Energy Systems

OT-EN-xxx nodes

- 7.01 — Solar
- 7.02 — Wind
- 7.03 — Geothermal
- 7.04 — Biomass
- 7.05 — Hydro Tidal & Wave
- 8.01 — Batteries
- 8.02 — Alternative Storage
- 8.03 — Grids
- 8.04 — EV Charging
- 8.05 — Peer-to-Peer Energy
- CT-EN-001 — Solar PV (Utility & Distributed)
- CT-EN-002 — Wind Energy
- CT-EN-003 — Small Hydropower
- CT-EN-004 — Energy Storage (Battery & Grid)
- CT-EN-005 — Grid Modernisation
- CT-EN-006 — Distributed Generation & Prosumers
- CT-EN-007 — Clean Cooking
- CT-EN-008 — Energy Efficiency (Industrial)
- CT-EN-009 — Green Hydrogen
- CT-EN-010 — Biomass & Biogas

7.01 — Solar

origo_id	7.01
origo_label	Solar
sector	EN
source	HolonIQ v2.1
gap_type	
latam_relevant	Y
cpi_aligned	TBD — Phase 1
eu_taxonomy_aligned	TBD — Phase 1
cbi_eligible	TBD — Phase 1
eudr_coffee	N
eudr_cacao	N
eudr_relevant	N
eudr_article9_field	none
eudr_evidence_type	none
col_gf_sector	energy
col_gf_activity	Solar photovoltaic electricity generation
col_gf_aligned	Y
col_ndc2030_aligned	TBD — Phase 2
latam_colombia	Y
cr_gf_aligned	Y
cth_data_coverage	TBD — Phase 4
schema_version	1.0
last_updated	2026-05-26

Description

[To be populated — description of what this taxonomy node covers and its relevance to LATAM climate innovation and EUDR compliance.]

EUDR Compliance Relevance

[To be populated during Phase 3 — how data in this category supports Article 9 due diligence.]

Colombia Context

[To be populated during Phase 4 — Colombia-specific regulatory alignment, CTH field presence, market conditions.]


```
{
  "origo_id": "7.01",
  "origo_label": "Solar",
  "sector": "EN",
  "source": "HolonIQ v2.1",
  "eudr_coffee": "N",
  "eudr_cacao": "N",
  "eudr_relevant": "N",
  "eudr_article9_field": "none",
  "col_gf_sector": "energy",
  "col_gf_aligned": "Y",
  "latam_colombia": "Y",
  "cr_gf_aligned": "Y",
  "schema_version": "1.0",
  "last_updated": "2026-05-26"
}
```

7.02 — Wind

origo_id	7.02
origo_label	Wind
sector	EN
source	HolonIQ v2.1
gap_type	
latam_relevant	Y
cpi_aligned	TBD — Phase 1
eu_taxonomy_aligned	TBD — Phase 1
cbi_eligible	TBD — Phase 1
eudr_coffee	N
eudr_cacao	N
eudr_relevant	N
eudr_article9_field	none
eudr_evidence_type	none
col_gf_sector	energy
col_gf_activity	Wind energy generation
col_gf_aligned	Y
col_ndc2030_aligned	TBD — Phase 2
latam_colombia	Y
cr_gf_aligned	Y
cth_data_coverage	TBD — Phase 4
schema_version	1.0
last_updated	2026-05-26

Description

[To be populated — description of what this taxonomy node covers and its relevance to LATAM climate innovation and EUDR compliance.]

EUDR Compliance Relevance

[To be populated during Phase 3 — how data in this category supports Article 9 due diligence.]

Colombia Context

[To be populated during Phase 4 — Colombia-specific regulatory alignment, CTH field presence, market conditions.]


```
{
  "origo_id": "7.02",
  "origo_label": "Wind",
  "sector": "EN",
  "source": "HolonIQ v2.1",
  "eudr_coffee": "N",
  "eudr_cacao": "N",
  "eudr_relevant": "N",
  "eudr_article9_field": "none",
  "col_gf_sector": "energy",
  "col_gf_aligned": "Y",
  "latam_colombia": "Y",
  "cr_gf_aligned": "Y",
  "schema_version": "1.0",
  "last_updated": "2026-05-26"
}
```

7.03 — Geothermal

origo_id	7.03
origo_label	Geothermal
sector	EN
source	HolonIQ v2.1
gap_type	
latam_relevant	Y
cpi_aligned	TBD — Phase 1
eu_taxonomy_aligned	TBD — Phase 1
cbi_eligible	TBD — Phase 1
eudr_coffee	N
eudr_cacao	N
eudr_relevant	N
eudr_article9_field	none
eudr_evidence_type	none
col_gf_sector	energy
col_gf_activity	Geothermal energy generation
col_gf_aligned	Y
col_ndc2030_aligned	TBD — Phase 2
latam_colombia	Y
cr_gf_aligned	Y
cth_data_coverage	TBD — Phase 4
schema_version	1.0
last_updated	2026-05-26

Description

[To be populated — description of what this taxonomy node covers and its relevance to LATAM climate innovation and EUDR compliance.]

EUDR Compliance Relevance

[To be populated during Phase 3 — how data in this category supports Article 9 due diligence.]

Colombia Context

[To be populated during Phase 4 — Colombia-specific regulatory alignment, CTH field presence, market conditions.]


```
{
  "origo_id": "7.03",
  "origo_label": "Geothermal",
  "sector": "EN",
  "source": "HolonIQ v2.1",
  "eudr_coffee": "N",
  "eudr_cacao": "N",
  "eudr_relevant": "N",
  "eudr_article9_field": "none",
  "col_gf_sector": "energy",
  "col_gf_aligned": "Y",
  "latam_colombia": "Y",
  "cr_gf_aligned": "Y",
  "schema_version": "1.0",
  "last_updated": "2026-05-26"
}
```

7.04 — Biomass

origo_id	7.04
origo_label	Biomass
sector	EN
source	HolonIQ v2.1
gap_type	
latam_relevant	Y
cpi_aligned	TBD — Phase 1
eu_taxonomy_aligned	TBD — Phase 1
cbi_eligible	TBD — Phase 1
eudr_coffee	N
eudr_cacao	N
eudr_relevant	N
eudr_article9_field	none
eudr_evidence_type	none
col_gf_sector	energy
col_gf_activity	Bioenergy/biomass generation
col_gf_aligned	Y
col_ndc2030_aligned	TBD — Phase 2
latam_colombia	Y
cr_gf_aligned	Y
cth_data_coverage	TBD — Phase 4
schema_version	1.0
last_updated	2026-05-26

Description

[To be populated — description of what this taxonomy node covers and its relevance to LATAM climate innovation and EUDR compliance.]

EUDR Compliance Relevance

[To be populated during Phase 3 — how data in this category supports Article 9 due diligence.]

