Energy

Renewable energy, grid infrastructure

- Solar Energy (Utility-Scale & Distributed)
- Wind Energy (Onshore & Offshore)
- Geothermal Energy
- Bioenergy (Biomass, Biogas, Biofuels)
- Energy Storage & Grid Infrastructure

Solar Energy (Utility-Scale & Distributed)

Source Metadata

Field	Value
source	cbi
source_version	CBI Taxonomy (current)
source_id	CBI-ENE-001
cbi_sector	Energy
bond_eligible	Y
mitigation	Y
adaptation	N
last_checked	2026-05-26

CBI Sector Criteria

The Climate Bonds Initiative Solar Sector Criteria define eligibility requirements for photovoltaic (PV) and concentrated solar power (CSP) installations seeking green bond certification. All solar electricity generation and solar thermal facilities are eligible, provided that any fossil fuel backup is limited to less than 15% of total energy output. The criteria apply equally to utility-scale ground-mounted arrays and distributed rooftop or building-integrated PV systems.

Eligible Activities & Assets

Eligible assets include: utility-scale PV solar farms (ground-mounted fixed-tilt and tracker systems); distributed generation installations on commercial, industrial, and residential buildings; concentrated solar power (CSP) plants including parabolic trough, tower, and dish systems; dedicated solar transmission infrastructure connecting generation to the grid; solar thermal heating and cooling systems; and floating solar (floatovoltaic) installations. Hybrid solar-storage facilities qualify when the storage component is charged predominantly from on-site solar generation.

Certification Process

Bond issuers must engage an approved verifier to conduct pre-issuance assessment confirming that nominated solar assets meet the sector criteria. Post-issuance reporting verifies that proceeds were allocated to eligible solar projects and that the 15% fossil fuel backup threshold is maintained. Verifiers review generation data, engineering specifications, and grid connection agreements.

LATAM Market Context

Solar energy is a leading use-of-proceeds category for LATAM green bonds, with energy projects receiving approximately half of total regional green bond proceeds. Brazil and Chile have been the largest solar bond issuers in the region, driven by competitive auction programs and strong irradiance resources. Colombia has seen rapid growth in utility-scale solar, with over 2 GW of capacity added since 2020, supported by renewable energy auctions and tax incentives.

Colombia Green Finance Taxonomy Alignment

Colombia's Taxonomía Verde de Colombia (TVC) includes solar energy generation as a fully eligible activity under its climate mitigation objective. The TVC was developed with technical support from CBI and shares substantial alignment with CBI sector criteria. Solar PV and CSP installations that meet CBI certification requirements will generally satisfy TVC substantial contribution criteria, facilitating dual compliance for Colombian issuers.

Cleantech Taxonomy Crosswalk

Maps to Cleantech Taxonomy sector ES (Energy) — specifically ES-RE-SOL (Renewable Energy: Solar). Cross-references to BU (Buildings) for building-integrated PV, and to XS (Cross-Sectoral) for grid infrastructure components serving multiple renewable sources.

Wind Energy (Onshore & Offshore)

Source Metadata

Field	Value
source	cbi
source_version	CBI Taxonomy (current)
source_id	CBI-ENE-002
cbi_sector	Energy
bond_eligible	Y
mitigation	Y
adaptation	N
last_checked	2026-05-26

CBI Sector Criteria

Wind energy was among the first sectors to receive CBI certification criteria. Both onshore and offshore wind generation facilities are fully eligible for Climate Bonds certification. The criteria recognize wind as a zero-emission generation technology with no fossil fuel backup threshold requirement, making certification relatively straightforward compared to hybrid or thermal technologies.

Eligible Activities & Assets

Eligible assets include: onshore wind farms and individual turbine installations; offshore fixed-bottom wind farms; floating offshore wind platforms; dedicated transmission infrastructure connecting wind farms to the grid (including subsea cables for offshore projects); wind farm repowering and life extension investments; and ancillary infrastructure such as substations and meteorological monitoring equipment directly supporting wind generation.

Certification Process

Issuers submit project documentation to an approved verifier demonstrating that bond proceeds fund eligible wind assets. Pre-issuance verification confirms technical specifications, permits, and power purchase agreements. Post-issuance reporting requires evidence of actual capital expenditure on nominated wind projects and generation performance data. Annual reporting continues through the bond term.

