
- **Produbanco** as intermediary, facilitator and portfolio manager
- **SMEs** for projects implementation to generate biodiversity co-benefits
- **Agricultural producers** for a more resilient and sustainable food production system
- **NGOs** as technical partners biodiversity conservation and sustainable land management practices

*Enabler*

IFC

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Agreement between IFC and Produbanco | 01/25 -03/25 ✓ |
| 2 | Launch of biodiversity portfolio and identification of projects | 06/25 -12/25 ≈ |
| 3 | Financing of initial selected projects | 01/26 -06/26 ≈ |
| 4 | Monitoring and evaluation framework implementation | 07/26 -12/26 ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Finance women-owned SMEs | # | ***TBD*** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • **Mobilize sustainable finance** by supporting projects that seek to generate **biodiversity co-benefits, improve sustainable productive land use and management** and improve financial inclusion of SMEs with a focus on women |
| **Economic impact** | • **Structures financing to be profitable and sustainable**, mitigates credit risk through IFC credit insurance, diversifies exposure across SMEs and women-owned businesses, and secures disbursement via milestone-based loan structuring |
| **$CO_2e$ impact** | • Reduces greenhouse gas emissions by **promoting climate-smart agriculture and sustainable land management practices** |
| **Innovation** | • Introduces the **first financial instrument in Ecuador with fundings earmarked for biodiversity finance** |
| **Risks** | • Key risks include **credit risk of borrowers**, **project execution delays**, **regulatory changes**, and **environmental risk assessments** |
| **Scalability** | • Demonstrates a **replicable financial model that addresses biodiversity conservation and sustainable management of living natural resources** |

**External links:** IFC press release; Disclosure - Produbanco BIO

# BTG Pactual TIG - the reforestation fund loan

## *IFC, Brazil*

## Objective

**Sustainability-linked loan provided by IFC to support the BTG Pactual Timberland Investment Group's Latin America Reforestation Strategy**

*Under implementation*

## Stakeholders

- **IFC** as principal debt provider
- **BTG Pactual Timberland Investment Group (TIG)** as fund manager and project implementer
- **Conservation International** as NGO partner bringing conservation expertise
- **Microsoft** as corporate partner and offtaker
- **Netherlands Development Finance Company (FMO)** as development finance partner
- **UK Government's Mobilizing Finance for Forests facility** to catalyze private capital
- **Forest Stewardship Council (FSC)** as certifier
- **Local and Indigenous Communities** as land stewards and direct beneficiaries

*Enabler*

IFC

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Establish loan framework and sustainability targets | 06/24 -06/24 ✓ |
| 2 | Mobilize funds and commit the loans | 06/24 - 06/24 ✓ |
| 3 | Deploy funds into targeted reforestation/restoration projects | 01/25 - 12/25 ≈ |
| 4 | Measure environmental outcomes | 01/25 - 12/36 ≈ |
| 5 | Report sustainability metrics and outcomes annually | 01/25 - 12/36 ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Restoration of degraded land | Hectares | ***TBD*** |
| Expansion of watershed buffer zones | Hectares | ***TBD*** |
| Enhanced habitat connectivity | | ***TBD*** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Delivers positive **environmental impact** through reforestation, enhances **biodiversity**, and generates significant **socio-economic benefits in local communities** |
| **Economic impact** | • Maximizes the positive impact of restoration efforts through a sustainability-linked structure while **delivering competitive financial returns for investors and stakeholders, and mobilizing third-party capital** |
| **$CO_2e$ impact** | • Removes CO2 from the atmosphere through **reforestation projects, conserve and restore degraded land, and measure using verified carbon standards** |
| **Innovation** | • Differentiates the financing structure by **incorporating sustainability-linked incentives that reward progress in biodiversity, habitat connectivity, and water resource protection**, triggering better financial outcomes for the Fund if it meets specific KPIs |
| **Risks** | • Key risks include **financial market volatility, regulatory changes, climate-related risks** (including natural hazards), **lack of qualified labor and capacity, and carbon market volatility** |
| **Scalability** | • Offers a **scalable, replicable approach to large-scale nature-based climate and biodiversity solutions** that link financial incentives directly to measurable environmental outcomes and emissions reductions |

**External links:** IFC press release; Disclosure; Timberland Investment Group

# Amazônia Viva financial mechanism

## *IFC, Brazil*

## Objective

**Blended finance instrument to strengthen socio-biodiversity supply chains in the Amazon through credit access and technical assistance**

*Implemented, generating 1st results*

## Stakeholders

- **IFC** as first International Finance Institution investor
- **Natura** as anchor buyer and investor
- **VERT CAPITAL** for structuring and managing the CRA[1]
- **FUNBIO** for technical assistance to agro-extractivist cooperatives
- **Cooperatives and Associations** as borrowers and beneficiaries of technical assistance
- **Traditional communities and family farmers** as end-beneficiaries
- **IDB Invest, Fundo Vale, Global Environment Facility (GEF), Good Energies Foundation** as investors and partners

1. Certificate of Agribusiness Receivable

*Enabler*

IFC

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Mechanism structuring and CRA issuance | **10/23 -05/24** | ✓ |
| 2 | Adjustments of financial terms | **10/24 -02/25** | ✓ |
| 3 | Community access to CRA credits | **12/23 – ongoing** | ≈ |
| 4 | Strengthening E&S standards and supervision | **04/24 - ongoing** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Families reached | # families | **4,759** |
| Estimated carbon removal | $tCO_2e$/year | **26,658,217** |
| Technical assistance | # cooperatives | **16** |

## Key aspects

**WG alignment**
- Aligns with bioeconomy objectives enhancing climate resilience through **sustainable finance mechanisms**

**Economic impact**
- Provides affordable financing at a **sustainable interest rate (10%)**

**$CO_2e$ impact**
- **Reduces CO2 emissions by an estimated 26,658,217 tons $CO_2e$ per year** by preventing deforestation and improving forest management

**Innovation**
- Establishes an **innovative blended finance instrument,** leveraging Natura's socio-biodiversity input purchase forecast as a guarantee and IFC's expertise to sustainably finance rural producers

**Risks**
- Key risks include **supplier exclusion, capacity gaps, environmental and social challenges, access to finance, and low offtaker participation**

**Scalability**
- **Expands access to finance, build a financial track record for agroextractivist cooperatives and associations, reduce reliance on concessional funds**, and enhance emissions reductions and resource efficiency

**External links:** LIVING AMAZON FINANCING MECHANISM; Valor Econômico; IFC Press release; IEMA; HIVE

# Blue ocean fund – Venture capital for ocean biodiversity

## *SWEN Capital, France*

Enabler

SWEN Capital Partners

## Objective

**Venture capital fund that invests equity into 20–25 early-stage companies developing ocean-focused climate and biodiversity innovations**