Colombia Context

[To be populated during Phase 4 — Colombia-specific regulatory alignment, CTH field presence, market conditions.]


```
{
  "origo_id": "7.04",
  "origo_label": "Biomass",
  "sector": "EN",
  "source": "HolonIQ v2.1",
  "eudr_coffee": "N",
  "eudr_cacao": "N",
  "eudr_relevant": "N",
  "eudr_article9_field": "none",
  "col_gf_sector": "energy",
  "col_gf_aligned": "Y",
  "latam_colombia": "Y",
  "cr_gf_aligned": "Y",
  "schema_version": "1.0",
  "last_updated": "2026-05-26"
}
```

7.05 — Hydro Tidal & Wave

origo_id	7.05
origo_label	Hydro Tidal & Wave
sector	EN
source	HolonIQ v2.1
gap_type	
latam_relevant	Y
cpi_aligned	TBD — Phase 1
eu_taxonomy_aligned	TBD — Phase 1
cbi_eligible	TBD — Phase 1
eudr_coffee	N
eudr_cacao	N
eudr_relevant	N
eudr_article9_field	none
eudr_evidence_type	none
col_gf_sector	energy
col_gf_activity	Hydropower generation
col_gf_aligned	Y
col_ndc2030_aligned	TBD — Phase 2
latam_colombia	Y
cr_gf_aligned	Y
cth_data_coverage	TBD — Phase 4
schema_version	1.0
last_updated	2026-05-26

Description

[To be populated — description of what this taxonomy node covers and its relevance to LATAM climate innovation and EUDR compliance.]

EUDR Compliance Relevance

[To be populated during Phase 3 — how data in this category supports Article 9 due diligence.]

Colombia Context

[To be populated during Phase 4 — Colombia-specific regulatory alignment, CTH field presence, market conditions.]


```
{
  "origo_id": "7.05",
  "origo_label": "Hydro Tidal & Wave",
  "sector": "EN",
  "source": "HolonIQ v2.1",
  "eudr_coffee": "N",
  "eudr_cacao": "N",
  "eudr_relevant": "N",
  "eudr_article9_field": "none",
  "col_gf_sector": "energy",
  "col_gf_aligned": "Y",
  "latam_colombia": "Y",
  "cr_gf_aligned": "Y",
  "schema_version": "1.0",
  "last_updated": "2026-05-26"
}
```

8.01 — Batteries

origo_id	8.01
origo_label	Batteries
sector	EN
source	HolonIQ v2.1
gap_type	
latam_relevant	Y
cpi_aligned	TBD — Phase 1
eu_taxonomy_aligned	TBD — Phase 1
cbi_eligible	TBD — Phase 1
eudr_coffee	N
eudr_cacao	N
eudr_relevant	N
eudr_article9_field	none
eudr_evidence_type	none
col_gf_sector	energy
col_gf_activity	Energy storage systems
col_gf_aligned	Y
col_ndc2030_aligned	TBD — Phase 2
latam_colombia	Y
cr_gf_aligned	Y
cth_data_coverage	TBD — Phase 4
schema_version	1.0
last_updated	2026-05-26

Description

[To be populated — description of what this taxonomy node covers and its relevance to LATAM climate innovation and EUDR compliance.]

EUDR Compliance Relevance

[To be populated during Phase 3 — how data in this category supports Article 9 due diligence.]

Colombia Context

[To be populated during Phase 4 — Colombia-specific regulatory alignment, CTH field presence, market conditions.]


```
{
  "origo_id": "8.01",
  "origo_label": "Batteries",
  "sector": "EN",
  "source": "HolonIQ v2.1",
  "eudr_coffee": "N",
  "eudr_cacao": "N",
  "eudr_relevant": "N",
  "eudr_article9_field": "none",
  "col_gf_sector": "energy",
  "col_gf_aligned": "Y",
  "latam_colombia": "Y",
  "cr_gf_aligned": "Y",
  "schema_version": "1.0",
  "last_updated": "2026-05-26"
}
```

8.02 — Alternative Storage

origo_id	8.02
origo_label	Alternative Storage
sector	EN
source	HolonIQ v2.1
gap_type	
latam_relevant	Y
cpi_aligned	TBD — Phase 1
eu_taxonomy_aligned	TBD — Phase 1
cbi_eligible	TBD — Phase 1
eudr_coffee	N
eudr_cacao	N
eudr_relevant	N
eudr_article9_field	none
eudr_evidence_type	none
col_gf_sector	energy
col_gf_activity	Energy storage systems
col_gf_aligned	partial
col_ndc2030_aligned	TBD — Phase 2
latam_colombia	Y
cr_gf_aligned	N
cth_data_coverage	TBD — Phase 4
schema_version	1.0
last_updated	2026-05-26

Description

[To be populated — description of what this taxonomy node covers and its relevance to LATAM climate innovation and EUDR compliance.]

EUDR Compliance Relevance

[To be populated during Phase 3 — how data in this category supports Article 9 due diligence.]

Colombia Context

[To be populated during Phase 4 — Colombia-specific regulatory alignment, CTH field presence, market conditions.]


```
{
  "origo_id": "8.02",
  "origo_label": "Alternative Storage",
  "sector": "EN",
  "source": "HolonIQ v2.1",
  "eudr_coffee": "N",
  "eudr_cacao": "N",
  "eudr_relevant": "N",
  "eudr_article9_field": "none",
  "col_gf_sector": "energy",
  "col_gf_aligned": "partial",
  "latam_colombia": "Y",
  "cr_gf_aligned": "N",
  "schema_version": "1.0",
  "last_updated": "2026-05-26"
}
```

8.03 — Grids

origo_id	8.03
origo_label	Grids
sector	EN
source	HolonIQ v2.1
gap_type	
latam_relevant	Y
cpi_aligned	TBD — Phase 1
eu_taxonomy_aligned	TBD — Phase 1
cbi_eligible	TBD — Phase 1
eudr_coffee	N
eudr_cacao	N
eudr_relevant	N
eudr_article9_field	none
eudr_evidence_type	none
col_gf_sector	energy
col_gf_activity	Electricity transmission and distribution
col_gf_aligned	Y
col_ndc2030_aligned	TBD — Phase 2
latam_colombia	Y
cr_gf_aligned	Y
cth_data_coverage	TBD — Phase 4
schema_version	1.0
last_updated	2026-05-26

Description

[To be populated — description of what this taxonomy node covers and its relevance to LATAM climate innovation and EUDR compliance.]

EUDR Compliance Relevance

[To be populated during Phase 3 — how data in this category supports Article 9 due diligence.]

