Book 10: Country Layers

Country-specific context for each of CTH's 5 operating countries. Colombia fully mapped in v1.0. Peru, Costa Rica, El Salvador, Guatemala in v1.1+.

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Colombia

Full country mapping — deepest CTH coverage (v1.0)

Peru

Country layer — v1.1

Peru — Overview & CTH Presence

country	Peru
iso_code	PE
cth_presence	CLP cohorts (2022–2026) + REIN Hub Peru (active since 2024)
gf_taxonomy	None — gap documented
ndc_target	30% unconditional / 40% conditional GHG reduction by 2030 vs BAU
eudr_commodities	Coffee, Cacao, Wood, Cattle (partial — Amazon frontier)
schema_version	1.1
last_updated	2026-05-27

Country Profile

Peru is CTH's second-deepest country engagement after Colombia. The REIN Hub Peru has been active since 2024, anchoring regional innovation networks across Lima, Cusco, and the selva alta coffee corridor. CLP cohorts have run continuously since 2022, producing startups focused on deforestation monitoring, sustainable agriculture, and rural energy access.

Economy and Climate Context

Peru's economy is heavily resource-dependent: mining (copper, gold, zinc) accounts for over 60% of exports, while agriculture — particularly coffee and cacao — provides livelihoods for hundreds of thousands of smallholders in the Amazon basin. The country faces a dual climate challenge: accelerating deforestation in the Amazon lowlands (Ucayali, Madre de Dios, San Martín) and glacier retreat in the Andes that threatens water supply for Lima and coastal agriculture.

CTH Engagement Summary

CTH's Peru footprint includes: (1) CLP cohorts spanning 4 annual cycles with approximately 35 startups supported across AFOLU, energy, and climate intelligence sectors; (2) REIN Hub Peru providing a permanent innovation node for cleantech entrepreneurs; (3) Sustenttia diagnostic platform deployed for Peruvian startups; (4) Data integration with SERNANP for Amazon deforestation monitoring use cases.

EUDR Exposure

Peru has significant EUDR exposure across four commodities. Coffee production in Junín, San Martín, and Amazonas provinces is the largest export category subject to EUDR due diligence. Cacao from San Martín and

Ucayali is the second-largest exposure. Timber from the Amazon basin (particularly Ucayali and Loreto) faces EU market access requirements. Cattle ranching along the Amazon frontier creates partial exposure, though at lower volumes than Brazil or Colombia.


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Peru — Regulatory & Climate Framework

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gf_taxonomy	None — gap documented
ndc_target	30% unconditional / 40% conditional by 2030
eudr_commodities	Coffee, Cacao, Wood, Cattle
schema_version	1.1
last_updated	2026-05-27

National Climate Law

Peru's Ley Marco de Cambio Climático (Ley 30754, enacted April 2018) establishes the legal framework for climate action. It mandates that all levels of government integrate climate change into planning and budgeting, creates the High-Level Commission on Climate Change (CANCC), and designates MINAM (Ministerio del Ambiente) as the primary coordinating authority. The law explicitly addresses both mitigation and adaptation with a focus on vulnerable populations.

NDC Commitments

Peru's updated NDC (2020) commits to a 30% unconditional reduction in GHG emissions by 2030 relative to business-as-usual projections, increasing to 40% conditional on international finance and technology transfer. Key sectoral targets include: (1) LULUCF — reducing deforestation to net-zero by 2030 in priority regions; (2) Energy — increasing renewable share in the electricity mix to 15% from non-hydro sources; (3) Agriculture — reducing emissions intensity per unit of production through improved practices.

Key Institutions

MINAM (Ministerio del Ambiente) is the primary climate authority. SERNANP (Servicio Nacional de Áreas Naturales Protegidas) manages protected areas and Amazon monitoring. OSINFOR regulates forest concessions and timber legality. SERFOR (Servicio Nacional Forestal y de Fauna Silvestre) manages forest governance. MEF (Ministry of Economy and Finance) leads green bond and sustainable finance initiatives.

Climate Plans and Strategies

PLANCC II (Plan de Acción Nacional de Cambio Climático) provides the operational roadmap for NDC implementation. The Plan de Acción en Género y Cambio Climático integrates gender considerations into climate policy. Peru's National Strategy on Forests and Climate Change (ENBCC) specifically targets deforestation reduction in the Amazon. The National Adaptation Plan (NAP) prioritizes water security, agriculture, and health.

Relevant Regulatory Instruments

Decreto Supremo 013-2019-MINAM establishes the carbon market regulation framework. Peru participates in REDD+ through the Forest Investment Program (FIP) and the Green Climate Fund (GCF). The Huella de Carbono Perú program provides a voluntary corporate carbon footprint registry. Superintendencia del Mercado de Valores (SMV) has issued guidance on green bond issuance but no mandatory disclosure requirements yet.


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Peru — Green Finance Taxonomy Alignment

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iso_code	PE
cth_presence	CLP cohorts + REIN Hub Peru
gf_taxonomy	None — gap documented
ndc_target	30% unconditional / 40% conditional by 2030
eudr_commodities	Coffee, Cacao, Wood, Cattle
schema_version	1.1
last_updated	2026-05-27

Green Finance Taxonomy Status

Peru does not have a national green finance taxonomy as of May 2026. This represents a significant gap given Peru's role as the second-largest economy in the Andean region and its substantial green bond issuance history. Colombia's Taxonomía Verde (2022) remains the only binding national GF taxonomy in the Andean/Pacific Alliance bloc and serves as the nearest regional reference point for Peru.

Gap Analysis

The absence of a Peruvian GF taxonomy creates three operational gaps for Origo: (1) No domestic activity classification to crosswalk against when assigning latam_peru flags — requiring reliance on Colombia's taxonomy as a proxy combined with NDC priorities; (2) No standardized green bond eligibility criteria specific to Peru's LULUCF-heavy emissions profile; (3) No regulatory alignment pathway for Peruvian financial institutions seeking to classify their portfolios as "green" under domestic law.

Nearest Equivalents

In the absence of a formal taxonomy, Peru relies on several proxy frameworks: (1) Colombia's Taxonomía Verde — applicable to many shared Andean commodities and sectors; (2) CBI (Climate Bonds Initiative) criteria — used for Peru's sovereign and corporate green bonds; (3) IFC Performance Standards — applied by development finance institutions operating in Peru; (4) EU Taxonomy — referenced by European importers of Peruvian commodities under EUDR compliance. The Origo taxonomy uses a combination of these to infer latam_peru relevance flags.

Development Prospects

SBS (Superintendencia de Banca, Seguros y AFP) issued Resolución 1928-2021 requiring financial institutions to integrate ESG risk into governance, which could serve as a foundation for taxonomy development. MEF has signaled interest in developing green finance guidelines as part of its sustainable finance roadmap. IDB and GCF technical assistance programs are supporting taxonomy-adjacent work in Peru's financial sector. A formal Peruvian GF taxonomy is estimated at 2–3 years from adoption.


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Peru — CLP Cohort Data Summary

country	Peru
iso_code	PE
cth_presence	CLP cohorts + REIN Hub Peru
gf_taxonomy	None — gap documented
ndc_target	30% unconditional / 40% conditional by 2030
eudr_commodities	Coffee, Cacao, Wood, Cattle
schema_version	1.1
last_updated	2026-05-27

CLP Cohort History

Peru has participated in CLP (Cleantech Leadership Programme) cohorts from 2022 through 2026, making it one of CTH's most consistent country partners. REIN Hub Peru, active since 2024, provides ongoing mentoring and networking beyond the cohort cycle. The combination of CLP + REIN gives Peru the second-deepest CTH coverage after Colombia.

Cohort Summary

Year	Startups	Primary Sectors	Notes
2022	6	AF, EN	First Peru cohort; focus on coffee traceability and rural solar
2023	8	AF, IC, EN	Expanded to include climate data/MRV startups
2024	10	AF, IC, EN, XS	REIN Hub launched; carbon market entrants joined
2025	7	AF, IC	EUDR-focused cohort; deforestation monitoring emphasis
2026	4	AF, EN, IC	Current cohort; Amazon sustainability focus

Sector Distribution

Across all Peru cohorts, sector distribution is: AFOLU (45%) — driven by coffee, cacao, and deforestation monitoring; Energy (25%) — rural electrification, solar, and small hydropower; Climate Intelligence (20%) — MRV platforms, earth observation, and supply chain traceability; Carbon/Offsets (10%) — REDD+ project developers and carbon accounting platforms.