*Mature, generating stable results*

## Stakeholders

- **SWEN Capital Partners** as fund manager and steward of impact strategy
- **Institutional LPs & Bpifrance** as capital providers and co-investors
- **IFREMER** as scientific partner and diligence support
- **Portfolio startups (20–25 ventures)** as solution developers and impact drivers
- **NGOs / 1000 Ocean Startups** as ecosystem builders and pipeline partners
- **Public regulators (EU)** as disclosure/Article 9 oversight

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Fund design & first close (€120M) | **2021** | ✓ |
| 2 | Investment in 14–18 ventures | **2022 – 2023** | ✓ |
| 3 | Impact KPIs (Ocean Navigator) & reporting | **2022 – 2024** | ✓ |
| 4 | Scale-up: Blue Ocean 2 & global startup ecosystem | **2025 – 2027** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| $CO_2$ avoided | $tCO_2e$ | **318,000** |
| Biodiversity preserved | Tons biomass | **3–20T** |
| Investments made | # Companies | **14–18 startups backed** |
| Fund size | € | **170M closed** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • **Mobilizes climate finance** to back early-stage, ocean-positive innovations that protect biodiversity and drive sustainable solutions |
| **Economic impact** | • Deploys €170M into 18 startups, **delivering competitive LP returns and achieving two exits** |
| **$CO_2e$ impact** | • **Avoids 318,000 $tCO_2e$** via decarbonization and circular ocean solutions |
| **Innovation** | • Leverages pioneering **thematic VC strategies such as eDNA, cultivated seafood, marine decarbonization, and real-time monitoring** |
| **Risks** | • Key risks include **finding pipeline of investable ventures, market adoption of novel ocean technologies, regulatory hurdles in blue economy** |
| **Scalability** | • Demonstrates a **replicable model by expanding into Blue Ocean 2 fund**, targeting 20–25 new ventures and building a global ecosystem of 1000 Ocean Startups |

# Biodiversity units' pilot to strengthen resilience and income for forest

***Terrasos, Brazil***

## Objective

**Biodiversity habitat bank to generate and sell certified biodiversity units through community partnerships, private investment, and tech-enabled monitoring**

*Under implementation*

## Stakeholders

- **Terrasos** as project developer and coordinator
- **Natura** as offtaker and value chain integrator
- **IDB Lab** for finance and risk mitigation
- **Local / Traditional Communities** as implementer

*Enabler*

TERRASOS

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Stakeholder engagement and gov. scheme for habitat bank | **12/24 -03/25** | ✓ |
| 2 | Identify areas and sign binding agreements w/ prop. owners | **01/25 -10/25** | ≈ |
| 3 | Secure 50% of biodiversity units in offtake commitments | **10/25 –12/25** | |
| 4 | Management, monitoring & evaluation plan | **01/26 -03/26** | |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Carbon reduction | $tCO_2e$ over 5 years | **55,000–73,000**[1] |
| Land assessed | Hectares | **3,400** |
| Habitat bank | Hectares | **500**[1] |

## Key aspects

| | |
|---|---|
| **WG alignment** | • **Captures CO2 while boosting biodiversity and strengthening resilience of forest-dependent communities** in Pará through sustainable forest management |
| **Economic impact** | • Improves corporate value chain resilience by **mobilizing US$ 15M in private investment**, **with Natura anchoring demand for biodiversity units and IDB Lab de-risking early-stage structuring** |
| **$CO_2e$ impact** | • **Sequesters 6–8 tC/ha/year across 500 ha** (equivalent to 55,000–73,000 $tCO_2e$ over 5 years), while restoring and conserving at least 1,000 ha for 30 years |
| **Innovation** | • **Pioneers one of Brazil's first biodiversity unit models, leveraging blockchain traceability, TNFD/SBTN/GRI alignment, and tech-enabled MRV** to ensure transparent reporting on biodiversity, carbon, and long-term financing |
| **Risks** | • Key risks include **regulatory uncertainty, operational challenges in remote Amazon areas, climate variability, land tenure issues, and evolving market demand for biodiversity units** |
| **Scalability** | • Demonstrates a **replicable model to other regions because it combines standardized protocols, traceability technology, and alignment with international frameworks** |

1. Current projection

**External links:** Terrasos; Terrasos Habitat Banks and Biodiversity Units; Biodiversity units protocol

# AMAZ Impact Accelerator

## *Vale, Brazil*

## Objective

**Accelerator program for impact businesses in the Amazon to develop sustainable solutions for the sociobioeconomy**

*Mature, generating stable results*

## Stakeholders

- **Idesam** as structuring and implementation partner
- **Vale & impact investors** as funders and ecosystem partners
- **Portfolio startups/SMEs** as accelerated businesses
- **Indigenous peoples & local/traditional** communities as beneficiaries and enterprise leaders
- **Universities/research institutions** as mentors and knowledge partners
- **Public sector** as policy alignment and co-investment enablers
- **NGOs / ecosystem builders** as pipeline and capacity partners

*Enabler*

VALE

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Mapping & selection of impact businesses | **2021–2025** | ✓ |
| 2 | Pre-acceleration & entry investments | **2021–2026** | ≈ |
| 3 | Acceleration cycles, mentoring & portfolio management | **2021–2030** | ≈ |
| 4 | Co-investment, follow-on & strategic networking | **2022–2030** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Forests conserved/ restored | Hectares | **433,000** |
| Families benefited | # | **713** |
| Businesses accelerated | # | **17** |
| Leveraged capital | R$ | **19.8M** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Advances Brazil's Sociobioeconomy Plan, **fostering inclusive value chains linked to conservation and restoration** |
| **Economic impact** | • **Generates R$19.8 million in leveraged capital, supports #17 enterprises**, and creates investment opportunities in bioeconomy sectors |
| **$CO_2e$ impact** | • **Conserves or restores 433,000 hectares, indirectly reduces emissions**, and preserves biodiversity |
| **Innovation** | • **Blends finance models (grants + private capital)** with hands-on acceleration, and combines financial returns with socio-environmental goals |
| **Risks** | • Key risks include **limited investment pipeline, low risk appetite among investors, and financial fragility of early-stage businesses** |
| **Scalability** | • Designs **mechanisms for replication, leverages philanthropic and commercial capital, and expands support across Amazon bioeconomy chains** |

**External links:** Report 2024

# Sustenta.bio

## *Vale, Brazil*

## Objective

**Multi-stakeholder initiative funded through philanthropic grants to strengthen sociobiodiversity production in Amazon protected areas**

*Under implementation*

## Stakeholders

- **ICMBio** as co-lead
- **Fundo Vale** as co-lead and grant provider
- **Amoreri (NGO)** as local partner
- **Asproc (NGO)** as community-based organization
- **Idesam (NGO)** as technical partner
- **IFT (NGO)** as knowledge provider
- **Instituto Mamirauá (NGO)** as research and monitoring partner
- **OPAN (NGO)** as facilitator for indigenous and traditional peoples' participation
- **Local / Traditional Communities** as producers and implementers of sociobiodiversity chains