Colombia Context

[To be populated during Phase 4 — Colombia-specific regulatory alignment, CTH field presence, market conditions.]


```
{
  "origo_id": "8.03",
  "origo_label": "Grids",
  "sector": "EN",
  "source": "HolonIQ v2.1",
  "eudr_coffee": "N",
  "eudr_cacao": "N",
  "eudr_relevant": "N",
  "eudr_article9_field": "none",
  "col_gf_sector": "energy",
  "col_gf_aligned": "Y",
  "latam_colombia": "Y",
  "cr_gf_aligned": "Y",
  "schema_version": "1.0",
  "last_updated": "2026-05-26"
}
```

8.04 — EV Charging

origo_id	8.04
origo_label	EV Charging
sector	EN
source	HolonIQ v2.1
gap_type	
latam_relevant	Y
cpi_aligned	TBD — Phase 1
eu_taxonomy_aligned	TBD — Phase 1
cbi_eligible	TBD — Phase 1
eudr_coffee	N
eudr_cacao	N
eudr_relevant	N
eudr_article9_field	none
eudr_evidence_type	none
col_gf_sector	transport
col_gf_activity	Electric vehicle infrastructure
col_gf_aligned	Y
col_ndc2030_aligned	TBD — Phase 2
latam_colombia	Y
cr_gf_aligned	Y
cth_data_coverage	TBD — Phase 4
schema_version	1.0
last_updated	2026-05-26

Description

[To be populated — description of what this taxonomy node covers and its relevance to LATAM climate innovation and EUDR compliance.]

EUDR Compliance Relevance

[To be populated during Phase 3 — how data in this category supports Article 9 due diligence.]

Colombia Context

[To be populated during Phase 4 — Colombia-specific regulatory alignment, CTH field presence, market conditions.]


```
{
  "origo_id": "8.04",
  "origo_label": "EV Charging",
  "sector": "EN",
  "source": "HolonIQ v2.1",
  "eudr_coffee": "N",
  "eudr_cacao": "N",
  "eudr_relevant": "N",
  "eudr_article9_field": "none",
  "col_gf_sector": "transport",
  "col_gf_aligned": "Y",
  "latam_colombia": "Y",
  "cr_gf_aligned": "Y",
  "schema_version": "1.0",
  "last_updated": "2026-05-26"
}
```

8.05 — Peer-to-Peer Energy

origo_id	8.05
origo_label	Peer-to-Peer Energy
sector	EN
source	HolonIQ v2.1
gap_type	
latam_relevant	Y
cpi_aligned	TBD — Phase 1
eu_taxonomy_aligned	TBD — Phase 1
cbi_eligible	TBD — Phase 1
eudr_coffee	N
eudr_cacao	N
eudr_relevant	N
eudr_article9_field	none
eudr_evidence_type	none
col_gf_sector	none
col_gf_activity	
col_gf_aligned	N
col_ndc2030_aligned	TBD — Phase 2
latam_colombia	Y
cr_gf_aligned	N
cth_data_coverage	TBD — Phase 4
schema_version	1.0
last_updated	2026-05-26

Description

[To be populated — description of what this taxonomy node covers and its relevance to LATAM climate innovation and EUDR compliance.]

EUDR Compliance Relevance

[To be populated during Phase 3 — how data in this category supports Article 9 due diligence.]

Colombia Context

[To be populated during Phase 4 — Colombia-specific regulatory alignment, CTH field presence, market conditions.]


```
{
  "origo_id": "8.05",
  "origo_label": "Peer-to-Peer Energy",
  "sector": "EN",
  "source": "HolonIQ v2.1",
  "eudr_coffee": "N",
  "eudr_cacao": "N",
  "eudr_relevant": "N",
  "eudr_article9_field": "none",
  "col_gf_sector": "none",
  "col_gf_aligned": "N",
  "latam_colombia": "Y",
  "cr_gf_aligned": "N",
  "schema_version": "1.0",
  "last_updated": "2026-05-26"
}
```

CT-EN-001 — Solar PV (Utility & Distributed)

origo_id	CT-EN-001
origo_label	Solar PV (Utility & Distributed)
sector	EN
source	origo
cpi_aligned	Renewable energy generation — solar
eu_taxonomy_aligned	Y — NACE D35.11 electricity generation from solar PV
cbi_eligible	Y — Solar energy criteria under CBI Energy sector
iea_aligned	Y — IEA ETCS solar PV generation and distributed solar
col_gf_sector	Energía
col_gf_activity	Generación de energía eléctrica a partir de energía solar fotovoltaica
col_gf_aligned	Y
col_ndc2030_aligned	Y — core pillar of Colombia NDC 51% GHG reduction by 2030; solar expansion target under Transición Energética
col_sisclima_relevant	Y
col_ley2169	Y — Art. 7 renewable energy mandates; Art. 3 climate mitigation measures
latam_colombia	Y
cth_clp_coverage	Y — 4 CLP cohort companies with solar deployment projects; Sustenttia diagnostics cover energy sourcing
cth_data_coverage	Y
schema_version	1.1
last_updated	2026-05-27

Description

Utility-scale and distributed solar photovoltaic generation, including ground-mounted solar farms, rooftop installations, and floating solar. This node covers the full value chain from module manufacturing to grid-connected and off-grid deployment. In LATAM, Colombia and Chile lead utility-scale solar pipeline growth, with Colombia's irradiation levels in La Guajira and Cesar among the highest in South America.

Colombia Context

Colombia's Ley 2099 de 2021 (Ley de Transición Energética) established tax exemptions on solar equipment imports and a 50% income tax deduction for renewable energy investments. CONPES 4075 (Política de

Transición Energética Justa) specifically targets La Guajira and Cesar as priority solar corridors, with over 3.5 GW of solar projects in the UPME registry as of 2025. The CREG has issued regulations enabling distributed solar under Resolución 174 de 2021, allowing net metering for installations up to 1 MW. MinMinas targets 12% of installed capacity from non-conventional renewables by 2030, with solar PV as the primary growth vector. Colombia's average solar irradiation of 4.5 kWh/m²/day nationally, and up to 6.0 kWh/m²/day in La Guajira, positions utility-scale solar as cost-competitive with thermal generation.

EUDR Relevance

This node has no direct EUDR commodity relevance.

CTH Data Coverage

CLP cohort includes 4 companies active in distributed and utility-scale solar: installation, EPC, and maintenance services. Sustenttia diagnostic platform captures energy sourcing profiles for assessed enterprises, flagging solar adoption readiness. REIN Hub field data from Cesar and Santander documents solar deployment barriers in rural PDET territories.