Key Outcomes

Notable outcomes from Peru CLP cohorts include: 3 startups that secured post-cohort investment exceeding $500K; 2 partnerships with SERNANP for Amazon monitoring technology deployment; 1 startup integrated into the Origo platform data pipeline for EUDR compliance services; establishment of REIN Hub Peru as a permanent cleantech innovation node in Lima.


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Peru — Taxonomy Node Mapping

country	Peru
mapping_type	taxonomy_node_mapping
schema_version	1.1

Node Mapping Summary

Peru's taxonomy node mapping reflects its Amazon-heavy EUDR exposure, its strong AFOLU sector relevance (coffee, cacao, timber, partial cattle), emerging energy transition needs, and its role as a key site for AI/MRV deforestation monitoring. All AFOLU base nodes with coffee, cacao, or wood EUDR flags are tagged Y. Energy nodes are tagged partial reflecting Peru's hydropower-dominant grid with nascent solar/wind growth. IC nodes for Amazon monitoring and MRV are tagged Y.

AFOLU Nodes

Node ID	Label	latam_peru	Rationale
CT-AF-001	Land & Soil	Y	Critical for soil management in coffee/cacao regions of Junín and San Martín
CT-AF-002	Forests & Woodlands	Y	Amazon deforestation is Peru's largest emissions source; shade-grown coffee agroforestry
CT-AF-003	Oceans & Water	Y	Water management in coffee processing (beneficio húmedo); El Niño coastal impacts
CT-AF-004	Ice & Snow	Y	Andean glacier retreat directly threatens Lima's water supply and highland agriculture
CT-AF-005	Air & Atmosphere	partial	Limited direct relevance; air quality monitoring in Lima and mining regions
CT-AF-006	Smart Farming	Y	Precision agriculture for smallholder coffee and cacao in selva alta
CT-AF-007	Livestock & Fisheries	partial	Cattle frontier in Amazon (partial EUDR); anchovy fisheries climate-sensitive
CT-AF-008	Crops	Y	Coffee, cacao, and quinoa are major export crops with climate vulnerability

CT-AF-009	Alternative Meat & Seafood	N	Minimal market presence in Peru
CT-AF-010	Alternative Dairy & Egg	N	Minimal market presence in Peru

Energy Nodes

Node ID	Label	latam_peru	Rationale
CT-EN-001	Critical Minerals	Y	Peru is a top-5 global producer of copper, zinc, silver — essential for energy transition
CT-EN-002	Hydrogen	partial	Green hydrogen pilots in southern coastal desert; early stage
CT-EN-003	Nuclear	N	No nuclear energy program
CT-EN-004	Bio & Synthetic Fuels	partial	Biodiesel from palm oil in San Martín; small scale
CT-EN-005	Fossil Fuels (Transition)	partial	Camisea gas field transition planning; LNG export infrastructure
CT-EN-006	Solar	Y	Excellent irradiance in Arequipa, Tacna, Moquegua; rural off-grid solar in Amazon
CT-EN-007	Wind	partial	Ica and Piura wind corridors; 3 GW pipeline but slow permitting
CT-EN-008	Geothermal	partial	Volcanic Andes potential but no operating plants; exploration phase only
CT-EN-009	Biomass	partial	Coffee pulp and cacao husk biomass potential in selva alta
CT-EN-010	Hydro Tidal & Wave	Y	Peru's grid is ~60% hydropower; critical dependency with glacier retreat risk
CT-EN-011	Batteries	partial	Lithium exploration in Puno; battery storage for grid stabilization
CT-EN-012	Alternative Storage	partial	Pumped hydro potential in Andes; early feasibility studies
CT-EN-013	Grids	partial	Grid modernization needed for renewable integration; SEIN interconnection gaps
CT-EN-014	EV Charging	partial	Lima EV adoption nascent; regulatory framework under development
CT-EN-015	Peer-to-Peer Energy	N	No regulatory framework for P2P energy trading

Climate Intelligence & Carbon Nodes

Node ID	Label	latam_peru	Rationale
CT-IC-001	IoT & Earth Observation	Y	SERNANP Amazon monitoring; satellite deforestation detection is core use case
CT-IC-002	Climate Data	Y	SENAMHI climate data infrastructure; glacier monitoring networks
CT-IC-003	Climate Finance	Y	Green bond issuance; GCF project pipeline; sovereign sustainability-linked bonds
CT-IC-004	Climate Risk	Y	El Niño/La Niña exposure; flood risk in Amazon; drought in coastal agriculture
CT-IC-005	Climate Insurance	partial	Parametric insurance pilots for smallholder coffee farmers; limited scale
CT-XS-001	Carbon Capture & Storage	N	No CCS projects or geological storage sites under development
CT-XS-002	B2B Carbon Offsets & Exchanges	Y	Amazon REDD+ project pipeline; voluntary carbon market activity
CT-XS-003	B2C Carbon Offsets	partial	Tourism-linked offsets; limited domestic B2C market
CT-XS-004	Carbon Intelligence	Y	Huella de Carbono Perú program; corporate carbon footprint registry
CT-XS-005	Carbon Accounting	Y	MINAM greenhouse gas inventory system; REDD+ MRV requirements

Waste, Built Environment & Transport Nodes

Node ID	Label	latam_peru	Rationale
CT-WA-001	Waste to Energy	partial	Pilot projects in Lima; coffee processing waste valorization potential
CT-WA-002	Sustainable Materials	partial	Bamboo construction and bio-based materials from Amazon resources
CT-WA-003	Textiles	partial	Alpaca and organic cotton supply chains with sustainability potential
CT-WA-004	Recycling	partial	Lima municipal recycling expansion; informal sector formalization
CT-WA-005	Solid Waste & Water Waste	partial	Coffee processing wastewater (aguas mieles) treatment technology
CT-BU-001	Construction	partial	Green building standards emerging in Lima; seismic resilience overlap

CT-BU-002 to CT-BU-005	Built Environment (remaining)	partial	Urban sustainability nascent; transport infrastructure in expansion
CT-TR-001 to CT-TR-005	Transport (all)	partial	Lima Metro expansion; EV policy under development; limited cleantech startup activity

Extension Nodes

Node ID	Label	latam_peru	Rationale
CT-EX-001	Drought-resistant crop varieties and seed tech	Y	Critical for coastal agriculture under El Niño stress
CT-EX-002	Flood resilience infrastructure (nature-based)	Y	Amazon basin and coastal El Niño flooding
CT-EX-003	Heat adaptation for agriculture	Y	Coffee rust and heat stress moving upslope in Andes
CT-EX-004	Early warning systems for climate events	Y	El Niño early warning critical for agriculture and fisheries
CT-EX-005	Community-led reforestation and agroforestry	Y	Indigenous community forestry in Amazon; shade coffee agroforestry
CT-EX-006	Mangrove restoration and blue carbon	partial	Tumbes mangroves; limited compared to Caribbean nations
CT-EX-007	Silvopastoral systems	partial	Amazon cattle frontier; emerging silvopastoral pilots
CT-EX-008	Bioeconomy: non-timber forest products	Y	Brazil nut, camu camu, sacha inchi — Amazon bioeconomy
CT-EX-009	PES platforms	Y	REDD+ payments; Transferencias Directas Condicionadas program
CT-EX-010	Solar home systems and pico-solar	Y	Rural electrification in Amazon communities without grid access
CT-EX-011	Community biodigesters	partial	Highland livestock communities; limited scale
CT-EX-014	Remote sensing and satellite deforestation monitoring	Y	Core use case: SERNANP Amazon monitoring, GeoBosques platform
CT-EX-015	AI-powered carbon MRV	Y	REDD+ MRV requirements; growing CLP startup activity
CT-EX-016	Supply chain traceability platforms	Y	Coffee and cacao supply chain traceability for EUDR compliance
CT-EX-017	Precision agriculture data platforms	Y	Smallholder coffee/cacao precision agriculture
CT-EX-018	Deforestation-free certification services	Y	EUDR Article 9 compliance for coffee and cacao exporters
CT-EX-019	Supply chain due diligence platforms	Y	EUDR operator obligations for Peruvian exporters

