Industry (IN)

Manufacturing, industrial processes, heavy industry, hydrogen

- CPI GLCF 2025 — Industry (IN) Index
- Hard-to-Abate Industries
- Light Manufacturing
- Industrial Process Efficiency

CPI GLCF 2025 — Industry (IN) Index

source	cpi
source_version	GLCF 2025
source_name	CPI GLCF 2025 — Industry (IN)
sector	IN
origo_nodes_mapped	TBD
last_verified	2026-05-26
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Description

CPI Global Landscape of Climate Finance 2025 coverage for: Manufacturing, industrial processes, heavy industry. Populate with specific CPI sub-sector and activity nodes during Phase 0.

Cleantech Taxonomy Mapping Notes

[To be populated during Phase 1 schema alignment — document how this source node maps to Cleantech Taxonomy IDs, including convergences, divergences, and gaps.]


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Hard-to-Abate Industries

Source Metadata

Field	Value
source	cpi
source_version	GLCF 2025
source_id	CPI-IN-001
sector	Industry
subsector	Hard-to-Abate Industries
mitigation	Y
adaptation	N
last_checked	2026-05-26

CPI Definition & Scope

Hard-to-Abate Industries in CPI's GLCF framework tracks climate finance directed at decarbonizing heavy industrial sectors where emissions are intrinsically tied to chemical processes, not just energy use. CPI captures investment in low-carbon steel production (hydrogen direct reduction, electric arc furnaces), low-carbon cement and concrete (alternative clinker, carbon capture), green chemicals (electrification of crackers, bio-based feedstocks), and carbon capture, utilization and storage (CCUS) applied to industrial point sources. CPI notes that industry investment remains at low levels despite significant mitigation potential.

Subsectors & Examples

- **Low-Carbon Steel** — hydrogen DRI, electric arc furnaces, scrap-based production
- **Low-Carbon Cement** — alternative clinker chemistries, supplementary cementitious materials, CCS
- **Green Chemicals** — electric crackers, bio-based feedstocks, green methanol
- **Industrial CCS/CCUS** — carbon capture on cement kilns, steel furnaces, chemical plants
- **Aluminum Decarbonization** — inert anode smelting, renewable-powered production

Mitigation & Adaptation Classification

Hard-to-abate industries are classified as **mitigation** in CPI's framework. These sectors produce process emissions (CO2 from calcination in cement, CO2 from reduction in steel) that cannot be eliminated solely through energy switching, requiring fundamental process innovation. CPI tracks both direct process emission reductions and energy-related emission reductions in these industries.

LATAM Relevance

Latin America has significant heavy industry presence. Colombia's cement industry (Argos, Cemex operations) is a major emitter with growing interest in alternative fuels and CCS. Peru's mining and metals sector is a core economic driver where decarbonization is increasingly demanded by international buyers. Costa Rica has smaller industrial emissions but participates in regional circular economy initiatives. Brazil's steel industry is the largest in the region and a key target for hydrogen-based decarbonization.

Cleantech Taxonomy Crosswalk

Maps to Cleantech Taxonomy sector **IN** (Industry) for heavy industry decarbonization. Cross-references with **ES** (Energy Systems) for hydrogen supply and industrial electrification, and **XS** (Cross-Sectoral) for CCUS infrastructure and carbon markets.

Light Manufacturing

Source Metadata

Field	Value
source	cpi
source_version	GLCF 2025
source_id	CPI-IN-002
sector	Industry
subsector	Light Manufacturing
mitigation	Y
adaptation	N
last_checked	2026-05-26

CPI Definition & Scope

Light Manufacturing in CPI's GLCF framework tracks climate finance directed at decarbonizing manufacturing sectors where emissions are primarily energy-related rather than process-based. CPI captures investment in electrification of manufacturing processes, on-site renewable energy for factories, energy efficiency in food processing, textiles, electronics, and automotive manufacturing, as well as clean technology manufacturing capacity (solar panel, battery, and EV component production). These sectors are more readily electrifiable than heavy industry.