Green Finance Alignment

Fully aligned with Colombia's Taxonomía Verde de Colombia (TVC) under the energy sector. CBI-eligible under solar energy criteria with third-party verification. EU Taxonomy alignment under NACE D35.11 with Do No Significant Harm (DNSH) requirements for land use and biodiversity. Green bond issuances by Bancolombia and Davivienda have financed solar projects under TVC criteria since 2023.


```
{
  "origo_id": "CT-EN-001",
  "origo_label": "Solar PV (Utility & Distributed)",
  "sector": "EN",
  "source": "origo",
  "cpi_aligned": "Renewable energy generation \u2014 solar",
  "eu_taxonomy_aligned": "Y \u2014 NACE D35.11 electricity generation from solar PV",
  "cbi_eligible": "Y \u2014 Solar energy criteria under CBI Energy sector",
  "iea_aligned": "Y \u2014 IEA ETCS solar PV generation and distributed solar",
  "col_gf_sector": "Energ\u00eda",
  "col_gf_activity": "Generaci\u00f3n de energ\u00eda el\u00e9ctrica a partir de energ\u00eda so
  "col_gf_aligned": "Y",
  "col_ndc2030_aligned": "Y \u2014 core pillar of Colombia NDC 51% GHG reduction by 2030; solar
  "col_sisclima_relevant": "Y",
  "col_ley2169": "Y \u2014 Art. 7 renewable energy mandates; Art. 3 climate mitigation measures'
  "latam_colombia": "Y",
  "cth_clp_coverage": "Y \u2014 4 CLP cohort companies with solar deployment projects; Sustentti
  "cth_data_coverage": "Y",
  "schema_version": "1.1",
  "last_updated": "2026-05-27"
}
```

CT-EN-002 — Wind Energy

origo_id	CT-EN-002
origo_label	Wind Energy
sector	EN
source	origo
cpi_aligned	Renewable energy generation — wind (onshore)
eu_taxonomy_aligned	Y — NACE D35.11 electricity generation from wind power
cbi_eligible	Y — Wind energy criteria under CBI Energy sector
iea_aligned	Y — IEA ETCS onshore wind generation
col_gf_sector	Energía
col_gf_activity	Generación de energía eléctrica a partir de energía eólica
col_gf_aligned	Y
col_ndc2030_aligned	Y — wind capacity expansion is central to NDC renewable energy targets
col_sisclima_relevant	Y
col_ley2169	Y — Art. 7 renewable energy; Art. 3 mitigation
latam_colombia	Y
cth_clp_coverage	N — no CLP cohort companies directly in wind; potential future pipeline
cth_data_coverage	N
schema_version	1.1
last_updated	2026-05-27

Description

Onshore and nearshore wind power generation, including turbine manufacturing, wind farm development, and grid integration. Colombia's Atlantic coast, particularly the Alta Guajira, holds some of the best wind resources in Latin America with average wind speeds exceeding 9 m/s. The sector is nascent but growing rapidly as part of Colombia's just energy transition strategy.

Colombia Context

La Guajira holds an estimated 25 GW of onshore wind potential, making it Colombia's primary wind corridor. Ley 2099 de 2021 provides the same tax incentives for wind as for solar, including VAT exemption on equipment and accelerated depreciation. CONPES 4075 explicitly addresses the social license challenges in La Guajira, mandating prior consultation with Wayúu indigenous communities for wind projects. The Jepírachi wind farm (19.5 MW, operational since 2004) remains the only grid-connected wind farm, but over 2.5 GW of projects have environmental licenses from ANLA. Windmar, Enel Green Power, and AES Colombia are the leading developers. Transmission constraints via the Colectora line remain the primary bottleneck — UPME's transmission plan

targets a 500 kV line connecting Cuestecitas to the national grid by 2027.

EUDR Relevance

This node has no direct EUDR commodity relevance.

CTH Data Coverage

No direct CLP cohort data on wind energy companies. CTH market intelligence tracks La Guajira wind pipeline through UPME registry data. Future REIN Hub deployments in La Guajira may capture community-level wind project impacts.

Green Finance Alignment

Fully TVC-aligned under the energy sector for wind generation. CBI-eligible with established wind energy criteria. EU Taxonomy aligned under NACE D35.11. IDB Invest and IFC have provided project finance for La Guajira wind farms. Green bond potential is high but depends on resolution of transmission and social license barriers.


```
{
  "origo_id": "CT-EN-002",
  "origo_label": "Wind Energy",
  "sector": "EN",
  "source": "origo",
  "cpi_aligned": "Renewable energy generation \u2014 wind (onshore)",
  "eu_taxonomy_aligned": "Y \u2014 NACE D35.11 electricity generation from wind power",
  "cbi_eligible": "Y \u2014 Wind energy criteria under CBI Energy sector",
  "iea_aligned": "Y \u2014 IEA ETCS onshore wind generation",
  "col_gf_sector": "Energ\u00eda",
  "col_gf_activity": "Generaci\u00f3n de energ\u00eda el\u00e9ctrica a partir de energ\u00eda e\
  "col_gf_aligned": "Y",
  "col_ndc2030_aligned": "Y \u2014 wind capacity expansion is central to NDC renewable energy ta
  "col_sisclima_relevant": "Y",
  "col_ley2169": "Y \u2014 Art. 7 renewable energy; Art. 3 mitigation",
  "latam_colombia": "Y",
  "cth_clp_coverage": "N \u2014 no CLP cohort companies directly in wind; potential future pipel
  "cth_data_coverage": "N",
  "schema_version": "1.1",
  "last_updated": "2026-05-27"
}
```

CT-EN-003 — Small Hydropower

origo_id	CT-EN-003
origo_label	Small Hydropower
sector	EN
source	origo
cpi_aligned	Renewable energy generation — small hydro
eu_taxonomy_aligned	Partial — EU Taxonomy includes hydro under D35.11 but with strict DNSH criteria on ecological flow and river connectivity
cbi_eligible	Y — Hydro criteria under CBI, limited to run-of-river and small scale (<25 MW)
iea_aligned	Y — IEA ETCS hydropower (small-scale category)
col_gf_sector	Energía
col_gf_activity	Generación de energía eléctrica a partir de pequeñas centrales hidroeléctricas (PCH)
col_gf_aligned	Y
col_ndc2030_aligned	Y — maintaining and expanding clean hydro base is part of NDC strategy
col_sisclima_relevant	Y
col_ley2169	Y — Art. 7 renewable energy portfolio
latam_colombia	Y
cth_clp_coverage	Y — 2 CLP companies in micro-hydro development for rural communities
cth_data_coverage	Y
schema_version	1.1
last_updated	2026-05-27

Description

Small hydropower (PCH, <20 MW) and micro-hydro (<1 MW) generation, including run-of-river systems. Colombia derives approximately 70% of its electricity from hydropower, making it the backbone of the national grid. However, climate variability (El Niño/La Niña cycles) increasingly threatens hydro reliability, driving diversification into solar and wind.

Colombia Context

Colombia's hydro-dominant grid (approximately 12 GW of large hydro, plus 1 GW of PCH) is both an asset and a vulnerability. The 2015-2016 El Niño event caused severe energy rationing, accelerating policy support for non-hydro renewables under Ley 1715 and subsequently Ley 2099. PCH projects (<20 MW) are classified as non-conventional renewables under Colombian law and qualify for Ley 2099 incentives. The IPSE (Instituto de Planificación y Promoción de Soluciones Energéticas) promotes micro-hydro in Zonas No Interconectadas (ZNI). CONPES 4075 recognizes small hydro's role in rural electrification but emphasizes complementarity with solar to reduce climate vulnerability. CREG Resolución 243 de 2016 regulates PCH grid connection and dispatch priority.

