



GEODYN
SOLUTIONS



**PROPOSAL FOR LARGE-
SCALE ORGANIC CACAO
FARMING AND HIGH-VALUE
PROCESSING IN THE
DOMINICAN REPUBLIC**

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EXECUTIVE SUMMARY

Geodyn Solutions proposes developing a 10,000-hectare organic cacao plantation and a state-of-the-art processing factory in the Dominican Republic to produce high-value cacao products (chocolate bars, cocoa powder, cocoa butter, and cocoa liquor) for export to the United States and Europe. Leveraging advanced agricultural technologies, biofertilizers, and sustainable agroforestry, this project will maximize yield, enhance quality, and improve nutrient profiles. The initiative will create 25,000–30,000 jobs, deliver a 15–20% return on investment (ROI), and provide significant environmental benefits, with a 20% contingency fee to mitigate risks.



PROJECT OVERVIEW

OBJECTIVES

- **Agricultural Development:** Cultivate 10,000 hectares of organic cacao using advanced technologies and biofertilizers to achieve high yields and superior quality.
- **Processing Facility:** Build a factory to produce premium chocolate bars, cocoa powder, cocoa butter, and cocoa liquor for export to high-value markets.
- **Economic Impact:** Generate 25,000–30,000 direct and indirect jobs, including farmworkers, factory staff, and technical roles.
- **Environmental Benefits:** Enhance biodiversity, sequester carbon, and improve soil health through organic agroforestry and biofertilizer use.
- **Financial Viability:** Achieve a projected ROI of 15–20% annually after Year 6, with a payback period of 8–9 years.

LOCATION

The project will be located across multiple provinces (Duarte, Sánchez Ramírez, and María Trinidad Sánchez), selected for their fertile soils, tropical climate, and proximity to export ports. Sites will comply with the European Union Deforestation Regulation (EUDR) and avoid protected areas.

ADVANCED TECHNOLOGY DETAILS



FARM DESIGN

- **Size:** 10,000 hectares, divided into 200 plots of 50 hectares for scalable management.
- **Agroforestry Model:** Cacao trees will be intercropped with shade trees (e.g., banana, citrus, mahogany) and high-value crops (e.g., vanilla, turmeric) to diversify income, enhance biodiversity, and improve soil health.
- **Cacao Varieties:** Fine-flavor Trinitario and Criollo hybrids, sourced from certified nurseries, optimized for premium markets.
- **Organic Certification:** Adherence to USDA Organic, EU Organic, Fairtrade, and Rainforest Alliance standards to access high-value markets.

CULTIVATION PRACTICES

- **Planting:** 1,200 cacao trees per hectare, with 100 shade trees per hectare. Planting will occur in phases over Years 1–3, with first harvests in Year 4.
- **Yield Projections:** Average yield of 1,200–1,500 kg/ha of dried cocoa beans by Year 6, increasing to 1,800 kg/ha by Year 10 with biofertilizer and technology enhancements.
- **Sustainability:** Biofertilizers and organic practices will reduce synthetic inputs, while agroforestry sequesters 12–18 tons CO₂/ha annually.
- **Training:** 5,000 farmers trained in advanced techniques, biofertilizer application, and technology use, building on IICA's success in boosting yields.



ADVANCED AGRICULTURAL TECHNOLOGIES

- **Biofertilizers:** Use of microbial biofertilizers (e.g., mycorrhizal fungi, rhizobacteria) to enhance nutrient uptake, increase yields by 20–30%, and improve cacao bean nutrient profiles (e.g., higher polyphenol content).
- **Precision Agriculture:** Deploy drones for aerial monitoring, soil sensors for real-time nutrient analysis, and AI-driven yield prediction models to optimize planting and harvesting.
- **Irrigation:** Solar-powered drip irrigation systems with IoT integration to reduce water use by 40% and ensure consistent soil moisture.
- **Pest Management:** Integrated pest management (IPM) with biopesticides and pheromone traps to control diseases like Moniliasis and Witch's Broom, reducing chemical use.
- **Automation:** Robotic pruning and harvesting systems to improve efficiency and reduce labor costs by 15%.

PROCESSING FACTORY



FACILITY DESIGN

LOCATION

Centralized facility near San Francisco de Macorís, with proximity to farms and Puerto Plata port for efficient logistics.