Subsectors & Examples

- **Food & Beverage Processing** — efficient drying, cold chain optimization, waste heat recovery
- **Textile Manufacturing** — process efficiency, renewable energy, waterless dyeing
- **Clean Technology Manufacturing** — solar panel, battery, EV, wind component factories
- **Electronics Manufacturing** — energy efficiency, renewable-powered production lines
- **General Manufacturing Electrification** — replacing gas-fired processes with electric alternatives

Mitigation & Adaptation Classification

Light manufacturing is classified as **mitigation** in CPI's framework. The primary pathway is energy decarbonization through electrification, on-site renewables, and efficiency improvements. Unlike hard-to-abate sectors, light manufacturing emissions can largely be eliminated through clean energy and efficiency without fundamental process changes.

LATAM Relevance

Light manufacturing is a significant employer and emitter across Latin America. Colombia's food processing and textile industries in Antioquia and Bogota are exploring electrification and efficiency investments. Peru's agri-processing sector (fishmeal, coffee, cacao) has growing demand for energy efficiency. Costa Rica's export-oriented manufacturing zones (medical devices, electronics) are under pressure from international buyers to decarbonize supply chains. Regional clean tech manufacturing (solar panels, batteries) remains nascent but is growing.

Cleantech Taxonomy Crosswalk

Maps to Cleantech Taxonomy sector **IN** (Industry) for light manufacturing. Cross-references with **ES** (Energy Systems) for industrial renewable energy supply and **AF** (AFOLU) for agri-processing value chains.

Industrial Process Efficiency

Source Metadata

Field	Value
source	cpi
source_version	GLCF 2025
source_id	CPI-IN-003
sector	Industry
subsector	Industrial Process Efficiency
mitigation	Y
adaptation	N
last_checked	2026-05-26

CPI Definition & Scope

Industrial Process Efficiency in CPI's GLCF framework tracks climate finance directed at cross-cutting efficiency measures applicable across multiple industrial sectors. CPI captures investment in waste heat recovery systems, industrial symbiosis networks, process optimization through digitalization, high-efficiency motors and drives, combined heat and power (CHP) systems, and circular economy approaches that reduce material throughput and associated emissions. These measures represent "low-hanging fruit" for industrial decarbonization.

Subsectors & Examples

- **Waste Heat Recovery** — organic Rankine cycle, heat exchangers, cascading heat use
- **High-Efficiency Motors** — IE4/IE5 motors, variable frequency drives, compressed air optimization
- **Industrial Symbiosis** — co-located industries sharing energy, water, and material streams
- **Process Digitalization** — AI-driven process optimization, digital twins, predictive maintenance
- **Circular Manufacturing** — material recovery, remanufacturing, design for disassembly

Mitigation & Adaptation Classification

Industrial process efficiency is classified as **mitigation** in CPI's framework. Efficiency improvements directly reduce energy consumption and greenhouse gas emissions per unit of industrial output. These are among the

most cost-effective mitigation options, often with positive financial returns even before accounting for carbon pricing or climate co-benefits.

LATAM Relevance

Industrial efficiency opportunities are abundant in Latin America where energy-intensive industries often operate below global best practice. Colombia's industrial zones in Bogota, Medellin, and Cali have significant potential for waste heat recovery and motor efficiency upgrades. Peru's mining sector is a major energy consumer where process optimization yields large emissions reductions. Costa Rica's free trade zones host international manufacturers increasingly subject to Scope 3 supply chain emission requirements from global buyers, driving efficiency investment.

Cleantech Taxonomy Crosswalk

Maps to Cleantech Taxonomy sector **IN** (Industry) for process efficiency. Cross-references with **IC** (ICT) for industrial digitalization and **WA** (Waste) for industrial waste valorization and circular economy approaches.