EUDR Relevance

This node has no direct EUDR commodity relevance.

CTH Data Coverage

Two CLP cohort companies develop micro-hydro systems for off-grid rural communities in Antioquia and Nariño. Sustenttia diagnostics capture energy source profiles where hydro is the primary input. REIN Hub data from PDET municipalities documents existing PCH installations and their operational status.

Green Finance Alignment

TVC-aligned for small hydropower generation. CBI eligibility is limited to run-of-river and projects under 25 MW with demonstrated ecological flow maintenance. EU Taxonomy alignment is partial — strict DNSH criteria require environmental impact assessments demonstrating no degradation of water body status. Findeter has offered green credit lines for PCH projects in rural Colombia.


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  "origo_label": "Small Hydropower",
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  "source": "origo",
  "cpi_aligned": "Renewable energy generation \u2014 small hydro",
  "eu_taxonomy_aligned": "Partial \u2014 EU Taxonomy includes hydro under D35.11 but with strict
  "cbi_eligible": "Y \u2014 Hydro criteria under CBI, limited to run-of-river and small scale (<
  "iea_aligned": "Y \u2014 IEA ETCS hydropower (small-scale category)",
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  "col_gf_activity": "Generaci\u00f3n de energ\u00eda el\u00e9ctrica a partir de peque\u00f1as c
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  "col_ndc2030_aligned": "Y \u2014 maintaining and expanding clean hydro base is part of NDC str
  "col_sisclima_relevant": "Y",
  "col_ley2169": "Y \u2014 Art. 7 renewable energy portfolio",
  "latam_colombia": "Y",
  "cth_clp_coverage": "Y \u2014 2 CLP companies in micro-hydro development for rural communities
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CT-EN-004 — Energy Storage (Battery & Grid)

origo_id	CT-EN-004
origo_label	Energy Storage (Battery & Grid)
sector	EN
source	origo
cpi_aligned	Energy storage — battery and grid-scale
eu_taxonomy_aligned	Y — NACE C27.20 manufacture of batteries; D35.11 electricity storage
cbi_eligible	Y — Energy storage criteria under CBI, enabling renewable integration
iea_aligned	Y — IEA ETCS energy storage systems
col_gf_sector	Energía
col_gf_activity	Almacenamiento de energía para integración de fuentes renovables
col_gf_aligned	Partial
col_ndc2030_aligned	Y — enabling technology for NDC renewable targets requiring grid flexibility
col_sisclima_relevant	Y
col_ley2169	Y — Art. 7 as enabling infrastructure for renewable deployment
latam_colombia	Y
cth_clp_coverage	N — no CLP companies in storage; emerging market
cth_data_coverage	N
schema_version	1.1
last_updated	2026-05-27

Description

Battery energy storage systems (BESS), grid-scale storage, and behind-the-meter storage solutions. Encompasses lithium-ion, flow batteries, and emerging chemistries. Storage is critical for integrating variable renewables (solar, wind) into grids and enabling off-grid electrification. In Colombia, storage addresses both grid stability during renewable ramp-up and energy access in Zonas No Interconectadas.

Colombia Context

Colombia's grid operator XM has identified energy storage as essential for managing the transition from a hydro-thermal to a hydro-solar-wind system. CREG issued Resolución 098 de 2022 establishing the regulatory

framework for energy storage participation in the wholesale market. The TVC includes storage as an eligible activity under the energy sector, though specific technical screening criteria are still being refined. MinMinas' Plan Energético Nacional 2020-2050 identifies storage as a strategic technology. Pilot projects include Enel's BESS in Magdalena Medio and Celsia's behind-the-meter installations. Off-grid storage paired with solar PV is being deployed by IPSE in ZNI communities of Chocó and Vaupés. Colombia has no domestic lithium production, making battery supply chain a strategic import dependency.

EUDR Relevance

This node has no direct EUDR commodity relevance. However, lithium and cobalt supply chains for batteries have broader environmental due diligence considerations under EU Battery Regulation (separate from EUDR).

CTH Data Coverage

No CLP cohort companies are currently in energy storage. This is an emerging market in Colombia with limited SME participation. Future CLP cohorts may include storage integrators as the market develops. Sustenttia diagnostics do not yet include storage-specific assessment modules.

Green Finance Alignment

Partial TVC alignment — storage is recognized but technical screening criteria are evolving. CBI-eligible when demonstrably enabling renewable energy integration. EU Taxonomy aligned under both manufacturing (C27.20) and electricity storage (D35.11) with lifecycle emissions thresholds. GCF and IDB have funded storage pilots in Colombia as part of grid modernisation packages.


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  "sector": "EN",
  "source": "origo",
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  "iea_aligned": "Y \u2014 IEA ETCS energy storage systems",
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  "col_gf_activity": "Almacenamiento de energ\u00eda para integraci\u00f3n de fuentes renovables
  "col_gf_aligned": "Partial",
  "col_ndc2030_aligned": "Y \u2014 enabling technology for NDC renewable targets requiring grid
  "col_sisclima_relevant": "Y",
  "col_ley2169": "Y \u2014 Art. 7 as enabling infrastructure for renewable deployment",
  "latam_colombia": "Y",
  "cth_clp_coverage": "N \u2014 no CLP companies in storage; emerging market",
  "cth_data_coverage": "N",
  "schema_version": "1.1",
  "last_updated": "2026-05-27"
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CT-EN-005 — Grid Modernisation

origo_id	CT-EN-005
origo_label	Grid Modernisation
sector	EN
source	origo
cpi_aligned	Low-carbon electricity systems — transmission and distribution
eu_taxonomy_aligned	Y — NACE D35.12 transmission; D35.13 distribution of electricity
cbi_eligible	Y — Grid infrastructure enabling renewable integration under CBI criteria
iea_aligned	Y — IEA ETCS electricity networks and smart grids
col_gf_sector	Energía
col_gf_activity	Modernización y expansión de redes eléctricas para integración de renovables
col_gf_aligned	Y
col_ndc2030_aligned	Y — grid expansion is a prerequisite for achieving NDC renewable capacity targets
col_sisclima_relevant	Y
col_ley2169	Y — Art. 7 enabling infrastructure
latam_colombia	Y
cth_clp_coverage	N — grid infrastructure is beyond CLP SME scope; large utility domain
cth_data_coverage	N
schema_version	1.1
last_updated	2026-05-27

Description

Modernisation of electricity transmission and distribution networks, including smart grid technologies, advanced metering infrastructure (AMI), demand-side management, and grid digitalisation. In Colombia, grid modernisation is essential to accommodate the influx of variable renewables from La Guajira and Cesar into the Interconnected National System (SIN) operated by XM.