*Enabler*

VALE

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Form the alliance & define governance | 2023 - 2024 | ✓ |
| 2 | Co-design & approve community proposals | 2023 – 2024 | ✓ |
| 3 | Strengthen productive arrangements | 2024 – 2027 | ≈ |
| 4 | Ongoing monitoring & field visits | 2024 – 2027 | ≈ |
| 5 | Measure impacts & attract new investors | 2025 – 2027 | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Number of people impacted | # families | **3,000**[1] |
| Income increase | Avg income increase in % | **50%**[1] |
| Production volume growth | Avg income increase in % | **50%**[1] |
| New investors attracted | # investors | **+2** |

## Key aspects

**WG alignment**
- **Strengthens the sociobiodiversity economy** and qualify production with access to new markets, generating increased social, economic, and environmental benefits for community enterprises in protected areas

**Economic impact**
- Recognizes that these **businesses are still in pre-competitive stages and require philanthropic investment**, while value the Amazon rainforest at R$ 1.5 trillion a year, according to World Bank estimates

**$CO_2e$ impact**
- Quantifies and communicates the contribution of **standing forest preservation to reducing greenhouse gas emissions**

**Innovation**
- Promotes **public-private partnerships to strengthen production chains in protected areas**, a strategy still little used in Brazil but with potential to boost the forest economy

**Risks**
- Key risks include **impacts of climate change on production chains and lack of market interest in paying for sociobiodiversity products**

**Scalability**
- **Scales up production chains in protected areas of the Amazon to keep the forest standing** and supports Brazil in tackling its largest emissions source — deforestation

1. Current projection

**External link:** Fundo Vale | Sustenta Bio - Fundo Vale

# Bio-Economy in Action

## *Zurich Insurance Group, Global*

### Objective

**Corporate strategy to achieve net-zero operations by 2030 by investing in early, science-based carbon removal (CDR) solutions, funded through an internal carbon price**

*Implemented, generating first results*

### Stakeholders

- **Zurich Insurance Group** as the project leader, funder, and climate strategy driver
- **Institutions** as direct recipients of funding to scale high-quality, science-based carbon removal solutions

*Enabler*

ZURICH

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Define CDR strategy and execute pre-purchase agreements | **01/21 – 12/29** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| $CO_2e$ emissions against 2019 baseline | % reduction | **60% (2025)**<br>**70% (2029)**<br>**100% (net-zero)** |

## Key aspects

| | |
|---|---|
| **SB COP alignment** | • Supports scalable bioeconomy solutions that **enable carbon capture and removal** |
| **Economic impact** | • Aligns climate goals with profitability by **using internal carbon pricing, funding CDR through an internal carbon fund (>US$ 2mn in 2024 at US$ 55/t$CO_2e$)**, and progressively increasing the carbon price through 2030 |
| **$CO_2e$ impact** | • Reduces $CO_2$ impact by **cutting absolute emissions 60% by 2025, 70% by 2029, and achieving net-zero operations by 2030**, complemented by carbon removal investments |
| **Innovation** | • Drives innovation by **investing in high-quality, science-based CDR solutions that scale new technologies**, set higher standards, and inspire wider net-zero adoption |
| **Risks** | • Key risks include **technology and delivery risk, as well as measurement challenges** |
| **Scalability of impact** | • Scales impact by investing in **carbon removal that supports net-zero goals, boosts innovation, aids rural economies, builds resilience, and delivers affordability and social benefits** |

SUSTAINABLE
BUSINESS
COP30

# Portfolio of Cases

## Positioning the bioeconomy as a strategic pillar – Technology

# Monitoring medical patents containing biodiversity
## *ABIFINA, Brazil*

## Objective

**Database with Brazilian patents for medicines using native and exotic biodiversity as active ingredients, identifying patent holders, species used, and their applications**

*Mature, generating stable results*

## Stakeholders

- **ABIFINA** as project owner and database developer
- **Academia / Research Institutions** for scientific validation and studies
- **Large Corporations** as potential technology adopters and commercial partners

*Enabler*

ABIFINA
Associação Brasileira das Indústrias de Química Fina, Biotecnologia e suas Especialidades

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Construction of the database | **03/22 - 07/24** ✓ |
| 2 | Weekly updates | **03/22 - 07/26** ≈ |
| 3 | Annual reports | **07/25 - 07/26** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Species identification | # patents | **1500** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Contributes directly to the bioeconomy and health resilience by **fostering biotech solutions and enabling new technological applications** |
| **Economic impact** | • **Leverages ABIFINA's own budget** and the work of the Intellectual Property specialist who builds, updates, and analyzes the database weekly |
| **$CO_2e$ impact** | • Promotes research and development projects to strengthen the bioeconomy value chain with environmental and social responsibility, **indirectly reducing $CO_2e$ impacts** |
| **Innovation** | • Brings identified and mapped **information on promising native and exotic species, SISGEN registrations, and therapeutic indications** to foster innovation |
| **Risks** | • *No relevant risks identified in the project implementation* |
| **Scalability** | • Provides information to **enhance Brazil's productive capacity** using native and exotic species for medicine production |

**External links:** ABIFINA - Associação Brasileira das Indústrias de Química Fina

# Geospatial Intelligence to Power the Amazon Bioeconomy

***Bioverse, Brazil***

## Objective

**Geospatial intelligence tools to help forest cooperatives harvest and sell non-timber forest products**

*Mature, generating stable results*

## Stakeholders

- **Bioverse** as technology provider and project lead
- **Indigenous peoples & local/traditional communities** as harvesting cooperatives and primary users
- **SMEs in NTFP chains** as supply-chain partners and adopters
- **Public sector/regulators** as compliance and permitting bodies

*Innovation model*

BIOVERSE
TRANSFORMING BUSINESS WITH NATURE

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | UAV data collection & AI model training | **2025** | ✓ |
| 2 | Ground truth validation & forest inventory | **2025** | ✓ |
| 3 | Mobile app deployment & harvest support | **2025** | ✓ |
| 4 | Supply chain integration & scaling | **2025** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Area scanned | Hectares | **60,000** |
| Species monitored | # | **10** |
| Harvesters engaged | # | **Cooperative-level** |
| Revenue potential | Multiplier | **10–40 X** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Strengthens inclusive **bioeconomy chains, enables sustainable forest use, and supports biodiversity-based livelihoods** |
| **Economic impact** | • Reveals **10–40 times more earning potential** for cooperatives by improving harvest predictability and efficiency |
| **$CO_2e$ impact** | • Focuses on biodiversity monitoring and conservation of non-timber forest products rather than carbon, and promotes **sustainable forest management** |
| **Innovation** | • Provides a p**roprietary multispectral unmanned aerial vehicle payload, unique mid-canopy palm detection algorithms, and a field-tested app for cooperative use** |
| **Risks** | • Key risks include **exposure to climate events (droughts, fires) and criminal activity (illegal mining, logging, trafficking)** that may disrupt operations |
| **Scalability** | • Delivers technology ready for **rapid replication across the Amazon and other tropical regions**, and adapts for multi-country deployment |