LATAM Market Context

Wind energy is the single largest funded category in LATAM green bond markets. Brazil dominates regional wind investment, with over 30 GW of installed onshore capacity and an emerging offshore wind pipeline in the northeast. Chile and Mexico have also issued significant wind-backed green bonds. Colombia's Caribbean coast has strong wind resources, with the La Guajira region hosting several large-scale projects in development.

Colombia Green Finance Taxonomy Alignment

The TVC classifies wind energy generation as a fully eligible mitigation activity. CBI certification aligns closely with TVC requirements for wind projects. Colombia's offshore wind regulatory framework, established in 2022, enables future bond issuance for marine wind projects that would meet both CBI and TVC criteria simultaneously.

Cleantech Taxonomy Crosswalk

Maps to Cleantech Taxonomy sector ES (Energy) — specifically ES-RE-WND (Renewable Energy: Wind). Offshore wind also cross-references AF-MC (AFOLU: Marine Conservation) for environmental impact considerations and XS (Cross-Sectoral) for grid integration components.

Geothermal Energy

Source Metadata

Field	Value
source	cbi
source_version	CBI Taxonomy (current)
source_id	CBI-ENE-003
cbi_sector	Energy
bond_eligible	Y
mitigation	Y
adaptation	N
last_checked	2026-05-26

CBI Sector Criteria

CBI includes geothermal energy under its renewable energy sector criteria. Geothermal power plants that generate electricity from underground heat sources are eligible for certification provided their direct lifecycle emissions remain below a defined threshold. Enhanced geothermal systems (EGS) and conventional hydrothermal facilities both qualify, subject to emissions intensity verification.

Eligible Activities & Assets

Eligible assets include: conventional hydrothermal power plants (flash steam and dry steam); binary cycle geothermal plants using lower-temperature resources; enhanced geothermal systems (EGS) involving engineered reservoirs; geothermal district heating and cooling networks; direct-use geothermal applications for industrial heat; and exploration and well-drilling infrastructure for confirmed geothermal reservoirs.

Certification Process

Verifiers assess geothermal projects for emissions intensity, typically requiring lifecycle CO2-equivalent emissions below 100 gCO2e/kWh. Pre-issuance review includes geological survey data, reservoir engineering assessments, and environmental impact studies. Post-issuance monitoring requires ongoing emissions measurement and resource sustainability reporting.

LATAM Market Context

Geothermal green bond issuance in LATAM remains limited but promising. Mexico leads the region with significant geothermal capacity (nearly 1 GW), followed by Central American nations. Colombia has identified geothermal potential in the Andean volcanic belt, particularly in the Nevado del Ruiz and Azufral areas, though commercial development is still in early stages. Chile has explored geothermal resources in the Atacama region.

Colombia Green Finance Taxonomy Alignment

The TVC includes geothermal energy generation as an eligible mitigation activity. Colombia's geothermal regulatory framework supports exploration permits, and future development projects could access green bond financing under both CBI and TVC criteria. The Servicio Geológico Colombiano has mapped priority geothermal zones suitable for development.

Cleantech Taxonomy Crosswalk

Maps to Cleantech Taxonomy sector ES (Energy) — specifically ES-RE-GEO (Renewable Energy: Geothermal). Cross-references to IN (Industry) for direct-use industrial heat applications and to BU (Buildings) for district heating networks.

Bioenergy (Biomass, Biogas, Biofuels)

Source Metadata

Field	Value
source	cbi
source_version	CBI Taxonomy (current)
source_id	CBI-ENE-004
cbi_sector	Energy
bond_eligible	partial
mitigation	Y
adaptation	N
last_checked	2026-05-26

CBI Sector Criteria

CBI Bioenergy Criteria are under ongoing development and apply conditional eligibility. Biomass, biogas, and biofuel projects must demonstrate sustainable feedstock sourcing and net lifecycle emission reductions compared to fossil fuel baselines. The criteria impose feedstock sustainability requirements to prevent land-use change emissions and competition with food production. Only bioenergy pathways demonstrating substantial GHG reductions qualify.