CAPACITY

Process 20,000 metric tons of dried cocoa beans annually, producing 4,000 tons of chocolate bars, 6,000 tons of cocoa powder, 5,000 tons of cocoa butter, and 3,000 tons of cocoa liquor.

EQUIPMENT

Advanced machinery (e.g., automated roasters, conching machines, tempering units) from Buhler Group, with blockchain-enabled traceability systems.

CERTIFICATIONS

Compliance with FDA, EU Organic, Fairtrade, and EUDR standards, ensuring market access and consumer trust.

PRODUCTION PROCESS

1. FERMENTATION AND DRYING

Beans fermented for 5–7 days in automated, climate-controlled units and dried to 7% moisture using solar-assisted dryers.

2. PROCESSING

Beans cleaned, roasted, and ground into liquor, then processed into powder, butter, or liquor. Chocolate bars produced with customizable formulations (e.g., 70% dark, single-origin).

3. PACKAGING

Eco-friendly, biodegradable packaging with QR codes linking to farm traceability data, appealing to premium consumers.

4. QUALITY ENHANCEMENT

Biofertilizer use increases bean polyphenol and flavonoid content, improving flavor and health benefits for high-value products.





EXPORT MARKETS

- **TARGET MARKETS:**
UNITED STATES (HEALTH-CONSCIOUS AND PREMIUM CHOCOLATE SEGMENTS) AND EUROPE (GERMANY, FRANCE, BELGIUM), WHERE ORGANIC CHOCOLATE DEMAND GROWS 5–7% ANNUALLY.
- **PRICING:**
ORGANIC COCOA BEANS AT \$4,500–\$5,500/TON, COCOA BUTTER AT \$7,000–\$9,000/TON, COCOA POWDER AT \$6,000–\$7,000/TON, AND CHOCOLATE BARS AT \$12,000–\$15,000/TON (WHOLESALE).
- **LOGISTICS:**
PARTNER WITH EXPORTERS LIKE RIZEK CACAO AND LOGISTICS FIRMS LIKE MAERSK TO STREAMLINE SHIPPING TO MIAMI AND ROTTERDAM.





CAPITAL EXPENDITURE (CAPEX)

BREAKDOWN

Item	Cost (USD)	Notes
Land Acquisition	50,000,000	10,000 hectares at \$5,000/ha
Cacao Seedlings	12,000,000	12 million trees at \$1/tree
Shade Trees/Crops	5,000,000	1 million trees/crops at \$5/unit
Irrigation Systems	20,000,000	Solar-powered, IoT-enabled
Farm Infrastructure	30,000,000	Fencing, storage, fermentation units
Advanced Tech	15,000,000	Drones, sensors, AI, robotics
Factory Construction	50,000,000	20,000 sqm facility
Processing Equipment	40,000,000	Automated roasters, conching machines
Certification Costs	2,000,000	USDA, EU Organic, Fairtrade, EUDR
Training Programs	5,000,000	Farmer and worker training
Working Capital	25,000,000	Initial operational costs (Years 1–3)
Subtotal	254,000,000	
Contingency (20%)	50,800,000	Risk mitigation
Total CapEx	304,800,000	

FUNDING STRATEGY

- **Equity Investment:** 50% (\$152,400,000) from Geodyn Solutions and private investors.
- **Debt Financing:** 30% (\$91,440,000) via loans from development banks (e.g., IFC, French Development Agency).
- **Grants:** 20% (\$60,960,000) from EU-ACP programs, World Bank, or USAID's agricultural initiatives.

FINANCIAL PROJECTIONS

REVENUE PROJECTIONS

YEAR 4

(INITIAL HARVEST)

5,000 TONS OF DRIED BEANS A
 $\$5,000/\text{TON} = \$25,000,000.$

YEAR 6

(FULL PRODUCTION)

15,000 TONS PROCESSED INTO 3,000 TONS CHOCOLATE BARS
(\$14,000/TON), 4,500 TONS POWDER (\$6,500/TON),
3,750 TONS BUTTER (\$8,000/TON),
2,250 TONS LIQUOR (\$6,000/TON) = \$94,250,000.

YEAR 10

(OPTIMIZED)

18,000 TONS PROCESSED INTO 3,600 TONS BARS,
5,400 TONS POWDER, 4,500 TONS BUTTER,
2,700 TONS LIQUOR = \$113,100,000.