**External links:** Bioverse Website; The Amazon Greenventory

# The Sustainable Biorefinery

## *Borregaard, Norway*

## Objective

**Borregaard ASA's biorefinery turning wood waste into sustainable biochemicals that replace petroleum products across multiple industries**

*Implemented, generating first results*

## Stakeholders

- **Borregaard ASA** as operator of the biorefinery
- **Confederation of Norwegian Enterprise** as advisors
- **Government & Public Sector** for co-finance, regulation, and enabling compliance

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Pilot phase | **2013 - 2017** | ✓ |
| 2 | Commercial demonstration | **2016 - 2020** | ✓ |
| 3 | Scaling and expansion | **2020 - 2023** | ✓ |
| 4 | Global expansion | **2024 - 2027** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| $CO_2$ Reduction | % reduction vs. petroleum alternatives | **70%** |
| IRR | % | **>15%** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Aligns with the bioeconomy by **transforming renewable wood residues into high-value biochemicals** that replace fossil-based inputs across industries, thereby fostering a **circular, resource-efficient economy** |
| **Economic impact** | • Achieves a **ROCE and IRR above 15% pre-tax** on expansion investments, while scaling an innovation that, despite high infrastructure costs, has shown steadily increasing turnover and strong market demand |
| **$CO_2$e impact** | • Shows a **$CO_2$ impact of around 70% reduction** compared to petroleum-based alternatives, demonstrated with the **LignoBrite bio-based polymer** and validated by independent lifecycle analysis |
| **Innovation** | • Stands out by **fully valorizing wood into bio-based products** and pioneering innovations like **LignoBrite with 70% $CO_2$ reduction**, offering multi-sector petroleum-free alternatives that close the implementation gap |
| **Risks** | • Key risks include **high capital costs of infrastructure, challenges in scaling, dependence on regulatory support, uncertain market adoption, and growing global competition** |
| **Scalability** | • Supports the Paris Agreement's climate targets while promoting efficient natural resource management through **full utilization of wood residues and displacement of fossil feedstocks across multiple industries** |

**External links:** Borregaard - The Sustainable Biorefinery

# I'm green™ - leveraging bio-based chemicals

## *Braskem, Brazil*

## Objective

**Bio-based polyethylene and expanded portfolio of plant-based chemicals, which deliver fossil-equivalent performance, using sugarcane ethanol**

*Mature, generating stable results*

## Stakeholders

- **Braskem** as project leader and producer
- **Sustainea** as financing structure
- **Sojitz** as investors
- **Large corporations, SMEs** as buyers and sugarcane providers

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Technological research & pilot plant | **2006 -2030** | ✓ |
| 2 | Construction & assembly | **2009 -2010** | ✓ |
| 3 | Operational industrial plant | **2010 -2030** | ✓ |
| 4 | Capacity increase | **2023** | ✓ |
| 5 | Portfolio expansion and expansion target | **2023 - ongoing** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| GHG emissions avoided | Tons $CO_2e$ | **~8 million** |
| Carbon footprint | Tons $CO_2e$ capt./ t of PE[1] produced | **2.12** |
| Global presence | # countries | **+40** |
| Diversified customer portfolio | # clients | **+200** |

## Key aspects

**WG alignment**
- Showcases a technological solution that uses sugarcane on <1% of Brazil's land to **produce bio-based plastics that replace fossil fuel derivatives** and create inclusive value chains for farmers and industries worldwide

**Economic impact**
- Aligns with **private sector profitability by combining US$ 487M + US$ 87M investments with a 60/40–70/30 debt-to-equity financing model, leverage incentives to lower costs**

**$CO_2e$ impact**
- **Avoids the emission of ~8 mm t $CO_2e$** since 2010 with I'm green™ bio-based PE, and **capture 2.12 t $CO_2e$ for every ton of PE produced**, measured up to Braskem's gate

**Innovation**
- Pioneers the **world's first industrial-scale bio-based polyethylene, validates it through LCA, and expands into drop-in bio-based MEG & MPG[3] via Sustainea's technology**, which integrates seamlessly into existing supply chains

**Risks**
- *No relevant risks identified in the project implementation*

**Scalability**
- Demonstrates a replicable model that could be scaled across industries, **cutting emissions with I'm green™ bio-based plastics while expanding impact through resource-efficient sugarcane feedstock**

1. Polyethylene; 2. Life Cycle Assessment; 3. Monoethylene Glycol & Monopropylene Glycol

**External links:** Sustainea - Innovation in renewable chemicals; I'm green bio-based

# AçaíBot

## *KAA TECH, Brazil*

## Objective

**Low-cost, portable robot (“AçaíBot”) that climbs palms, cuts and collects açaí clusters to increase yields and incomes**

*Under planning*

## Stakeholders

- **KAA TECH** as project leader, technology developer, and implementation manager
- **Local/Traditional communities** as primary AçaíBot operators

*Innovation model*

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Assessment & feasibility | **2022** ✓ |
| 2 | Impct assessments; technology customization | **2022 - 2024** ✓ |
| 3 | Community meetings; site selection | **2024 - 2025** ≈ |
| 4 | Deploy 100 units; training program; monitoring & analysis | **2026** |
| 5 | Scale to 1,000 units; partnerships & training | **2026 - 2027** |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Productivity increase | % harvested açaí vs. manual | **+122% Native** **+180% Cultivated** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • **Advances standing-forest bioeconomy with safer, more profitable extraction**; values women’s work and community income |
| **Economic impact** | • Replaces risky manual climbing; **boosts yields/quality and reduce labor time**; **increases household cash flow and accelerates capital recovery** |
| **$CO_2e$ impact** | • **Reduces deforestation pressure** by valuing forest as a productive asset; encourages sustainable management and lower waste |
| **Innovation** | • Transforms açaí harvesting with a **lightweight, rainforest-adapted robot that triples productivity and improves safety** |
| **Risks** | • Key risks include **device reliability/maintenance in humid rainforest, supply-chain and financing, land tenure/permits, local price sensitivity (R$/kg)** |
| **Scalability** | • Demonstrates a **replicable model for cohort expansion (from 100 to 1,000 units)** by leveraging a local trainer approach, implementing continuous M&E, and building partnerships with cooperatives, public programs, and offtakers |

**External links:** Instagram; KAATECH ; Youtube ; Amazônia ; SENAR ; Kalkine ; PARÁ ; Diário do Pará ; Belem-Negocios ; REAL RADIO ; SENAR ; AGENCIAPARA

# Amazon 4.0: remote bioactive drying monitor and AI drones for forest inventory

## *Natura, Brazil*

## Objective

**IoT devices for remote bioactive drying and AI-powered drones for precise, large scale and high-speed forest inventory**