Eligible Activities & Assets

Conditionally eligible assets include: biogas plants using agricultural waste, manure, or municipal organic waste; biomass combined heat and power (CHP) plants using sustainably sourced residues; advanced biofuel production from non-food feedstocks (cellulosic ethanol, renewable diesel); landfill gas capture and utilization systems; and biorefinery infrastructure producing bio-based chemicals alongside energy. First-generation food-crop biofuels face stricter scrutiny and may not qualify.

Certification Process

Verifiers assess feedstock supply chain documentation, lifecycle analysis (LCA) demonstrating emission reductions, and land-use impact assessments. Pre-issuance review requires evidence of sustainable sourcing certifications (e.g., RSB, ISCC). Post-issuance monitoring includes feedstock origin tracking and actual versus projected emission reduction reporting.

LATAM Market Context

Brazil is a global bioenergy leader with extensive sugarcane ethanol and bagasse power generation. Colombian bioenergy projects have focused on palm oil biomass residues and sugarcane bagasse in the Valle del Cauca region. Green bond issuance for bioenergy in LATAM is growing, particularly for waste-to-energy projects in Brazil and Mexico that align with circular economy objectives.

Colombia Green Finance Taxonomy Alignment

The TVC includes bioenergy from sustainable biomass as an eligible mitigation activity, with specific criteria requiring proof of sustainable feedstock sourcing. Colombia's palm oil and sugarcane industries provide significant biomass residue feedstocks. TVC criteria align with CBI's emphasis on avoiding deforestation-linked feedstocks, consistent with Colombia's commitments under the Paris Agreement.

Cleantech Taxonomy Crosswalk

Maps to Cleantech Taxonomy sector ES (Energy) — specifically ES-RE-BIO (Renewable Energy: Bioenergy). Cross-references to AF (AFOLU) for feedstock sustainability, WA (Waste) for waste-to-energy pathways, and IN (Industry) for biorefinery processes.

Energy Storage & Grid Infrastructure

Source Metadata

Field	Value
source	cbi
source_version	CBI Taxonomy (current)
source_id	CBI-ENE-005
cbi_sector	Energy
bond_eligible	Y
mitigation	Y
adaptation	N
last_checked	2026-05-26

CBI Sector Criteria

The CBI Electrical Grids and Storage Criteria (published November 2021) define eligibility for grid infrastructure and energy storage assets. Transmission and distribution infrastructure is eligible when it enables integration of renewable energy or improves grid efficiency. Storage systems must support decarbonization of the electricity system rather than prolong fossil fuel generation.

Eligible Activities & Assets

Eligible assets include: battery energy storage systems (utility-scale lithium-ion, flow batteries, and emerging chemistries); pumped hydroelectric storage facilities; grid-scale compressed air and gravity storage; transmission lines and substations enabling renewable energy evacuation; smart grid infrastructure including advanced metering and demand response systems; interconnectors linking grids to facilitate renewable energy trade; and grid modernization investments reducing technical losses.

Certification Process

Verifiers assess whether grid infrastructure projects demonstrably support renewable energy integration or reduce system emissions. Pre-issuance assessment includes grid planning studies showing the infrastructure's role in decarbonization. Storage projects must demonstrate that charging is predominantly from low-carbon sources. Post-issuance monitoring tracks grid emissions intensity trends and renewable energy integration metrics.

LATAM Market Context

Grid infrastructure investment is critical across LATAM, where renewable energy zones are often distant from demand centers. Brazil's extensive transmission buildout to connect wind-rich northeastern states to southern demand centers has attracted green bond financing. Chile's grid interconnection projects and Colombia's grid modernization program present significant bond issuance opportunities in the region.

Colombia Green Finance Taxonomy Alignment

The TVC includes electricity transmission and distribution infrastructure as eligible when it supports renewable energy integration. Colombia's Plan de Expansión de Transmisión prioritizes renewable energy evacuation from La Guajira and Santander. Smart grid and storage investments align with both CBI and TVC criteria as enabling infrastructure for Colombia's energy transition.

Cleantech Taxonomy Crosswalk

Maps to Cleantech Taxonomy sector ES (Energy) — specifically ES-GR (Grid Infrastructure) and ES-ST (Energy Storage). Cross-references to XS (Cross-Sectoral) for smart grid and digitalization components, and to IC (ICT) for advanced grid management systems.