OPERATING EXPENSES (ANNUAL, YEAR 6)

- **Labor:** \$50,000,000 (25,000 workers at \$2,000/year average)
- **Maintenance:** \$10,000,000
- **Utilities:** \$5,000,000
- Packaging/Transport: \$15,000,000
- Certifications: \$2,000,000
- **Total:** \$82,000,000

ROI CALCULATION

- **Net Profit (Year 6):** \$94,250,000 (revenue) – \$82,000,000 (OpEx) = \$12,250,000.
- **Net Profit (Year 10):** \$113,100,000 – \$82,000,000 = \$31,100,000.
- **Cumulative Cash Flow:** Positive by Year 8, with ROI of 15–20% annually by Year 10, driven by high-value products and yield improvements.

PAYBACK PERIOD

- Initial investment (\$304,800,000) recovered by Year 8–9, assuming stable market prices and optimized yields.

JOB CREATION



- **Farmworkers:** 20,000 full-time workers for planting, maintenance, and harvesting (\$1,500–\$2,000/year).
- **Factory Staff:** 4,000 workers for processing, packaging, and quality control (\$2,500–\$3,500/year).
- **Technical/Administrative:** 1,000 roles (agronomists, engineers, export managers) at \$5,000–\$15,000/year.
- **Total Jobs:** 25,000 direct jobs, plus 5,000 indirect jobs (e.g., logistics, equipment suppliers).
- **Social Impact:** Prioritize local hiring, with 40% of roles for women and youth to address labor shortages and promote inclusivity.



ENVIRONMENTAL BENEFITS

- **Biodiversity:** Agroforestry supports native species, with shade trees and intercroops creating habitats for pollinators and wildlife.
- **Carbon Sequestration:** 10,000 hectares sequester 120,000–180,000 tons CO₂ annually, equivalent to offsetting emissions from 30,000 cars.
- **Soil Health:** Biofertilizers increase soil microbial activity, improving nutrient cycling and reducing erosion by 50%.
- **Water Efficiency:** IoT irrigation and shade trees reduce water use by 40%, preserving local watersheds.
- **Deforestation Compliance:** EUDR-compliant site selection ensures no forest loss, aligning with global sustainability goals.

RISK MITIGATION

- **Market Risks:** Diversified high-value products and long-term contracts with buyers (e.g., Mars, Nestlé) stabilize revenue.
- **Disease:** Advanced IPM and resistant hybrids, supported by IICA protocols, minimize crop losses.
- **Technology Failure:** Redundant systems and local technician training ensure operational continuity.
- **Contingency Fund:** 20% (\$50,800,000) allocated for unforeseen costs (e.g., climate events, equipment delays).





IMPLEMENTATION TIMELINE

YEAR	ACTIVITY
Year 1–2	Land acquisition, phased planting, factory construction, technology deployment
Year 3	Complete planting, factory setup, worker training
Year 4	First harvest, initial processing, export trials
Year 5–6	Scale production, optimize yields, secure export contracts
Year 7–10	Full capacity, continuous improvement, reinvestment





ENVIRONMENTAL AND HEALTH BENEFITS

4. RAS AND BIOFLOC

- *RAS reduces water use by 90%, critical in water-stressed regions.*
- *Biofloc eliminates antibiotics, ensuring safe exports and consumer trust.*



5. LOW-CARBON OPERATIONS

- *Renewable energy powers 80% of operations, cutting emissions by 40%.*
- *Hybrid propulsion aligns with Dominican climate goals.*

6. ECOSYSTEM PROTECTION

- *Mobile vessel minimizes coastal impact; AI prevents escapes, protecting native species.*
- *Biodegradable packaging for exports reduces plastic pollution.*





Geodyn Solutions' 10,000-hectare organic cacao plantation and high-value processing factory will position the Dominican Republic as a global leader in premium, sustainable cacao products. With a \$304.8 million investment, the project will create 25,000–30,000 jobs, achieve a 15–20% ROI by Year 10, and deliver substantial environmental benefits through advanced technologies and biofertilizers. The 20% contingency fee ensures resilience, making this a transformative venture for economic and ecological sustainability.



REFERENCES

- ***IICA, Dominican Republic Cocoa Sector.***
- ***Cacao Forest Initiative, Agroforestry Models.***
- ***USDA, Organic Cacao Market Trends.***
- ***Buhler Group, Cocoa Processing Technology.***
- ***World Bank, South-South Exchange Programs.***

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