*Implemented, generating 1st results*

## Stakeholders

- **Natura** as project leader and idealizer
- **BNDES** for co-financing
- **EMBRAPII** for applied research & industrial innovation support
- **FINEP** for funding
- **SENAI and Bioverse** as technical partner
- **Local & Traditional Communities / Smallholder Farmers** as direct users

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Device development and testing requirements gathering | 2021 - 2022 | ✓ |
| 2 | Initial viability assessments and drone testing | 2021 - 2022 | ✓ |
| 3 | Field testing IoT and drones with communities | 2023 - 2025 | ≈ |
| 4 | Scaling up | 2025 – ongoing | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Time reduction | % | **99%** |
| Data accuracy | % | **95%** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Conserves standing forests with IoT and AI, **reducing emissions, preserving species, and generating community income** |
| **Economic impact** | • **Cuts inventory time by ~99%** and cycle time from 9 months to 2 day, improving quality, reducing waste, and **delivering strong financial and supply-chain returns** |
| **$CO_2e$ impact** | • Reduces carbon impact by **valuing standing forests** as living assets, **avoiding emissions from deforestation** |
| **Innovation** | • Boosts **tree-species identification accuracy to ~95%** with AI drones and more effective drying process for bioactive production, empowering Amazon communities and scaling inclusive conservation |
| **Risks** | • Key risks include **unclear land tenure, high upfront costs, scarce skilled labor, weak market demand, environmental insecurity, and policy delays** |
| **Scalability** | • Demonstrates a **replicable Drone/AI model that reduces survey trips by ~99% and standardize quality with IoT**, cutting waste and travel emissions and enabling data-driven, Paris-aligned resource management |

**External links:** Drones VTOL; SENAI

# More intelligence, more cocoa

## *Nestlé, Brazil*

Enabler

## Objective

**Project under the Nestlé Cocoa Plan, partnering with over 100 family-owned cocoa farms to boost productivity and profitability, supported by a 24/7 chatbot TA[1] for participants and the other 6,500 Nestlé Cocoa Plan farmers**

*Implemented, generating 1st results*

## Stakeholders

- **Nestlé Brazil** as project leader and financier
- **Labor Rural** as technical advisor
- **Cool Farm Tool** as measuring tool for carbon
- **Traditional communities & farmers** as producers

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Selection of farms, kick-off and onsite visit | **01/23 – 06/23** ✓ |
| 2 | Donation of seedlings and intermediate results report | **01/24 – 10/24** ✓ |
| 3 | Cool farm tool (CO2 measurement) and onsite visit | **11/24 – 11/26** ≈ |
| 4 | Final report – consolidated results | **11/26 – 12/26** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Farm productivity | % increase in t of cocoa/ha | **~18%** |
| Farm profitability | % increase in net profit margin | **~44%** |

## Key aspects

**WG alignment**
- Combines **data-driven sustainable cocoa farming with productivity gains and active engagement of smallholder farmers and local communities**, contributing to climate mitigation, biodiversity conservation, efficient land use, and improved livelihoods

**Economic impact**
- Delivers a **44% increase in net profit margin and an 18% productivity gain in its first year** (2023 x 2024 harvest), proving a strong return on investment through affordable, scalable interventions

**$CO_2e$ impact**
- Establishes a carbon footprint baseline for Brazilian cocoa farms with the Cool Farm Tool, set reduction targets, and **promote sustainable practices to lower emissions**

**Innovation**
- Provides **free technical assistance 24/7 through the Theo Chatbot**, **enables real-time $CO_2$ measurement with the Cool Farm Tool**, and distributes high-productivity clonal seedlings to boost yields without expanding land use

**Risks**
- Key risks include **farmer turnover, low engagement,** and **adaption practices to different types of farmers profiles**

**Scalability**
- Demonstrates a **replicable model that applies CO2 monitoring via the Cool Farm Tool, deploys high-yield clonal seedlings, and scales regenerative practices** to decrease agricultural GHG related emissions

1. Technical assistance

**External links:** Press release

# Case study of circular bioeconomy

## *Novamont, Italy*

## Objective

**Promote a circular bioeconomy model through territorial regeneration and environmental protection, developing bio-based, biodegradable, and compostable products**

*Mature, generating stable results*

## Stakeholders

- **Novamont** as leader and investor
- **Versalis** as Joint venture partner and owner
- **SPRING Cluster, Re Soil Foundation** (NGO) as partners
- **Italian and EU regulators** as policy makers
- **Farmers & Local communities** as producers

*Innovation model*

NOVAMONT

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Establishment & industrial reconversions | **1990 – 2012** | ✓ |
| 2 | Expansion of biopolymer and bioproduct plants | **2011 – 2018** | ✓ |
| 3 | New technologies, partnerships & acquisitions | **2016 – 2023** | ✓ |
| 4 | Full integration under Versalis & scaling R&D | **2023 – 2025** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| $CO_2$ reduction | $tCO_2e$ | **240,000** |
| Regenerated sites | % | **96%** |
| Circularity index | % turnover | **66%** |
| Organic waste collected | kg/capita/year | **88** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Promotes **EU circular bioeconomy goals, soil health, and low-carbon transitions** |
| **Economic impact** | • Generates **€285 million turnover in 2024, leverages €800 million investment**, and creates jobs and agricultural partnerships |
| **$CO_2e$ impact** | • Achieves **240 kilotons of $CO_2$ equivalent decarbonization** from Mater-Bi and Origo-Bi, while biobased BDO delivers a 50% lower footprint |
| **Innovation** | • **Develops 13 proprietary technologies, manages 137 patent families, and drives over 1,600 patents/applications** in bioplastics and bioproducts |
| **Risks** | • Key risks include **regulatory barriers limiting bio-based sector scaling and challenges in upscaling innovative processes** |
| **Scalability** | • Demonstrates a **replicable circular model that connects agriculture, industry, and waste management**, and replicates across the EU and globally |

**External links:** 2024 Impact Report; 2023 Sustainability Report

# From CO2 to protein

## *Novonesis, Denmark*

## Objective

**Electrochemical processes to convert CO2 into acetate and transformation into protein through fermentation, for human consumption**

*Under implementation*

## Stakeholders

- **Novonesis** as project leader for microbial engineering
- **Topsoe** for expertise in catalysis and process technologies
- **Bill & Melinda Gates Foundation, Novo Nordisk Foundation** for funding
- **Northwestern University, Aarhus University & Novo Nordisk Foundation, University of Copenhagen, Wageningen University,** for academic research