CT-EX-020	Smallholder technical assistance for EUDR	Y	Hundreds of thousands of smallholder coffee farmers need EUDR support
CT-EX-021	EUDR operator documentation services	Y	Documentation requirements for Peruvian coffee/cacao operators
CT-EX-022	Cacao plot-level geolocation	Y	San Martín and Ucayali cacao polygon mapping
CT-EX-023	Cacao agroforestry monitoring	Y	Cacao agroforestry carbon monitoring in selva alta
CT-EX-026	Cacao climate adaptation	Y	Varietal resilience research for Peruvian fino de aroma cacao
CT-EX-029	Pasture-driven deforestation monitoring	Y	Amazon frontier cattle expansion monitoring
CT-EX-032	Cross-commodity EUDR landscape compliance	Y	Multi-commodity landscapes in Ucayali and San Martín
CT-EX-034	Palm oil mill traceability	Y	San Martín palm oil production
CT-EX-035	RSPO and palm certification	Y	RSPO-certified operations in Peruvian Amazon
CT-EX-036	Imported commodity deforestation risk screening	Y	Peru as origin country for EU-destined commodities
CT-EX-039	Community forest management	Y	Indigenous community forest governance in Amazon basin
CT-EX-040	Smallholder group certification	Y	Coffee cooperative group certification models
CT-EX-041	Alternative development crop compliance	partial	DEVIDA alternative development regions with coca-to-cacao transitions

Costa Rica

Country layer — v1.1 (incl. Costa Rica GF Taxonomy Aug 2024)

Costa Rica Green Finance Taxonomy — Overview

Overview

Field	Value
country	Costa Rica
gf_taxonomy	BCCR Green Finance Taxonomy (Aug 2024)
ndc_target	Max 11,380 Gg CO2e by 2030; 53% reduction budget 2025-2035
carbon_neutrality	2050
last_updated	2026-05-26

Background

Costa Rica launched its Taxonomía de Finanzas Sostenibles in August 2024, making it the third country in Latin America (after Colombia and Mexico) to establish a green finance taxonomy. The taxonomy was developed under the joint leadership of the Ministry of Environment and Energy (MINAE), the Ministry of Finance, the Central Bank of Costa Rica (BCCR), and the four financial regulators (SUGEF, SUGEVAL, SUPEN, SUGESE), with contributions from over 300 experts representing more than 180 organizations across public and private sectors, NGOs, and academia.

Sectors Covered

The taxonomy identifies eight priority economic sectors for sustainable investment:

1. **Electricity, Gas, Steam & Air Conditioning Supply** — renewable energy generation, grid efficiency, geothermal (Costa Rica generates ~95% renewable electricity)
2. **Construction** — green buildings, energy-efficient construction, sustainable materials
3. **Transport** — electromobility, public transit electrification, low-carbon logistics
4. **Manufacturing** — clean industrial processes, resource efficiency
5. **Solid Waste Management & Emissions Capture** — waste-to-energy, circular economy, recycling infrastructure
6. **Water Supply & Treatment** — water infrastructure, wastewater treatment, watershed management
7. **Information & Communication Technologies** — ICT for sustainability monitoring, smart grids, environmental data platforms

8. **Land Use (Agriculture, Livestock & Forestry)** — sustainable agriculture, reforestation, silvopastoral systems, PES programs

Environmental Objectives

The initial phase prioritizes two environmental objectives: (1) climate change mitigation and (2) climate change adaptation. Future phases may incorporate additional objectives including sustainable water use, biodiversity protection, circular economy transition, and pollution prevention — following the EU Taxonomy six-objective structure.

Design Principles

The taxonomy applies a three-step eligibility test for each economic activity: (a) substantial contribution to at least one environmental objective, (b) Do No Significant Harm (DNSH) to other objectives, and (c) minimum social safeguards. This mirrors the EU Taxonomy architecture, ensuring international interoperability. The taxonomy is designed to be interoperable with the EU Taxonomy, Colombia Taxonomía Verde, and Mexico sustainable taxonomy, following the UNEP FI Common Framework for Latin American taxonomies published in 2023.

Institutional Framework

SUGEVAL (securities superintendent) oversees taxonomy application in capital markets. SUGEF applies it to banking supervision. The taxonomy supports: evaluation of credit and investment portfolio alignment, design of new green financial products, climate risk assessment of portfolios, and green bond issuance standards. Costa Rica has been active in the Green Climate Fund and receives technical support for taxonomy implementation.

Costa Rica NDC & Carbon Neutrality

Overview

Field	Value
country	Costa Rica
ndc_version	Third NDC (2025-2035), submitted November 2025
ndc_target_2030	Max 11,380 Gg CO2e net emissions (incl. LULUCF)
ndc_budget	132,700 Gg CO2e cumulative 2025-2035 (~53% reduction)
carbon_neutrality	2050
last_updated	2026-05-26

National Decarbonization Plan 2018-2050

Costa Rica published its Plan Nacional de Descarbonización in February 2019, becoming one of the first countries worldwide to present a long-term decarbonization strategy aligned with the Paris Agreement. The plan targets net-zero emissions by 2050, organized in three stages: initial (2018-2022), inflection (2023-2030), and massive deployment (2031-2050). It operates through 10 decarbonization axes and 8 cross-cutting strategies covering all major economic sectors.

NDC Sectoral Targets

Costa Rica's third NDC (2025-2035), submitted at COP30 in November 2025, establishes an economy-wide emissions budget with sector-specific mitigation contributions:

- **Energy:** Maintain and expand near-100% renewable electricity (historically ~95% from hydro, geothermal, wind, solar). Diversify away from hydro dependence given climate-induced drought risk. Biofuel mandate of 10% ethanol in gasoline.
- **Transport:** Electrify public transit as the top priority. EVs reached 12% of vehicle sales in 2023. Targets include zero-emission public bus fleet and expanded electric rail.

- **Agriculture & Livestock:** Nationally Appropriate Mitigation Actions (NAMAs) for coffee, livestock, and rice. Sustainable agriculture practices, low-carbon livestock management, climate-smart crops.
- **FOLU (Forests & Other Land Use):** The LULUCF sector is a net carbon sink equivalent to over 20% of economy-wide emissions. The 2050 target requires more than doubling current sink capacity. Costa Rica pioneered Payments for Ecosystem Services (PES) globally through FONAFIFO.
- **Waste:** Circular economy expansion, waste-to-energy, improved landfill management, methane capture.
- **Industry:** Clean manufacturing processes, energy efficiency in industrial operations, decarbonization of industrial heat.
- **Blue Carbon:** Emerging area in the third NDC — mangrove restoration, coastal wetlands, ocean-based climate solutions.

PES Pioneer

Costa Rica's Payments for Ecosystem Services program (Pagos por Servicios Ambientales), administered by FONAFIFO since 1997, is globally recognized as a model for conservation finance. It has channeled over USD 500 million to landowners for forest conservation, reforestation, agroforestry, and watershed protection. This program directly underpins several Cleantech Taxonomy nodes in the EX sector (PES platforms, community reforestation, agroforestry).

Climate Action Context

Costa Rica generates nearly all its electricity from renewable sources and has maintained forest cover above 50% through aggressive conservation policy. The Climate Action Tracker rates Costa Rica's overall climate targets as needing to be approximately 7% more ambitious to align with 1.5°C pathways. The country's unique challenge is transport — the sector accounts for the largest share of fossil fuel use and is the primary decarbonization frontier.

Costa Rica-Colombia Taxonomy Alignment

Overview

Field	Value
country	Costa Rica
comparison	Costa Rica GF Taxonomy vs Colombia Taxonomía Verde
shared_influence	CBI, EU Taxonomy, UNEP FI LATAM Framework
last_updated	2026-05-26

Shared Foundations

Both Costa Rica and Colombia built their green finance taxonomies on common international foundations: the EU Taxonomy architecture (substantial contribution + DNSH + social safeguards), Climate Bonds Initiative sector criteria, and the UNEP FI Common Framework for Sustainable Finance Taxonomies for Latin America and the Caribbean (2023). This shared heritage means approximately 70% of eligible activities overlap between the two taxonomies, particularly in energy, transport, construction, and water sectors.

Sector Coverage Comparison

Sector	Colombia TVC	Costa Rica GF	Notes
Energy	Y	Y	Both cover renewables, grid, storage. CR stronger on geothermal.
Transport	Y	Y	Both cover electromobility. CR more advanced in EV adoption.
Construction	Y	Y	Green buildings, energy efficiency. Similar criteria.
Water	Y	Y	Both cover treatment and supply. CR has stronger watershed focus.
Waste	Y	Y	Waste-to-energy, recycling, circular economy.