Colombia Context

XM operates Colombia's wholesale electricity market and system dispatch. UPME's Plan de Expansión de Transmisión 2024-2038 identifies over $5 billion in required grid investments, including the critical Colectora

transmission line connecting La Guajira wind/solar to demand centers. CREG Resolución 015 de 2018 established the smart metering framework (AMI), targeting 75% smart meter penetration by 2030. The SIN serves approximately 98% of the population, but Zonas No Interconectadas (ZNI) require off-grid solutions. Grid losses average 13.5% nationally (up to 25% in Caribe region), representing a major efficiency opportunity. ISA (Interconexión Eléctrica S.A.) is the dominant transmission operator, with Grupo Energía Bogotá and Celsia as key distribution players.

EUDR Relevance

This node has no direct EUDR commodity relevance.

CTH Data Coverage

Grid modernisation falls outside the CLP cohort scope (large utility infrastructure). CTH monitors grid expansion via UPME and XM public data for market intelligence purposes. No direct Sustenttia or REIN Hub data on grid assets.

Green Finance Alignment

TVC-aligned for grid infrastructure supporting renewable integration. CBI-eligible under enabling infrastructure criteria. EU Taxonomy aligned under NACE D35.12 and D35.13 with lifecycle emissions thresholds for grid infrastructure. IDB and World Bank have been primary financiers for Colombia grid modernisation, including the ongoing $500M IDB-backed grid strengthening program.


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{
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  "origo_label": "Grid Modernisation",
  "sector": "EN",
  "source": "origo",
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  "eu_taxonomy_aligned": "Y \u2014 NACE D35.12 transmission; D35.13 distribution of electricity'
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  "iea_aligned": "Y \u2014 IEA ETCS electricity networks and smart grids",
  "col_gf_sector": "Energ\u00eda",
  "col_gf_activity": "Modernizaci\u00f3n y expansi\u00f3n de redes el\u00e9ctricas para integrac
  "col_gf_aligned": "Y",
  "col_ndc2030_aligned": "Y \u2014 grid expansion is a prerequisite for achieving NDC renewable
  "col_sisclima_relevant": "Y",
  "col_ley2169": "Y \u2014 Art. 7 enabling infrastructure",
  "latam_colombia": "Y",
  "cth_clp_coverage": "N \u2014 grid infrastructure is beyond CLP SME scope; large utility domai
  "cth_data_coverage": "N",
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CT-EN-006 — Distributed Generation & Prosumers

origo_id	CT-EN-006
origo_label	Distributed Generation & Prosumers
sector	EN
source	origo
cpi_aligned	Renewable energy generation — distributed
eu_taxonomy_aligned	Y — NACE D35.11 distributed electricity generation from renewables
cbi_eligible	Y — Distributed renewable generation under CBI Energy criteria
iea_aligned	Y — IEA ETCS distributed energy resources
col_gf_sector	Energía
col_gf_activity	Autogeneración y generación distribuida a partir de fuentes renovables
col_gf_aligned	Y
col_ndc2030_aligned	Y — distributed generation supports both mitigation and energy access targets in NDC
col_sisclima_relevant	Y
col_ley2169	Y — Art. 7 renewable energy; Art. 3 mitigation
latam_colombia	Y
cth_clp_coverage	Y — 3 CLP companies offer distributed solar installation and prosumer services
cth_data_coverage	Y
schema_version	1.1
last_updated	2026-05-27

Description

Self-generation (autogeneración) and distributed generation from renewable sources, including prosumer models where consumers both produce and consume electricity. Covers net metering, net billing, and power purchase agreements for distributed resources. Colombia's regulatory framework for distributed generation has evolved significantly since Ley 1715 de 2014, creating growing opportunities for SMEs and communities.

Colombia Context

Ley 1715 de 2014 established the foundational framework for distributed generation and self-generation in Colombia, subsequently strengthened by Ley 2099 de 2021. CREG Resolución 174 de 2021 defines net

metering (medición bidireccional) for installations up to 1 MW, allowing prosumers to sell surplus to the grid. CREG Resolución 075 de 2021 regulates distributed generation up to 5 MW. As of 2025, over 3,500 distributed generation installations are registered with the SUI (Sistema Único de Información), predominantly rooftop solar. EPM, Celsia, and Enel-Codensa offer prosumer programs in Medellín, Cali, and Bogotá respectively. Tax benefits under Ley 2099 include 50% income tax deduction, VAT exemption, and customs duty exemption for equipment. Community energy models (comunidades energéticas) are emerging in Santander and Boyacá, supported by Ley 2099 Art. 13.

EUDR Relevance

This node has no direct EUDR commodity relevance.

CTH Data Coverage

Three CLP cohort companies are active in distributed generation: two in rooftop solar EPC and one in prosumer energy management software. Sustenttia diagnostics capture enterprise energy sourcing and distributed generation adoption indicators. REIN Hub data from Santander documents community solar installations in rural municipalities.

Green Finance Alignment

Fully TVC-aligned for distributed renewable generation. CBI-eligible under distributed energy criteria. EU Taxonomy aligned under D35.11. Bancoldex offers green credit lines for distributed generation projects through financial intermediaries. Microfinance institutions (Bancamía, Contactar) have piloted solar prosumer loans for low-income households with IDB support.


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  "sector": "EN",
  "source": "origo",
  "cpi_aligned": "Renewable energy generation \u2014 distributed",
  "eu_taxonomy_aligned": "Y \u2014 NACE D35.11 distributed electricity generation from renewable
  "cbi_eligible": "Y \u2014 Distributed renewable generation under CBI Energy criteria",
  "iea_aligned": "Y \u2014 IEA ETCS distributed energy resources",
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  "col_gf_activity": "Autogeneraci\u00f3n y generaci\u00f3n distribuida a partir de fuentes renc
  "col_gf_aligned": "Y",
  "col_ndc2030_aligned": "Y \u2014 distributed generation supports both mitigation and energy ac
  "col_sisclima_relevant": "Y",
  "col_ley2169": "Y \u2014 Art. 7 renewable energy; Art. 3 mitigation",
  "latam_colombia": "Y",
  "cth_clp_coverage": "Y \u2014 3 CLP companies offer distributed solar installation and prosume
  "cth_data_coverage": "Y",
  "schema_version": "1.1",
  "last_updated": "2026-05-27"
}
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CT-EN-007 — Clean Cooking

origo_id	CT-EN-007
origo_label	Clean Cooking
sector	EN
source	origo
cpi_aligned	Low-carbon buildings — clean cooking and heating
eu_taxonomy_aligned	N — not directly covered by EU Taxonomy (focused on industrialised-country building standards)
cbi_eligible	N — no specific CBI criteria for clean cooking
iea_aligned	Y — IEA ETCS clean cooking and modern energy access
col_gf_sector	Energía
col_gf_activity	Sustitución de biomasa tradicional por soluciones de cocción limpia
col_gf_aligned	Partial
col_ndc2030_aligned	Y — clean cooking is an explicit NDC health co-benefit target and deforestation reduction measure
col_sisclima_relevant	Y
col_ley2169	Y — Art. 3 mitigation measures with health co-benefits
latam_colombia	Y
cth_clp_coverage	Y — 1 CLP company develops improved cookstove technology
cth_data_coverage	Y
schema_version	1.1
last_updated	2026-05-27

Description

Transition from traditional biomass cooking (wood, charcoal) to clean cooking solutions including LPG, electric cooking, improved biomass stoves, and biogas digesters. Clean cooking reduces indoor air pollution (a leading cause of respiratory illness), deforestation, and black carbon emissions. In rural Colombia, an estimated 1.5 million households still depend on traditional biomass for cooking.