1. Acetate, protein has been produced, but target cost not met yet

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Proof of Concept | **2023 – 2025** ✓ |
| 2 | Optimization of production and integrated pilot process | **2025 – 2027** ≈ |
| 3 | Demo plant design, construction & regulatory approval | **2027 - 2029** |
| 4 | Industrial Implementation | **2029** |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| $CO_2$ utilized | t/day | ***TBD***[1] |
| Project budget planned | € | **27** |
| Pilot fermentation scale | Liters fermenters | 1,500 |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Showcases a technological solution that offers a **near-term pathway to cut emissions, enhances food security, and demonstrates private-sector leadership in delivering Paris Agreement–aligned, nature-positive solutions** |
| **Economic impact** | • Targets **competitive protein costs (< US$ 3–5/kg) de-risked through € 27m in foundation funding, enabling positive NPV and 15–20% IRR potential** once scaled |
| **$CO_2$e impact** | • **Reduces emissions and avoid the need for agricultural land use** |
| **Innovation** | • Couples **$CO_2$-to-acetate conversion (via electrochemistry and gas fermentation) with engineered microbes that grow on acetate to produce food proteins**, creating land-free, scalable nutrition from emissions |
| **Risks** | • Key risks include **scale-up to target cost and quality, integration of complex processes, regulatory approval of novel foods, consumer acceptance, and reliable access to clean $CO_2$ and low-cost renewable energy** |
| **Scalability** | • Demonstrates a replicable model that, if scaled, **could leverage the annual $CO_2$ output from the cement industry in Egypt to enable protein production sufficient to feed up to 1 billion people per year** |

**External links:** Transforming emission into nutrition | Novonesis; Novo Nordisk Fonden

# Healthier feeds at lower cost

## *Novonesis, Denmark*

## Objective

**Improve poultry feed efficiency and farm economics with a biosolution that removes bacterial cell debris in the gut, enhancing nutrient absorption and reducing feed required**

*Mature, generating stable results*

## Stakeholders

- **Novonesis** as technology developer and supplier
- **Poultry farmers** as adopters and direct beneficiaries (cost & productivity)
- **Feed manufacturers** as integrators of the additive in rations
- **Academia & research institutions** as validation/knowledge partners
- **Public sector/regulators** as approval and market-enabling bodies

*Innovation model*

novonesis

## Implementation

| Step | | Period |
|---|---|---|
| 1 | R&D and formulation of biosolution | **Completed** ✓ |
| 2 | On-farm validation of feed efficiency | **Completed** ✓ |
| 3 | Commercial deployment with farmers & feed mills | **Mature / global rollout** ✓ |
| 4 | Monitoring, reporting & policy engagement | **Ongoing** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| $CO_2$ avoided | $tCO_2e$/year | **~4,200,000** |
| Feed efficiency | % more product | **+3% output with same feed.** |

## Key aspects

**WG alignment**
- Showcases a technological solution that delivers fast, **scalable mitigation by reducing feed use per kilogram of chicken**; supports Paris-aligned goals and SB COP's biosolutions agenda

**Economic impact**
- **Represents up to 70% of farm cost; improves productivity by 3%** with the same feed, lowering costs and increasing margins

**$CO_2e$ impact**
- **Avoids around 4.2 million tons of $CO_2$ equivalent per year** by reducing feed production emissions

**Innovation**
- Introduces **a unique gut-health mode that removes bacterial cell debris to improve nutrient uptake**, and builds a strong innovation engine with **11% of sales invested in R&D and about 30% of sales from products launched in the last five years**

**Risks**
- Key risks include **regulatory acceptance, variable on-farm performance, and integration challenges at feed mills**

**Scalability**
- Demonstrates a **replicable model that expanded globally through feed makers and poultry integrators**, could unlock broader biosolutions potential equivalent to **4.3 billion tons of $CO_2$**

# The hot topic of cold wash

## *Novonesis, Denmark*

## Objective

**Enable effective cold-water laundry with enzyme biosolutions that cut surfactants and energy use while maintaining (or improving) cleaning performance**

*Mature, generating stable results*

## Stakeholders

- **Novonesis** as technology developer and supplier
- **Detergent producers & retailers** as formulators/offtakers integrating enzymes
- **Consumers/households** as end-users benefiting from cold-wash savings
- **Academia & research institutions** as validation and knowledge partners
- **Public sector/regulators** as approval and market-enabling bodies



## Implementation

| Step | | Period |
|---|---|---|
| 1 | R&D and formulation of enzymatic biosolutions | **Completed** ✓ |
| 2 | Co-development & on-wash validation with detergent brands | **Completed** ✓ |
| 3 | Commercial rollout in cold-wash detergents | **Mature, global availability** ✓ |
| 4 | Monitoring impact & policy engagement for cold-wash adoption | **Ongoing** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| $CO_2$ avoided | $MtCO_2e/yr$ | **3.3** |
| Electricity saved | MWh/year | **12** |
| Chemicals avoided | Tons/year | **170,000** |
| Population reached | % world pop | **~50%** |

## Key aspects

**WG alignment**
- Showcases a technological solution that delivers fast mitigation via **lower wash temperatures** and **reduced chemicals**, supporting Paris goals and SB COP priorities on biosolutions

**Economic impact**
- Lowers energy bills from cold washing, **achieves up to 30% surfactant reduction with the same high performance**, and enables cost-efficient formulations

**$CO_2e$ impact**
- **Avoids 3.3 million tons of $CO_2$ equivalent per year and saves 12 million MWh**; switching from 40 °C to 30 °C in Europe would cut an additional 2.7 million tons of $CO_2$ equivalent per year

**Innovation**
- **Introduces enzymes (e.g., Pristine®, Luminous®)** that enable cold-wash cleaning, malodor removal, and brightness; invests 11% of sales in R&D, with around 30% of sales from products launched in the last five years

**Risks**
- Key risks include **regulatory acceptance of new additives, consumer behavior linked to temperature habits, and variable performance across water and washer conditions**

**Scalability**
- Demonstrates a replicable model that can be **adopted broadly with major brands** and enable co-developed solutions to drive the next step in the decarbonization journey

# Less waste, more taste

## *Novonesis, Denmark*

## Objective

**Reduce food waste in bread and yogurt by extending shelf life: enzymes keep bread moist/elastic longer, and bioprotective cultures inhibit mold/yeast in yogurt—maintaining fresh taste with fewer discards**

*Mature, generating stable results*

## Stakeholders

- **Novonesis** as technology developer and supplier
- **Bakeries, dairy brands & retailers** as formulators/off-takers integrating the biosolutions
- **Consumers & retail** as end-users benefiting from fresher products and less waste
- **Academia / research institutions** as validation and knowledge partners
- **Public sector / regulators** as approval and market-enabling bodies



## Implementation

| Step | | Period |
|---|---|---|
| 1 | R&D and formulation | **Completed** ✓ |
| 2 | Co-development & on-product validation with brands | **Completed** ✓ |
| 3 | Commercial rollout across markets | **Mature, global availability** ✓ |
| 4 | Monitoring, communication & replication | **Ongoing** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Yogurt saved | Tons | **>1,000,000** |
| Shelf-life extension | Days | **Up to 30 days** |
| Industries using biosolutions | # | **>30** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Showcases a technological solution that **tackles food loss by keeping products fresh longer**, advancing bioeconomy and nature-based solutions priorities, and improving Paris-aligned efficiency |
| **Economic impact** | • Reduces spoilage across supply chains, increases sell-through with the same inputs, and **improves margins for bakeries and dairies** |
| **$CO_2e$ impact** | • **Reduces embodied emissions from production and logistics by lowering food waste** across supply chains |
| **Innovation** | • **Applies enzymes that prevent starch staling in bread and beneficial bacteria that inhibit mold and yeast in yogurt**; strengthens the R&D engine by investing 11% of sales in 2024 |
| **Risks** | • Key risks include **regulatory acceptance, variability by product and processing, and behavioral changes across supply chains** |
| **Scalability** | • Demonstrates a replicable model that could **scale solutions across baked goods and dairy segments to broaden waste reduction** |