Agriculture	Y (tiered)	Y	Colombia has basic/intermediate/advanced tiers. CR uses PES framework.
Livestock	Y (tiered)	Y	Colombia more detailed with practice tiers for cattle.
Forestry	Y (tiered)	Y	Both cover reforestation. CR PES model is more established.
Manufacturing	Y	Y	Clean industrial processes in both.
ICT	Y	Y	Both include ICT for environmental monitoring.

Key Differences

- **Agricultural depth:** Colombia's TVC has a three-tier practice classification (basic, intermediate, advanced) for agriculture, livestock, and forestry. Costa Rica does not tier but relies on PES eligibility and NAMA alignment.
- **Hydrogen:** Both countries are developing hydrogen roadmaps, but Colombia's is more advanced with a published strategy. Costa Rica's hydrogen activities are covered but less detailed.
- **Fossil fuel transition:** Colombia's taxonomy explicitly addresses transition activities for fossil fuels. Costa Rica, with near-100% renewable electricity, has less need for fossil transition categories.
- **Blue carbon:** Costa Rica's NDC explicitly includes blue carbon (mangroves, coastal wetlands). Colombia addresses this through biodiversity and LULUCF channels.
- **PES integration:** Costa Rica's taxonomy benefits from 25+ years of PES implementation through FONAFIFO, giving it stronger forest finance infrastructure than any other LATAM country.

Interoperability Implications for Origo

For the Cleantech Taxonomy crosswalk, the high sector overlap means most nodes that are col_gf_aligned=Y will also be cr_gf_aligned=Y. The main divergences occur in: (a) fossil fuel transition nodes (Colombia Y, Costa Rica N), (b) carbon market nodes (neither taxonomy covers directly), and (c) advanced food-tech nodes like alternative proteins (neither covers). The EX-sector LATAM extensions (PES, agroforestry, silvopastoral) align strongly with both taxonomies.

Costa Rica Cleantech Taxonomy Crosswalk

Overview

Field	Value
country	Costa Rica
crosswalk_scope	71 Cleantech Taxonomy nodes vs CR GF Taxonomy + NDC
gf_taxonomy_sectors	Energy, Transport, Construction, Manufacturing, Waste, Water, ICT, Land Use
ndc_sectors	Energy, Transport, Agriculture, Waste, LULUCF, Industry, Blue Carbon
last_updated	2026-05-26

Methodology

This crosswalk maps each of the 71 Cleantech Taxonomy nodes against two Costa Rica regulatory instruments: (1) the BCCR Green Finance Taxonomy (August 2024) and (2) the National Decarbonization Plan / NDC (third NDC, 2025-2035). For each node, alignment is rated Y (directly covered), partial (indirectly or partially covered), or N (not covered).

Sector Summary — AFOLU (CT-AF)

Node	Label	cr_gf_aligned	cr_ndc_aligned
CT-AF-001	Land & Soil	Y	Y
CT-AF-002	Forests & Woodlands	Y	Y
CT-AF-003	Oceans & Water	Y	Y
CT-AF-004	Ice & Snow	N	N
CT-AF-005	Air & Atmosphere	N	partial
CT-AF-006	Smart Farming	Y	Y
CT-AF-007	Livestock & Fisheries	Y	Y

CT-AF-008	Crops	Y	Y
CT-AF-009	Alternative Meat & Seafood	N	N
CT-AF-010	Alternative Dairy & Egg	N	N

Sector Summary — Waste (CT-WA)

Node	Label	cr_gf_aligned	cr_ndc_aligned
CT-WA-001	Waste to Energy	Y	Y
CT-WA-002	Sustainable Materials	Y	partial
CT-WA-003	Textiles	N	N
CT-WA-004	Recycling	Y	Y
CT-WA-005	Solid Waste & Water Waste	Y	Y

Sector Summary — Cross-Sectoral (CT-XS)

Node	Label	cr_gf_aligned	cr_ndc_aligned
CT-XS-001	Carbon Capture & Storage	N	N
CT-XS-002	B2B Carbon Offsets	N	partial
CT-XS-003	B2C Carbon Offsets	N	partial
CT-XS-004	Carbon Intelligence	N	partial
CT-XS-005	Carbon Accounting	N	partial

Sector Summary — ICT (CT-IC)

Node	Label	cr_gf_aligned	cr_ndc_aligned
CT-IC-001	IoT & Earth Observation	Y	Y
CT-IC-002	Climate Data	partial	Y
CT-IC-003	Climate Finance	Y	Y
CT-IC-004	Climate Risk	partial	Y
CT-IC-005	Climate Insurance	N	partial

Sector Summary — Energy (CT-EN)

Node	Label	cr_gf_aligned	cr_ndc_aligned
CT-EN-001	Critical Minerals	N	N
CT-EN-002	Hydrogen	Y	Y
CT-EN-003	Nuclear	N	N
CT-EN-004	Bio & Synthetic Fuels	Y	Y
CT-EN-005	Fossil Fuels (Transition)	N	N
CT-EN-006	Solar	Y	Y
CT-EN-007	Wind	Y	Y
CT-EN-008	Geothermal	Y	Y
CT-EN-009	Biomass	Y	Y
CT-EN-010	Hydro Tidal & Wave	Y	Y
CT-EN-011	Batteries	Y	Y
CT-EN-012	Alternative Storage	partial	partial
CT-EN-013	Grids	Y	Y
CT-EN-014	EV Charging	Y	Y
CT-EN-015	Peer-to-Peer Energy	N	N

Sector Summary — Buildings (CT-BU)

Node	Label	cr_gf_aligned	cr_ndc_aligned
CT-BU-001	Construction	Y	Y
CT-BU-002	Heating & Cooling	Y	Y
CT-BU-003	Residential	Y	Y
CT-BU-004	Commercial	Y	Y
CT-BU-005	Transport Infrastructure	Y	Y

Sector Summary — Transport (CT-TR)

Node	Label	cr_gf_aligned	cr_ndc_aligned
CT-TR-001	Micro Mobility	Y	Y
CT-TR-002	Vehicles	Y	Y
CT-TR-003	Trains & Rolling Stock	Y	Y

CT-TR-004	Boats & Ships	N	partial
CT-TR-005	Aircraft	N	N

Sector Summary — Origo Extensions (CT-EX)

Node	Label	cr_gf_aligned	cr_ndc_aligned
CT-EX-001	Drought-resistant crops	Y	Y
CT-EX-002	Flood resilience (NbS)	Y	Y
CT-EX-003	Heat adaptation agriculture	Y	Y
CT-EX-004	Early warning systems	Y	Y
CT-EX-005	Community reforestation	Y	Y
CT-EX-006	Mangrove & blue carbon	Y	Y
CT-EX-007	Silvopastoral systems	Y	Y
CT-EX-008	Bioeconomy: NTFP	Y	Y
CT-EX-009	PES platforms	Y	Y
CT-EX-010	Solar home systems	Y	Y
CT-EX-011	Community biodigesters	Y	Y
CT-EX-012	Artisanal cleantech	Y	partial
CT-EX-013	Productive energy microenterprises	Y	Y
CT-EX-014	Remote sensing deforestation	Y	Y
CT-EX-015	AI-powered carbon MRV	N	partial
CT-EX-016	Supply chain traceability	N	N
CT-EX-017	Precision agriculture data	Y	Y
CT-EX-018	Deforestation-free certification	N	N
CT-EX-019	Supply chain due diligence	N	N
CT-EX-020	Smallholder EUDR assistance	Y	partial
CT-EX-021	EUDR documentation services	N	N

Costa Rica CTH Presence & Data Coverage

Overview

Field	Value
country	Costa Rica
cth_presence	CLP cohorts, REIN Hub connections
clp_status	Active cohorts
rein_hubs	Connected via LATAM network
last_updated	2026-05-26

CLP Cohort Coverage

CleantechHUB operates Cleantech Leadership Programme (CLP) cohorts that include Costa Rica-based cleantech entrepreneurs and organizations. Costa Rica participants typically operate in renewable energy, sustainable agriculture, waste management, and eco-tourism sectors. The CLP provides mentorship, technical assistance, and market access support that directly maps to multiple Cleantech Taxonomy nodes, particularly in the EN (Energy), AF (AFOLU), and EX (Extensions) sectors.

REIN Hub Connections

Costa Rica connects to the CTH REIN (Red de Emprendimiento e Innovación) Hub network through cross-border cleantech partnerships. Costa Rica's strong institutional framework for environmental innovation — including CINDE (investment promotion), PROCOMER (trade), and the Costa Rican Chamber of Technology — creates entry points for REIN Hub activities. Priority connection areas include: PES platform technology, agroforestry monitoring tools, and renewable energy microgrids.

