Industrial Process Efficiency

Source Metadata

Field	Value
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sector	Industry
subsector	Industrial Process Efficiency
mitigation	Y
adaptation	N
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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.

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