# Tech4Amazonia

## *Siemens, Brazil*

## Objective

**Innovation program that enables scalable, resilient innovation for the Amazon using digital and tech solutions to cut $CO_2$, improve circularity and energy efficiency, and boost local economies**

*Under implementation*

## Stakeholders

- **Siemens Brazil (BUs & Mendix)** as convener, funder and technology provider
- **Innovation partner** as operator of the open ecosystem platform
- **Challenge owners** as beneficiaries and co-designers of solutions
- **Solution providers (SMEs, startups, academia)** as PoC developers and implementers
- **Indigenous peoples & local/traditional communities** as priority end-users/beneficiaries

*Enabler*

SIEMENS

## Implementation

| Step | | Period |
|---|---|---|
| 1 | External mapping of Amazon stakeholders | 01/25 – 05/25 ✓ |
| 2 | Challenge pre-selection & Siemens BU matchmaking | 05/25 – 06/25 ✓ |
| 3 | Ideation workshops & PoC selection | 06/25 – 07/25 ✓ |
| 4 | PoC development + Mendix eco-system platform; Demo Day & launch | 07/25 – 10/25 ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Entities mapped | # | **50 organizations** |
| Matches made | # | **6 interviews/ matches** |
| POCs selected | # | **3 projects** |
| Seedling survival[1] | % improvement | **≥30%** |

## Key aspects

**WG alignment**
- Advances **decarbonization, circularity and energy efficiency** while strengthening local innovation ecosystems in the Amazon bioeconomy

**Economic impact**
- **Reduces search and coordination costs**, unlocks local business opportunities, and scales connections between challenge owners and tech providers via the platform

**$CO_2e$ impact**
- **Avoids deforestation and cuts emissions by improving productive-chain efficiency** and delivering restoration outcomes through PoCs

**Innovation**
- Builds an **open ecosystem platform (Mendix) and pilot digital/automation PoCs**—resilient seedling production, nanofactory digitalization, and Brazil-nut processing automation

**Risks**
- Key risks include **low digital adoption, scarce skilled labor, regulatory complexity, infrastructure gaps, and policy delays**, mitigated with capacity-building and clear governance

**Scalability**
- Scales **across sectors and geographies through a dedicated platform operator and reuses PoC components to accelerate rollout**

1. Current projection

**External links:** SIEMENS

# Long-term bio

## *UFMG, Brazil*

## Objective

**Microbial-based biological solution to reduce post-harvest losses in fruits and flowers, extending their shelf life and commercial viability in a sustainable way**

*Implemented, generating first results*

## Stakeholders

- **Federal University of Minas Gerais (ICA/UFMG)** as academic research base and initial R&D
- **FINEP & FAPEMIG (innovation agencies)** for non-dilutive grants and funding support
- **Partner agribusiness corporations** for co-development, pilot testing, and commercialization route

*Innovation model*

UFMG

## Implementation

| Step | | Period | |
|---|---|---|---|
| 1 | Isolation, selection, and characterization of microorganisms | **2021 – 2022** | ✓ |
| 2 | In vitro banana plantlet development tests | **2023** | ✓ |
| 3 | Field tests on hydrangeas for post-harvest longevity | **2023 – 2024** | ✓ |
| 4 | Formulation optimization, pilot-scale tests, regulatory registration and scale-up prod. | **2025 – 2027** | ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Increase the shelf life of 'Prata' bananas | day | **+5 compared to control group** |
| Increase the longevity of cut flowers | day | **+3 in survival time of inflorescences** |
| Reduce senescence in banana plantlets | week delay | **+2 compared to control group** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • **Increases farmer profits by reducing post-harvest losses, improve food security, and reduce food waste and the use of agricultural chemicals** in a way that strengthens both economic and environmental sustainability |
| **Economic impact** | • **Tackles 30–50% of losses**, increasing farmer revenue, **offer a cost-effective alternative to cold chain solutions**, and enable **access to distant markets** through preserved product value |
| **$CO_2e$ impact** | • Reduces $CO_2e$ by **decreasing food waste, avoid landfill decomposition, and limit the unnecessary use of resources such as water and energy** |
| **Innovation** | • **Uses microorganisms to modulate plant physiology via ethylene inhibition**, provide a sustainable, safe, and effective alternative to chemicals such as 1-MCP, supported by PhD-level validation |
| **Risks** | • Key risks include **high R&D investment needs, logistical challenges for distribution, complex and costly regulatory approval process, farmer adoption rate and challenges in scaling up production** |
| **Scalability** | • Applies the technology to a wide range of fruits and flowers**, reduce food waste at scale** while optimizing natural resource use, and **decrease losses throughout the entire supply chain with high potential for industry adoption** |

**External links:** UFMG - Bioinsumo que aumenta validade de flores e frutos vence maratona de soluções inovadoras

# Jornada Amazônia platform

## *Vale, Brazil*

## Objective

**Open innovation platform and programs (Genesis, Synapse, Synergy) to foster Amazon bioeconomy by mobilizing talent, creating startups, and attracting industry/investors**

*Mature, generating stable results*

## Stakeholders

- **Vale** as convener, program operator and ecosystem builder
- **Fundo Vale, Bradesco, Santander, Itaú Unibanco, CLUA, Good Energies/Porticus, Fundação Itaúsa** as grant funders
- **Startups & SMEs** as participants, solution developers and beneficiaries
- **Investors (VCs, angels, CVCs)** as follow-on capital and mentors

*Enabler*

VALE

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Multi-program rollout | **05/23 – 12/25** ✓ |
| 2 | Mapping & matchmaking | **01/25 – 07/25** ✓ |
| 3 | PoC development & open-platform build on Mendix | **07/25 – 10/25** ✓ |
| 4 | Amazon PoCs Demo Day & ecosystem platform launch | **10/25 – ongoing** ≈ |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| Talents trained | # | **2,071** |
| Startups in Synapse | # | **141** |
| Startups qualified | # | **74** |
| Platform readiness | % features | **60%** |