Data Availability Assessment

Costa Rica has relatively strong public environmental data infrastructure compared to other LATAM countries:

- **National GHG Inventory:** Published regularly through SINAMECC (National Climate Change Metrics System)
- **Forest Cover:** SINAC/FONAFIFO maintain detailed forest cover and PES data
- **Energy:** ICE (Costa Rican Electricity Institute) publishes detailed generation mix data
- **EV Adoption:** MINAE tracks electric vehicle registrations and charging infrastructure
- **Financial:** BCCR and SUGEVAL publish green bond and sustainable finance data

Gaps remain in: disaggregated agricultural emissions by practice type, smallholder-level PES data, and real-time waste management metrics.

Taxonomy Node Coverage

Of the 71 Cleantech Taxonomy nodes, Costa Rica's GF taxonomy covers approximately 44 nodes (62%) and the NDC covers approximately 50 nodes (70%). The strongest coverage is in Energy (13/15 GF, 12/15 NDC), Buildings (5/5 both), and the EX extensions (15/21 GF, 16/21 NDC). The weakest coverage is in Cross-Sectoral (0/5 GF, 0/5 NDC for carbon markets) and niche food-tech categories (alternative proteins).

El Salvador

Country layer — v1.2

El Salvador — Overview & CTH Presence

country	El Salvador
iso_code	SV
cth_presence	CLP cohorts only (no REIN Hub)
gf_taxonomy	None — emerging interest post-COP28
ndc_target	30% unconditional / 50% conditional GHG reduction by 2030
eudr_commodities	Coffee (high exposure), Cacao (minor), Wood (partial — firewood/charcoal)
schema_version	1.1
last_updated	2026-05-27

Country Profile

El Salvador is CTH's smallest country engagement by coverage depth — CLP cohorts only, with no REIN Hub established. Despite this, El Salvador offers a unique cleantech profile: it is the only dollarized economy in the CTH portfolio, which simplifies green bond issuance and international investor access. The country's small geographic size (21,041 km²) and flat-to-hilly Pacific slope terrain create favorable conditions for solar energy deployment.

Economy and Climate Context

El Salvador's economy is driven by remittances (~26% of GDP), services, and agriculture. Coffee, historically the dominant export commodity, has declined due to coffee leaf rust (roya) and climate variability but remains the primary EUDR-exposed commodity. The country is highly vulnerable to ENSO-driven drought, tropical storms, and coastal flooding. Deforestation has reduced forest cover to approximately 12% of total land area — one of the lowest in the Americas.

CTH Engagement Summary

CTH's El Salvador footprint consists of CLP cohort participation since 2023. Startup participation has focused on solar energy, specialty coffee traceability, and drought adaptation technologies. The absence of a REIN Hub limits post-cohort support infrastructure. El Salvador startups have accessed Sustenttia diagnostics through the regional CLP platform.

EUDR Exposure

El Salvador's EUDR exposure is concentrated in specialty coffee, which is the country's most valuable agricultural export to the EU. Coffee farms are predominantly small-scale (70% under 5 hectares), creating significant challenges for plot-level geolocation and documentation requirements under EUDR Article 9. Cacao production is minor but growing in eastern departments. Wood exposure relates primarily to firewood and charcoal production, not industrial timber.


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El Salvador — Regulatory & Climate Framework

country	El Salvador
iso_code	SV
cth_presence	CLP cohorts only
gf_taxonomy	None — emerging interest post-COP28
ndc_target	30% unconditional / 50% conditional by 2030
eudr_commodities	Coffee, Cacao, Wood
schema_version	1.1
last_updated	2026-05-27

National Environmental Law

El Salvador's Ley de Medio Ambiente (Decreto Legislativo 233, 1998, reformed multiple times) provides the foundational environmental regulatory framework. The law establishes MARN (Ministerio de Medio Ambiente y Recursos Naturales) as the lead environmental authority and mandates environmental impact assessments for development projects. Subsequent reforms have incorporated climate change considerations, though the law predates modern climate policy frameworks.

NDC Commitments

El Salvador's updated NDC (2021) commits to a 30% unconditional and 50% conditional reduction in GHG emissions by 2030. Priority sectors include: (1) Energy — increasing renewable energy share to 74% of generation capacity, leveraging geothermal and solar; (2) AFOLU — reducing emissions from deforestation and land-use change through landscape restoration programs; (3) Waste — expanding methane capture from landfills. The conditional target is ambitious relative to the economy's size and depends heavily on international climate finance.

Key Institutions

MARN is the primary climate authority, responsible for NDC implementation and environmental regulation. The Consejo Nacional de Sustentabilidad Ambiental y Vulnerabilidad (CONASAV) provides cross-sectoral coordination. The Superintendencia del Sistema Financiero (SSF) regulates the financial sector but has not yet issued green finance guidance. The Consejo Salvadoreño del Café (CSC) manages coffee sector policy.

Climate Plans and Strategies

The Plan Nacional de Cambio Climático (PNCC) provides the strategic framework for climate action. El Salvador's Nationally Appropriate Mitigation Actions (NAMAs) focus on energy efficiency and renewable energy. The Plan Nacional de Restauración de Ecosistemas y Paisajes (Plan de Restauración) targets restoration of 1 million hectares through agroforestry and landscape approaches. The Estrategia Nacional de Medio Ambiente (ENMA) integrates climate resilience into environmental governance.

Dollarization and Green Finance Implications

El Salvador's dollarized economy (since 2001) creates unique green finance dynamics: (1) No exchange rate risk for international green bond investors; (2) Simplified cross-border investment structures for climate finance; (3) Federal Reserve monetary policy pass-through limits domestic monetary tools for green stimulus. The introduction of Bitcoin as legal tender (2021) has created regulatory uncertainty that may complicate green finance development.


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El Salvador — Green Finance Taxonomy Alignment

country	El Salvador
iso_code	SV
cth_presence	CLP cohorts only
gf_taxonomy	None — emerging interest post-COP28
ndc_target	30% unconditional / 50% conditional by 2030
eudr_commodities	Coffee, Cacao, Wood
schema_version	1.1
last_updated	2026-05-27

Green Finance Taxonomy Status

El Salvador does not have a national green finance taxonomy as of May 2026. There is emerging interest post-COP28, with MARN and SSF participating in IDB-sponsored regional workshops on sustainable finance classification. However, no formal development process has been initiated. The country's Bitcoin-as-legal-tender experiment has absorbed regulatory bandwidth that might otherwise support GF taxonomy development.

Gap Analysis

The absence of a GF taxonomy creates several gaps for Origo country mapping: (1) No domestic classification system to crosswalk — El Salvador's latam_el_salvador flags must rely entirely on NDC priorities, CBI criteria, and regional proxies; (2) No green bond framework specific to El Salvador's economy, though dollarization means USD-denominated green bonds face no currency risk; (3) Limited institutional capacity for taxonomy development given MARN's resource constraints.

Nearest Equivalents

El Salvador references the following proxy frameworks: (1) Costa Rica's green finance guidelines — most relevant Central American reference; (2) CBI taxonomy — applied for any future green bond issuance; (3) EU Taxonomy — applicable to coffee exports under EUDR compliance pathways; (4) SICA (Central American Integration System) regional sustainability frameworks. The Origo taxonomy assigns latam_el_salvador flags based on NDC priorities, EUDR commodity exposure, and CLP sector activity.

Development Prospects

A Salvadoran GF taxonomy is likely 4–5 years from adoption given current institutional capacity and competing regulatory priorities. The CABEI (Central American Bank for Economic Integration) green bond program may

provide an external catalyst by requiring taxonomy-aligned classification for financed projects. IDB Invest has signaled interest in supporting Central American taxonomy harmonization efforts that could accelerate El Salvador's timeline.


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El Salvador — CLP Cohort Data Summary

country	El Salvador
iso_code	SV
cth_presence	CLP cohorts only
gf_taxonomy	None — emerging interest post-COP28
ndc_target	30% unconditional / 50% conditional by 2030
eudr_commodities	Coffee, Cacao, Wood
schema_version	1.1
last_updated	2026-05-27

CLP Cohort History

El Salvador joined the CLP program in 2023, making it the newest country in CTH's portfolio. Cohort participation has been smaller in scale than Colombia, Costa Rica, or Peru — reflecting both the country's smaller cleantech ecosystem and the absence of a REIN Hub to provide sustained post-cohort support. Startup quality has been concentrated in solar energy and specialty coffee technology.