Colombia Context

Colombia's NDC identifies clean cooking as a priority health-climate nexus intervention, targeting the replacement of 500,000 traditional cookstoves by 2030. MinMinas' Estrategia Nacional de Cocción Limpia promotes LPG distribution expansion and electric cooking in areas with reliable grid access. The IPSE supports clean cooking transitions in ZNI through solar-electric cooking pilots. DNP (Departamento Nacional de Planeación) estimates that indoor air pollution from biomass cooking causes approximately 3,000 premature deaths annually. The World Bank's Colombia Clean Cooking Fund has disbursed $15 million for improved cookstove distribution in Cauca,

Nariño, and Chocó. Carbon credits from cookstove projects are traded on the Bolsa Mercantil de Colombia, with Gold Standard and Verra certification. CONPES 4075 links clean cooking to the just energy transition, particularly for ethnic and campesino communities in PDET territories.

EUDR Relevance

Indirect EUDR relevance: clean cooking reduces demand for fuelwood, which contributes to deforestation of tropical forests. In cacao and coffee-growing regions (Tumaco, Catatumbo), cookstove transitions can complement EUDR deforestation-free supply chain goals.

CTH Data Coverage

One CLP cohort company develops improved biomass cookstoves with carbon credit monetisation. Sustenttia diagnostics capture energy source for cooking in enterprise worker welfare assessments. REIN Hub data from PDET municipalities in Nariño and Cauca documents cookstove adoption rates and fuelwood consumption patterns.

Green Finance Alignment

Partial TVC alignment — recognized as a mitigation activity but not a primary TVC screening category. Not CBI-eligible under current criteria. Carbon credit revenues are the primary finance mechanism through voluntary carbon markets. GCF has funded clean cooking programs in Colombia through BIOS and OLADE implementing entities.


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{
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  "sector": "EN",
  "source": "origo",
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  "iea_aligned": "Y \u2014 IEA ETCS clean cooking and modern energy access",
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  "col_ndc2030_aligned": "Y \u2014 clean cooking is an explicit NDC health co-benefit target and
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  "col_ley2169": "Y \u2014 Art. 3 mitigation measures with health co-benefits",
  "latam_colombia": "Y",
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  "cth_data_coverage": "Y",
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CT-EN-008 — Energy Efficiency (Industrial)

origo_id	CT-EN-008
origo_label	Energy Efficiency (Industrial)
sector	EN
source	origo
cpi_aligned	Energy efficiency — industry
eu_taxonomy_aligned	Y — multiple NACE codes covering industrial energy efficiency improvements
cbi_eligible	Y — Energy efficiency criteria under CBI with verified energy savings
iea_aligned	Y — IEA ETCS industry energy efficiency
col_gf_sector	Energía
col_gf_activity	Eficiencia energética en procesos industriales y comerciales
col_gf_aligned	Y
col_ndc2030_aligned	Y — industrial energy efficiency is a core NDC mitigation measure with quantified targets
col_sisclima_relevant	Y
col_ley2169	Y — Art. 3 mitigation; Art. 8 energy efficiency mandates
latam_colombia	Y
cth_clp_coverage	Y — 5 CLP companies provide energy efficiency auditing and implementation services
cth_data_coverage	Y
schema_version	1.1
last_updated	2026-05-27

Description

Industrial energy efficiency improvements including process optimisation, waste heat recovery, variable speed drives, high-efficiency motors, thermal insulation, and energy management systems (ISO 50001). Colombia's industrial sector accounts for approximately 30% of national energy consumption, with significant efficiency improvement potential in cement, steel, food processing, and chemicals.

Colombia Context

PROURE (Programa de Uso Racional y Eficiente de Energía) is Colombia's national energy efficiency program, administered by MinMinas with UPME technical support. CONPES 4075 sets industrial energy efficiency targets

of 18% improvement in energy intensity by 2030. Ley 2099 Art. 15 establishes energy efficiency obligations for large industrial consumers (>55 GWh/year). The SGIE (Sistema de Gestión Integral de la Energía) framework promotes ISO 50001 adoption in industry. ANDI (Asociación Nacional de Industriales) reports that only 12% of large industrial firms have implemented energy management systems. MinMinas Resolución 40203 de 2020 establishes minimum energy performance standards (MEPS) for industrial motors and transformers. Tax incentives under Ley 2099 include IVA exclusion for energy efficiency equipment and 25% income tax deduction for efficiency investments.

EUDR Relevance

This node has no direct EUDR commodity relevance. However, energy efficiency in agro-industrial processing (palm oil mills, coffee processing) indirectly supports EUDR supply chain sustainability metrics.

CTH Data Coverage

Five CLP cohort companies provide energy efficiency services: auditing, LED lighting retrofits, industrial process optimisation, and energy management consulting. Sustenttia diagnostics include energy consumption per unit of production as a core environmental indicator. REIN Hub data captures energy efficiency adoption in agricultural processing facilities across PDET territories.

Green Finance Alignment

Fully TVC-aligned for industrial energy efficiency. CBI-eligible with verified energy savings of at least 30% improvement. EU Taxonomy aligned across multiple NACE codes with substantial contribution thresholds. Bancóldex offers green credit lines specifically for energy efficiency investments. IFC has provided $200 million in energy efficiency credit lines through Colombian financial intermediaries.


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  "col_ley2169": "Y \u2014 Art. 3 mitigation; Art. 8 energy efficiency mandates",
  "latam_colombia": "Y",
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CT-EN-009 — Green Hydrogen

origo_id	CT-EN-009
origo_label	Green Hydrogen
sector	EN
source	origo
cpi_aligned	Low-carbon fuels — green hydrogen
eu_taxonomy_aligned	Y — NACE C20.11 manufacture of hydrogen; strict lifecycle emissions threshold
cbi_eligible	Y — Hydrogen criteria under CBI with production emissions cap
iea_aligned	Y — IEA ETCS hydrogen production (electrolysis from renewables)
col_gf_sector	Energía
col_gf_activity	Producción de hidrógeno verde mediante electrólisis con energías renovables
col_gf_aligned	Y
col_ndc2030_aligned	Y — green hydrogen is identified in Colombia's Long-Term Strategy as key to hard-to-abate sector decarbonisation
col_sisclima_relevant	Y
col_ley2169	Y — Art. 3 mitigation; Art. 7 clean energy development
latam_colombia	Y
cth_clp_coverage	N — nascent market with no CLP SME participation yet
cth_data_coverage	N
schema_version	1.1
last_updated	2026-05-27

Description

Production of hydrogen through electrolysis powered by renewable electricity (green hydrogen), and its application in industry, transport, and energy storage. Green hydrogen is a nascent but strategically important sector globally and in Colombia, where exceptional renewable resources in La Guajira position the country as a potential export hub.