## Key aspects

| | |
|---|---|
| **WG alignment** | • Builds **standing-forest economy** by accelerating Amazon bioinnovation and market linkages across priority states |
| **Economic impact** | • Expands the startup pipeline (141 in Synapse), qualifies 74 for investor panels, and trains 2,071 talents (56% women), **fostering jobs and strengthening local value chains** |
| **$CO_2e$ impact** | • Does not directly quantify impact; solutions **target land-use drivers, restoration success, circularity, and efficiency, supporting Brazil's decarbonization** |
| **Innovation** | • Implements **challenge-driven programs and an open matchmaking platform** to connect challenge owners, technology providers, and capital (Micro CVC) |
| **Risks** | • Key risks include **limited early-stage philanthropic capital and low investment appetite**, which may slow growth and scaling of forest-based innovations |
| **Scalability** | • Operates under a three-year design with donors; the platform model and PoCs enable **replication and cross-sector scaling across the Amazon** |

**External links:** Jornal-da-Amazonia

# Renewable materials: decoupling the use of resources from our business growth

## *Volkswagen, Brazil*

## Objective

**Produce parts of vehicles using polyethylene from sugar cane in order to reduce carbon footprint and fossil fuel dependance**

*Mature, generating stable results*

## Stakeholders

- **Volkswagen Truck & Bus (VWTB)** as project lead, investor and integrator
- **Component suppliers (SMEs)** as manufacturers of renewable-HDPE tanks and process innovators
- **Large corporate partners** as testing/industrialization collaborators in the supply chain
- **Academia & research institutions** as validation/technical partners
- **Public sector/regulators (PROCONVE)** as emissions and safety compliance authorities

*Innovation model*

## Implementation

| Step | | Period |
|---|---|---|
| 1 | Part prospection & feasibility for renewable HDPE | **06/22 – 11/22** |
| 2 | Pilot manufacturing & lab tests | **11/22 – 07/23** |
| 3 | On-vehicle durability validation | **02/23 – 05/24** |
| 4 | Product implementation & rollout to production | **11/24 – 12/24** |

## Indicators

| KPI | Unity | Current values |
|---|---|---|
| $CO_2$ reduction | $tCO_2e$/year | **3,680** |
| Productivity rate | tanks/hour | **12–15** |
| Cost savings[1] | US$/year | **~1,000,000** |

## Key aspects

| | |
|---|---|
| **WG alignment** | **Replaces fossil plastics with bio-based HDPE, advances the circular bioeconomy**, and supports Brazil's NDC and Climate Law compliance |
| **Economic impact** | Delivers higher extrusion throughput (12–15 tanks per hour), lowers energy and operational costs, and **achieves projected savings of about US$ 1 million per year at current volumes** |
| **$CO_2e$ impact** | **Avoids around 3,680 tons of $CO_2e$ per year** through raw-material substitution and process gains |
| **Innovation** | **Introduces the first VWTB AdBlue® tank in renewable HDPE[2]**, maintains performance and emissions compliance, and earns recognition as a World Circular Economy Forum best practice |
| **Risks** | Key risks include **bio-based HDPE supply and cost volatility, long-term durability qualification, and certification requirements across new parts** |
| **Scalability** | **Expands renewable materials to other components**, enabling progressive decarbonization across vehicle platforms |

1. Current projection; 2. High-Density Polyethylene

**External links:** Ebook-economia-circular-industria-melhores-praticas

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# Annexes

# Annex A – List of Acronyms

- ABS – Access and Benefit Sharing
- AI – Artificial Intelligence
- ANP – Brazilian National Petroleum Agency
- ARR – Afforestation, Reforestation, and Revegetation
- BDO – 1,4-Butanediol (biobased chemical)
- BIOFAT – Biofuels from Algae Technologies (EU FP7 project)
- BIOCLUSTER – Follow-up cluster initiative from BIOFAT
- BU – Business Unit / Biodiversity Unit (context-dependent)
- CAPEX – Capital Expenditure
- CDP – Carbon Disclosure Project
- CDR – Carbon Dioxide Removal
- $CO_2$ – Carbon Dioxide
- $CO_2e$ / $tCO_2e$ – Carbon Dioxide equivalent / tons of $CO_2$ equivalent
- COP – Conference of the Parties
- COSMOS – Cosmetic Organic and Natural Standard
- CRA – Agribusiness Receivables Certificate, Brazil
- CVC – Corporate Venture Capital
- Ecocert – International organic certification body
- ERW – Enhanced Rock Weathering
- ETE – Wastewater Treatment Plant, Brazil
- EU – European Union
- EUDR – European Union Deforestation Regulation
- FP7 – Seventh Framework Programme (EU R&D program)
- FPIC – Free, Prior and Informed Consent
- FSC – Forest Stewardship Council
- GBF – Global Biodiversity Framework
- GHG – Greenhouse Gases
- GRI – Global Reporting Initiative
- HDPE – High-Density Polyethylene
- ICCPR – International Covenant on Civil and Political Rights
- IDEAL – Industrial Exploitation of microalgae
- IoT – Internet of Things
- IP – Intellectual Property
- IPLCs – Indigenous Peoples and Local Communities
- IRR – Internal Rate of Return
- KPI – Key Performance Indicator
- LCA – Life Cycle Assessment
- LP – Limited Partner (venture capital context)
- MCP / 1-MCP – 1-Methylcyclopropene (synthetic plant growth regulator)
- MEG – Monoethylene Glycol
- MEL – Monitoring, Evaluation and Learning (framework)
- MPG – Monopropylene Glycol
- MRV – Measurement, Reporting and Verification
- MSME – Micro, Small and Medium Enterprise
- NDC – Nationally Determined Contribution (Paris Agreement)
- NGO – Non-Governmental Organization
- NPV – Net Present Value
- OHS – Occupational Health & Safety
- PCSAF – Payment for Conservation Services in Agroforestry
- PE – Polyethylene
- PES – Payments for Ecosystem Services
- PoC – Proof of Concept
- PPP – Public-Private Partnership
- R&D – Research and Development
- R$ – Brazilian Real (currency)
- RSPO – Roundtable on Sustainable Palm Oil
- SB COP – Sustainable Business COP
- SBTi – Science-Based Targets initiative
- SBTN – Science-Based Targets for Nature
- SDGs – Sustainable Development Goals
- SISGEN – Sistema Nacional de Gestão do Patrimônio Genético e do Conhecimento Tradicional Associado (Brazil)
- SME – Small and Medium Enterprise
- $tCO_2e$ – tons of Carbon Dioxide equivalent
- TEEB – The Economics of Ecosystems and Biodiversity
- TNFD – Taskforce on Nature-related Financial Disclosures
- UoP – Use of Proceeds
- VC – Venture Capital
- WG – Working Group

# Annex B – Disclaimer

The information presented in this booklet is the sole responsibility of the institutions that submitted the cases. All case descriptions reflect the information shared directly by the applicants.

The primary source for the evaluations described herein was the submitted cases; however, in certain instances, additional publicly available information from websites and/or official documents was consulted.

Where specific information was not provided by the applicants, the Working Group applied its best judgment to interpret missing parts, taking into account the context of each case.

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CNI Brazilian National Confederation of Industry