Cohort Summary

Year	Startups	Primary Sectors	Notes
2023	3	EN, AF	First cohort; solar installers and coffee traceability
2024	4	EN, AF, IC	Solar-focused; one climate data startup entered
2025	3	AF, EN	Drought adaptation and agroforestry focus
2026	2	EN, AF	Current cohort; solar + specialty coffee

Sector Distribution

Across El Salvador CLP cohorts, sector distribution is: Energy (42%) — dominated by solar deployment and distribution startups leveraging flat terrain and high irradiance; AFOLU (42%) — specialty coffee traceability, drought-resistant agriculture, and agroforestry; Climate Intelligence (16%) — climate data and early warning systems for drought/ENSO events.

Key Observations

El Salvador's CLP participation reveals several patterns: (1) The cleantech ecosystem is early-stage — most startups are pre-revenue or early-revenue; (2) Solar energy has outsized representation due to favorable geography (Pacific-facing, flat terrain, 5.5+ kWh/m²/day irradiance); (3) Coffee sector startups are increasingly EUDR-motivated; (4) The absence of a REIN Hub limits sustained engagement — startups lose momentum between cohort cycles; (5) Dollarization simplifies international investor engagement for those startups that reach investment readiness.


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El Salvador — Taxonomy Node Mapping

country	El Salvador
mapping_type	taxonomy_node_mapping
schema_version	1.1

Node Mapping Summary

El Salvador's taxonomy node mapping reflects its concentrated EUDR exposure in specialty coffee, its strong solar energy potential, and its high climate vulnerability (drought, ENSO, coastal flooding). The node mapping is narrower than Peru or Colombia given El Salvador's smaller economy and limited cleantech ecosystem. AFOLU nodes for coffee are tagged Y; solar energy nodes are tagged Y; adaptation-relevant extension nodes are tagged Y; most other sectors are partial or N.

AFOLU Nodes

Node ID	Label	latam_el_salvador	Rationale
CT-AF-001	Land & Soil	Y	Soil degradation from intensive coffee cultivation; restoration needs
CT-AF-002	Forests & Woodlands	Y	12% forest cover remaining — shade coffee agroforestry is primary restoration pathway
CT-AF-003	Oceans & Water	partial	Coastal flooding and Pacific fisheries; limited cleantech activity
CT-AF-004	Ice & Snow	N	No relevance — tropical lowland country
CT-AF-005	Air & Atmosphere	N	No significant cleantech activity in air quality
CT-AF-006	Smart Farming	Y	Precision agriculture for specialty coffee; drought monitoring for smallholders
CT-AF-007	Livestock & Fisheries	N	Livestock sector small and not EUDR-exposed
CT-AF-008	Crops	Y	Coffee is the primary export crop; cacao growing; drought-resistant staples needed
CT-AF-009	Alternative Meat & Seafood	N	No market presence
CT-AF-010	Alternative Dairy & Egg	N	No market presence

Energy Nodes

Node ID	Label	latam_el_salvador	Rationale
CT-EN-001	Critical Minerals	N	No significant mineral reserves; mining ban in effect since 2017
CT-EN-002	Hydrogen	N	No hydrogen development programs
CT-EN-003	Nuclear	N	No nuclear program
CT-EN-004	Bio & Synthetic Fuels	partial	Sugarcane ethanol potential; small scale
CT-EN-005	Fossil Fuels (Transition)	partial	Oil-dependent transport sector needs transition planning
CT-EN-006	Solar	Y	Excellent irradiance (5.5+ kWh/m²/day); flat Pacific terrain; strong CLP pipeline
CT-EN-007	Wind	partial	Metapán wind corridor; limited compared to solar potential
CT-EN-008	Geothermal	Y	~25% of electricity from geothermal (Berlín, Ahuachapán plants); volcanic ring potential
CT-EN-009	Biomass	partial	Coffee husk and sugarcane bagasse; small scale
CT-EN-010	Hydro Tidal & Wave	partial	Small hydropower on Lempa River; limited expansion potential
CT-EN-011	Batteries	N	No battery production or significant storage deployment
CT-EN-012	Alternative Storage	N	No alternative storage projects
CT-EN-013	Grids	partial	SIEPAC regional grid interconnection; needs modernization for solar integration
CT-EN-014	EV Charging	N	Minimal EV adoption; no charging infrastructure
CT-EN-015	Peer-to-Peer Energy	N	No regulatory framework

Climate Intelligence & Carbon Nodes

Node ID	Label	latam_el_salvador	Rationale
CT-IC-001	IoT & Earth Observation	partial	MARN environmental monitoring; limited satellite coverage programs
CT-IC-002	Climate Data	Y	Drought and ENSO monitoring critical for agriculture; early warning systems

CT-IC-003	Climate Finance	partial	CABEI green bond access; limited domestic green finance infrastructure
CT-IC-004	Climate Risk	Y	High vulnerability to drought, tropical storms, coastal flooding, volcanic risk
CT-IC-005	Climate Insurance	partial	CCRIF SPC Caribbean/Central America parametric insurance; emerging
CT-XS-001	Carbon Capture & Storage	N	No CCS activity
CT-XS-002	B2B Carbon Offsets	partial	Small-scale forestry offset projects; limited market
CT-XS-003	B2C Carbon Offsets	N	No domestic B2C carbon market
CT-XS-004	Carbon Intelligence	N	No national carbon registry or intelligence platform
CT-XS-005	Carbon Accounting	partial	National GHG inventory exists but limited granularity

Waste, Built Environment & Transport Nodes

Node ID	Label	latam_el_salvador	Rationale
CT-WA-001 to CT-WA-005	Waste (all)	partial	Landfill methane capture potential; coffee processing waste; limited cleantech
CT-BU-001 to CT-BU-005	Built Environment (all)	N	Minimal green building activity; no cleantech startup presence
CT-TR-001 to CT-TR-005	Transport (all)	N	No significant cleantech transport activity

Extension Nodes

Node ID	Label	latam_el_salvador	Rationale
CT-EX-001	Drought-resistant crop varieties	Y	Critical — ENSO drought is the primary agricultural risk
CT-EX-002	Flood resilience (nature-based)	Y	Coastal and riverine flooding from tropical storms
CT-EX-003	Heat adaptation for agriculture	Y	Coffee rust and heat stress at lower elevations
CT-EX-004	Early warning systems	Y	Drought/ENSO early warning critical for 400K+ smallholders
CT-EX-005	Community-led reforestation	Y	Priority: El Salvador has lowest forest cover in Americas; shade coffee reforestation
CT-EX-006	Mangrove restoration	Y	Pacific coast mangroves for storm surge protection and blue carbon

CT-EX-007	Silvopastoral systems	partial	Small-scale livestock; limited compared to larger countries
CT-EX-008	Bioeconomy: NTFPs	N	Limited forest resources for non-timber products
CT-EX-009	PES platforms	partial	Small-scale PES pilots; limited government funding
CT-EX-010	Solar home systems	Y	Rural electrification gaps; strong solar resource
CT-EX-014	Remote sensing deforestation monitoring	partial	Small land area limits complexity; basic MARN monitoring exists
CT-EX-016	Supply chain traceability	Y	Specialty coffee traceability for EUDR compliance
CT-EX-017	Precision agriculture platforms	Y	Smallholder coffee farm management and drought adaptation
CT-EX-018	Deforestation-free certification	Y	EUDR compliance for specialty coffee exports to EU
CT-EX-019	Supply chain due diligence	Y	EUDR operator obligations for Salvadoran coffee exporters
CT-EX-020	Smallholder EUDR assistance	Y	70% of coffee farms under 5 ha — massive EUDR support need
CT-EX-025	Cacao smallholder digital inclusion	Y	Growing cacao sector needs digital tools for emerging EUDR requirements
CT-EX-030	Pasture restoration and livestock intensification	Y	Land-scarce country benefits from intensification to free land for reforestation
CT-EX-031	Cattle deforestation-free verification	Y	Even small cattle sector needs verification given minimal remaining forest
CT-EX-038	Timber legality verification	Y	Firewood/charcoal supply chain legality verification

Guatemala

Country layer — v1.2

Guatemala — Overview & CTH Presence

country	Guatemala
iso_code	GT
cth_presence	CLP cohorts only (no REIN Hub)
gf_taxonomy	None — opportunity: largest Central American capital market
ndc_target	22.6% unconditional GHG reduction by 2030
eudr_commodities	Coffee (high — Huehuetenango, Antigua), Cacao (moderate), Wood (Petén), Rubber (minor)
schema_version	1.1
last_updated	2026-05-27

Country Profile

Guatemala is Central America's largest economy by GDP and population (~18 million). CTH engagement consists of CLP cohorts only, with no REIN Hub established. Despite this, Guatemala presents the most diverse cleantech opportunity set of the three Central American countries in the Origo taxonomy: world-leading cardamom exports, highland specialty coffee, the Maya Biosphere Reserve (Petén), and the region's strongest geothermal energy capacity after Costa Rica.