Colombia Context

Colombia published its Hoja de Ruta del Hidrógeno in September 2021, setting targets of 1-3 GW of electrolyser capacity by 2030 and positioning La Guajira as the production epicenter. Ley 2099 Art. 14 establishes regulatory sandbox provisions for hydrogen pilot projects. MinMinas created the Misión de Hidrógeno Verde y Azul to coordinate policy. Ecopetrol, the state oil company, has committed $1 billion to green hydrogen by 2030 as part of its energy transition strategy. Siemens Energy and EDF signed MoUs with the Colombian government for La Guajira green H2 projects. The hydrogen roadmap identifies five priority applications: ammonia production

(fertilizers), oil refining, heavy transport, mining, and export to Europe/East Asia. Current delivered green hydrogen cost in Colombia is estimated at $4-6/kg, with a target of $1.5-2/kg by 2030 as electrolyser and renewable costs decline. CONPES 4075 includes green hydrogen as a pillar of the just energy transition, emphasizing local value chain development.

EUDR Relevance

This node has no direct EUDR commodity relevance.

CTH Data Coverage

No CLP cohort companies are in green hydrogen. This is an emerging market dominated by large corporates (Ecopetrol, Promigas) and international developers. CTH monitors the hydrogen pipeline for future taxonomy and market intelligence updates. Sustenttia does not yet include hydrogen-specific assessment modules.

Green Finance Alignment

Fully TVC-aligned for green hydrogen production. CBI-eligible under hydrogen criteria with lifecycle emissions cap of 4.4 kgCO2e/kgH2. EU Taxonomy aligned under C20.11 with strict 3.0 tCO2e/tH2 lifecycle threshold (Delegated Act). IDB and GIZ have funded hydrogen feasibility studies in Colombia. The Hydrogen Council projects $2.5 billion in LATAM hydrogen investment by 2030, with Colombia capturing 15-20%.


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  "eu_taxonomy_aligned": "Y \u2014 NACE C20.11 manufacture of hydrogen; strict lifecycle emissio
  "cbi_eligible": "Y \u2014 Hydrogen criteria under CBI with production emissions cap",
  "iea_aligned": "Y \u2014 IEA ETCS hydrogen production (electrolysis from renewables)",
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  "col_gf_activity": "Producci\u00f3n de hidr\u00f3geno verde mediante electr\u00f3lisis con ene
  "col_gf_aligned": "Y",
  "col_ndc2030_aligned": "Y \u2014 green hydrogen is identified in Colombia's Long-Term Strategy
  "col_sisclima_relevant": "Y",
  "col_ley2169": "Y \u2014 Art. 3 mitigation; Art. 7 clean energy development",
  "latam_colombia": "Y",
  "cth_clp_coverage": "N \u2014 nascent market with no CLP SME participation yet",
  "cth_data_coverage": "N",
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CT-EN-010 — Biomass & Biogas

origo_id	CT-EN-010
origo_label	Biomass & Biogas
sector	EN
source	origo
cpi_aligned	Renewable energy generation — bioenergy
eu_taxonomy_aligned	Partial — EU Taxonomy covers bioenergy under D35.11 with strict sustainability and GHG savings criteria
cbi_eligible	Y — Bioenergy criteria under CBI with feedstock sustainability requirements
iea_aligned	Y — IEA ETCS bioenergy (biogas and biomass power)
col_gf_sector	Energía
col_gf_activity	Generación de energía a partir de biomasa residual y biogás
col_gf_aligned	Y
col_ndc2030_aligned	Y — biomass waste-to-energy supports both mitigation and waste management NDC targets
col_sisclima_relevant	Y
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Description

Energy generation from biomass residues (agricultural, forestry, municipal waste) and biogas (anaerobic digestion of organic waste). Covers cogeneration (CHP), direct combustion, gasification, and anaerobic digestion. Colombia has abundant biomass resources from its agro-industrial sector, particularly palm oil residues, sugarcane bagasse, coffee pulp, and municipal organic waste.

Colombia Context

Colombia produces approximately 72 million tonnes of agricultural residues annually, with major streams from sugarcane (17M t bagasse), palm oil (12M t empty fruit bunches, POME), coffee (4M t pulp/mucilage), and rice

(3M t husks). The sugar sector in Valle del Cauca already cogenerates approximately 400 MW from bagasse. Palm oil mills in Magdalena Medio, Meta, and Santander generate biogas from POME (Palm Oil Mill Effluent) with growing adoption of biodigester technology. Ley 2099 classifies biomass-to-energy as non-conventional renewable, granting full tax incentives. CREG regulates biogas injection into natural gas networks under Resolución 045 de 2022. MinAmbiente's NAMA (Nationally Appropriate Mitigation Action) for the palm sector promotes methane capture from POME. Municipal waste-to-energy is regulated under Ley 1715 and the Plan Nacional de Gestión Integral de Residuos Sólidos (PGIRS). TVC explicitly lists residual biomass energy as an eligible green activity.

EUDR Relevance

Direct EUDR relevance for palm oil residue-based biomass: palm oil is a core EUDR commodity (Regulation 2023/1115). While residue utilisation (empty fruit bunches, POME) does not directly constitute palm oil trade, EUDR due diligence applies to the originating plantation. Biomass from palm residues must demonstrate deforestation-free sourcing for the underlying palm commodity. CTH's EUDR data platform (data.cleantechhub.net) tracks geolocation hashes for palm supply chain traceability.

CTH Data Coverage

Three CLP cohort companies work in biomass: one in palm POME biodigestion, one in coffee pulp valorisation, and one in municipal organic waste biogas. Sustenttia diagnostics assess waste management and biomass utilisation in agro-industrial enterprises. REIN Hub data from Santander and Meta documents palm residue volumes and current disposal/valorisation practices in PDET territories.

Green Finance Alignment

TVC-aligned for residual biomass energy generation. CBI-eligible with feedstock sustainability verification (no purpose-grown energy crops without certification). EU Taxonomy alignment is partial — strict GHG savings thresholds (80% reduction vs. fossil comparator) and sustainability criteria for biomass sourcing under RED III. IDB Lab has funded biodigester pilot programs in Colombia's palm and livestock sectors.


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