Economy and Climate Context

Guatemala's economy is diversified across agriculture (10% of GDP but 30% of employment), remittances (~18% of GDP), manufacturing, and services. Coffee from highland regions (Huehuetenango, Antigua, Cobán) is a major export commodity and the primary EUDR exposure. Guatemala is the world's largest cardamom exporter — a commodity NOT on the EUDR list but economically significant. The Petén department contains the Maya Biosphere Reserve, one of the largest contiguous forest areas in Mesoamerica, under severe deforestation pressure.

CTH Engagement Summary

CTH's Guatemala footprint includes CLP cohort participation since 2023. Startups have focused on geothermal energy applications, coffee traceability, and Maya forest conservation technologies. Guatemala has the largest untapped cleantech potential of the three Central American countries due to its market size, geothermal resources, and forest conservation needs. A REIN Hub for Guatemala could serve as a Central American anchor node.

EUDR Exposure

Guatemala has significant EUDR exposure across four commodities. Highland coffee (Huehuetenango, Antigua Guatemala, Cobán) is the highest-exposure commodity, with EU as a major destination market. Cacao production in Alta Verapaz represents moderate exposure. Wood from Petén and other forested departments faces EUDR requirements, particularly timber from community forest concessions in the Maya Biosphere Reserve's multiple-use zone. Rubber production is minor but present. Notably, cardamom — Guatemala's other major agricultural export — is not subject to EUDR.


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Guatemala — Regulatory & Climate Framework

country	Guatemala
iso_code	GT
cth_presence	CLP cohorts only
gf_taxonomy	None — opportunity: largest Central American capital market
ndc_target	22.6% unconditional by 2030
eudr_commodities	Coffee, Cacao, Wood, Rubber
schema_version	1.1
last_updated	2026-05-27

Climate Framework

Guatemala's climate governance is anchored in Acuerdo Gubernativo 329-2009, which created the institutional framework for climate change response. This is one of the older climate instruments in the region and predates the Paris Agreement — it needs updating to reflect current ambitions. The Ley Marco para Regular la Reducción de la Vulnerabilidad, la Adaptación Obligatoria ante los Efectos del Cambio Climático y la Mitigación de Gases de Efecto Invernadero (Decreto 7-2013) provides a more recent legal foundation but implementation has been slow.

NDC Commitments

Guatemala's updated NDC (originally 2019, updated 2021) commits to a 22.6% unconditional GHG reduction by 2030 relative to BAU. This is the most modest unconditional target among the three countries in this phase, reflecting institutional and fiscal constraints. Key sectoral priorities: (1) LULUCF — reducing deforestation in Petén and the northern lowlands, which account for the majority of Guatemala's emissions; (2) Energy — expanding geothermal, solar, and biomass generation; (3) Agriculture — improved practices in coffee and staple crop production to reduce emissions intensity.

Key Institutions

MARN Guatemala (Ministerio de Ambiente y Recursos Naturales) is the primary climate and environmental authority. CONAP (Consejo Nacional de Áreas Protegidas) manages the Maya Biosphere Reserve and other protected areas. INAB (Instituto Nacional de Bosques) governs forest management and community forestry concessions. ANACAFÉ (Asociación Nacional del Café) manages coffee sector policy and export standards. The Superintendencia de Bancos regulates the financial sector but has limited green finance mandates.

Climate Plans and Strategies

Guatemala's Política Nacional de Cambio Climático provides the strategic vision. The Plan de Acción Nacional de Cambio Climático (PANCC) operationalizes NDC commitments. The Estrategia Nacional para la Reducción de la Deforestación (ENREDD+) targets reduced deforestation through REDD+ mechanisms, with Petén as the priority landscape. Guatemala's National Adaptation Plan focuses on water security, food sovereignty, and disaster risk reduction — reflecting the country's high vulnerability to hurricanes, drought, and volcanic activity.

Community Forest Concessions

Guatemala's community forest concession model in the Maya Biosphere Reserve's multiple-use zone is internationally recognized as one of the most successful community-managed forest governance systems in the tropics. ACOFOP (Asociación de Comunidades Forestales de Petén) coordinates 12 community concessions covering over 400,000 hectares. This model has demonstrated deforestation rates near zero within concession areas, significantly lower than surrounding unmanaged areas. It is directly relevant to EUDR timber compliance and REDD+ carbon market activity.


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Guatemala — Green Finance Taxonomy Alignment

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iso_code	GT
cth_presence	CLP cohorts only
gf_taxonomy	None — opportunity: largest Central American capital market
ndc_target	22.6% unconditional by 2030
eudr_commodities	Coffee, Cacao, Wood, Rubber
schema_version	1.1
last_updated	2026-05-27

Green Finance Taxonomy Status

Guatemala does not have a national green finance taxonomy as of May 2026. However, this represents a significant opportunity: Guatemala has the largest capital market in Central America, with the Bolsa de Valores Nacional and a banking sector large enough to support green bond issuance. The Superintendencia de Bancos has not yet issued green finance guidance, but the institutional infrastructure exists for taxonomy development if political will materializes.

Gap Analysis

The absence of a Guatemalan GF taxonomy creates these gaps for Origo: (1) No domestic activity classification for crosswalking — latam_guatemala flags rely on NDC priorities, community forestry governance frameworks, and EUDR commodity exposure; (2) The largest Central American economy lacks a green finance standard, creating a regional gap that ripples through CABEI-financed programs; (3) No taxonomy means no standardized eligibility criteria for the community forest concession model — which could be a globally significant green finance use case.

Nearest Equivalents

Guatemala references the following proxy frameworks: (1) Costa Rica's green finance guidelines — the most developed Central American reference; (2) CBI taxonomy — applicable through CABEI bond programs; (3) EU Taxonomy — referenced by European coffee importers under EUDR compliance; (4) REDD+ safeguards and benefit-sharing standards — particularly relevant for Petén community forestry; (5) FSC (Forest Stewardship Council) certification — several community concessions in Petén hold FSC certification, which serves as a de facto green standard for timber.

Development Prospects

Guatemala could leapfrog other Central American countries in GF taxonomy development due to its capital market size and the internationally recognized community forestry model that provides a ready-made green activity classification template. IDB and World Bank technical assistance programs are supporting sustainable finance development in Guatemala. A realistic timeline for taxonomy adoption is 3–4 years, potentially accelerated if CABEI mandates taxonomy alignment for its regional lending programs.


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Guatemala — CLP Cohort Data Summary

country	Guatemala
iso_code	GT
cth_presence	CLP cohorts only
gf_taxonomy	None — opportunity: largest Central American capital market
ndc_target	22.6% unconditional by 2030
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last_updated	2026-05-27

CLP Cohort History

Guatemala has participated in CLP cohorts since 2023. While lacking a REIN Hub, Guatemala produces a more diverse startup pipeline than El Salvador due to its larger economy and varied geography — highland coffee, Petén forests, Pacific coast agriculture, and volcanic geothermal resources create distinct cleantech niches. Guatemala's CLP cohorts have been moderately sized, reflecting an ecosystem with more entrepreneurs than El Salvador but less institutional support than Peru.

Cohort Summary

Year	Startups	Primary Sectors	Notes
2023	4	AF, EN	First cohort; coffee traceability and geothermal applications
2024	5	AF, EN, IC	Maya forest conservation tech; solar deployment
2025	4	AF, IC	EUDR-focused; community forest governance platforms
2026	3	AF, EN	Current cohort; geothermal + coffee

Sector Distribution

Across Guatemala CLP cohorts, sector distribution is: AFOLU (50%) — highland coffee, Maya forest conservation, community forestry governance, cacao agroforestry; Energy (31%) — geothermal applications, solar, biomass from agricultural waste; Climate Intelligence (19%) — deforestation monitoring for Petén, supply chain traceability, and REDD+ MRV platforms.

Key Observations

Guatemala's CLP participation reveals distinct patterns: (1) Community forestry governance technology is a unique niche — no other CTH country has this focus; (2) Geothermal startups reflect Guatemala's volcanic geology and existing geothermal infrastructure; (3) Highland specialty coffee (Huehuetenango, Antigua) creates premium market access that motivates EUDR compliance investment; (4) The Maya Biosphere Reserve generates carbon market activity (REDD+) that attracts climate intelligence startups; (5) Cardamom, Guatemala's most distinctive agricultural export, falls outside the EUDR framework but could benefit from Origo-style traceability infrastructure for voluntary sustainability markets.


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Guatemala — Taxonomy Node Mapping

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Node Mapping Summary

Guatemala's taxonomy node mapping reflects its diverse EUDR exposure (coffee, cacao, wood, rubber), its unique community forest concession model in Petén, strong geothermal energy potential, and highland agricultural adaptation needs. AFOLU nodes for coffee and forestry are tagged Y. Geothermal and solar energy nodes are tagged Y. NbS/bioeconomy extension nodes related to the Maya forest are tagged Y. Community forest governance creates a distinct node relevance pattern not seen in the other two countries.

AFOLU Nodes

Node ID	Label	latam_guatemala	Rationale
CT-AF-001	Land & Soil	Y	Highland coffee soil management; Petén land restoration after slash-and-burn
CT-AF-002	Forests & Woodlands	Y	Maya Biosphere Reserve — one of Mesoamerica's largest forests; community concessions
CT-AF-003	Oceans & Water	partial	Motagua and Polochic river basin management; Pacific coast fisheries
CT-AF-004	Ice & Snow	N	No relevance — tropical country
CT-AF-005	Air & Atmosphere	partial	Guatemala City air quality; volcanic emissions monitoring
CT-AF-006	Smart Farming	Y	Precision agriculture for highland coffee and cacao; cardamom production data
CT-AF-007	Livestock & Fisheries	partial	Petén cattle ranching contributes to deforestation; not a major EUDR exposure
CT-AF-008	Crops	Y	Coffee, cacao, cardamom — major export crops with climate vulnerability
CT-AF-009	Alternative Meat & Seafood	N	No market presence

CT-AF-010	Alternative Dairy & Egg	N	No market presence

Energy Nodes

Node ID	Label	latam_guatemala	Rationale
CT-EN-001	Critical Minerals	partial	Nickel (Izabal), some metallic mineral reserves; controversial mining sector
CT-EN-002	Hydrogen	N	No hydrogen development programs
CT-EN-003	Nuclear	N	No nuclear program
CT-EN-004	Bio & Synthetic Fuels	partial	Sugarcane ethanol and palm oil biodiesel; controversial social impacts
CT-EN-005	Fossil Fuels (Transition)	partial	Oil production in Petén; transition planning needed
CT-EN-006	Solar	Y	Good irradiance across Pacific slope; rural off-grid solar for remote communities
CT-EN-007	Wind	partial	San Marcos wind corridor; 2 operating wind farms
CT-EN-008	Geothermal	Y	Strongest geothermal potential in Central America after Costa Rica; Zunil, Amatitlán
CT-EN-009	Biomass	Y	Sugarcane bagasse, coffee husk, and palm waste; significant installed capacity
CT-EN-010	Hydro Tidal & Wave	partial	Hydropower significant (~30% of generation); Chixoy dam; social controversy
CT-EN-011	Batteries	N	No battery production or significant storage deployment
CT-EN-012	Alternative Storage	N	No alternative storage projects
CT-EN-013	Grids	partial	SIEPAC interconnection; grid modernization for renewable integration
CT-EN-014	EV Charging	N	Minimal EV adoption
CT-EN-015	Peer-to-Peer Energy	N	No regulatory framework

Climate Intelligence & Carbon Nodes

Node ID	Label	latam_guatemala	Rationale
CT-IC-001	IoT & Earth Observation	Y	CONAP Petén monitoring; satellite deforestation detection for Maya Biosphere Reserve

CT-IC-002	Climate Data	Y	INSIVUMEH climate/volcanic monitoring; drought early warning for Dry Corridor
CT-IC-003	Climate Finance	Y	Largest Central American capital market; CABEI green bond access; REDD+ finance
CT-IC-004	Climate Risk	Y	Hurricane, drought (Corredor Seco), volcanic, and seismic risk — extremely high vulnerability
CT-IC-005	Climate Insurance	partial	CCRIF SPC parametric insurance; agricultural index insurance pilots
CT-XS-001	Carbon Capture & Storage	N	No CCS activity
CT-XS-002	B2B Carbon Offsets	Y	Maya Biosphere Reserve REDD+ projects; active carbon credit generation
CT-XS-003	B2C Carbon Offsets	partial	Tourism-linked offsets; limited scale
CT-XS-004	Carbon Intelligence	partial	Limited national carbon registry; REDD+ reporting systems
CT-XS-005	Carbon Accounting	partial	National GHG inventory; community forest carbon accounting for REDD+

Waste, Built Environment & Transport Nodes

Node ID	Label	latam_guatemala	Rationale
CT-WA-001	Waste to Energy	partial	Guatemala City landfill methane; sugarcane waste cogeneration
CT-WA-002	Sustainable Materials	partial	Timber from community concessions (FSC-certified); bamboo potential
CT-WA-003 to CT-WA-005	Waste (remaining)	partial	Municipal waste challenges in Guatemala City; coffee processing waste
CT-BU-001 to CT-BU-005	Built Environment (all)	partial	Guatemala City green building emerging; seismic resilience technology overlap
CT-TR-001 to CT-TR-005	Transport (all)	partial	Transmetro BRT expansion; limited cleantech transport startup activity

Extension Nodes

Node ID	Label	latam_guatemala	Rationale
CT-EX-001	Drought-resistant crop varieties	Y	Corredor Seco drought affecting staple crops and coffee; critical food security

CT-EX-002	Flood resilience (nature-based)	Y	Hurricane and tropical storm flooding; Polochic/Motagua basins
CT-EX-003	Heat adaptation for agriculture	Y	Coffee rust at lower elevations; heat stress in Corredor Seco
CT-EX-004	Early warning systems	Y	Volcanic, seismic, hurricane, and drought early warning critical
CT-EX-005	Community-led reforestation	Y	Maya Biosphere community concession model — global best practice
CT-EX-006	Mangrove restoration	partial	Pacific coast mangroves; smaller scale than Caribbean nations
CT-EX-007	Silvopastoral systems	Y	Petén cattle ranching — silvopastoral as deforestation alternative
CT-EX-008	Bioeconomy: NTFPs	Y	Petén community concessions: xate palm, chicle, allspice — globally significant
CT-EX-009	PES platforms	Y	REDD+ payments for Maya Biosphere conservation; PINPEP incentive program
CT-EX-010	Solar home systems	Y	Rural electrification gaps in Alta Verapaz, Petén, and western highlands
CT-EX-011	Community biodigesters	partial	Highland livestock communities; limited scale
CT-EX-014	Remote sensing deforestation monitoring	Y	Petén deforestation monitoring; CONAP surveillance; fire detection
CT-EX-015	AI-powered carbon MRV	Y	Maya Biosphere REDD+ MRV requirements; community concession verification
CT-EX-016	Supply chain traceability	Y	Coffee, cacao, and timber traceability for EUDR and voluntary markets
CT-EX-017	Precision agriculture platforms	Y	Highland coffee, cacao, and cardamom farm management
CT-EX-018	Deforestation-free certification	Y	EUDR compliance for coffee and cacao; FSC for community timber
CT-EX-019	Supply chain due diligence	Y	EUDR operator obligations for Guatemalan exporters
CT-EX-020	Smallholder EUDR assistance	Y	Highland coffee smallholders need EUDR compliance support
CT-EX-021	EUDR operator documentation	Y	Documentation for coffee, cacao, and timber operators
CT-EX-022	Cacao geolocation	Y	Alta Verapaz cacao plot mapping
CT-EX-023	Cacao agroforestry monitoring	Y	Cacao under forest canopy in Alta Verapaz

CT-EX-032	Cross-commodity landscape compliance	Y	Multi-commodity landscapes in Petén and Alta Verapaz
CT-EX-038	Timber legality verification	Y	Community concession timber legality — FSC-certified operations in Petén
CT-EX-039	Community forest management	Y	ACOFOP community concessions — global best practice for forest governance
CT-EX-040	Smallholder group certification	Y	Highland coffee cooperatives; community forestry group certification