Carbon Capture, Utilisation & Storage (CCUS)

Source Metadata

Field	Value
source	iea
source_version	ETCS 2025
source_id	IEA-CRS-003
iea_category	cross_cutting
technology	Carbon Capture, Utilisation & Storage (CCUS)
technology_readiness	early_commercial
mitigation	Y
adaptation	N
last_checked	2026-05-26

IEA Technology Definition

The IEA classifies CCUS as a cross-cutting technology covering the capture of CO2 from industrial processes or power generation, its transport, and permanent geological storage or utilization in products. The ETP Technology Guide includes post-combustion capture, pre-combustion capture, oxy-combustion, and direct air capture (DAC). CCUS is considered essential for decarbonizing hard-to-abate sectors and delivering negative emissions when combined with bioenergy (BECCS).

Technology Readiness & Deployment

Average annual investment in CCUS has grown more than 15-fold since 2020 to over USD 5 billion in 2025, with several landmark projects reaching final investment decisions. However, almost 90% of announced CCUS projects have not yet reached final investment decision. Chemical absorption from industrial sources (natural gas processing, hydrogen production) is at early commercial stage. Post-combustion capture from power generation and direct air capture remain at demonstration stage. The IEA rates CCUS as not on track, requiring major acceleration.

Key Metrics & Benchmarks

Global operational CO2 capture capacity is approximately 50 Mtpa across about 40 facilities. Capture costs range from USD 15-25/tCO2 for natural gas processing to USD 40-120/tCO2 for power generation and USD 250-600/tCO2 for direct air capture. The IEA Net Zero scenario requires CCUS capacity to reach over 1 Gtpa by 2030. The United States leads in operational capacity, supported by the 45Q tax credit.

LATAM Relevance

CCUS deployment in Latin America is nascent but has significant potential. Brazil's Petrobras operates CO2 reinjection in pre-salt oil fields at a scale exceeding 10 MtCO2/year, one of the world's largest CO2 storage operations. Colombia, Argentina, and Mexico have identified geological storage potential in depleted oil and gas fields and saline aquifers. LATAM's large industrial base in steel, cement, and petrochemicals provides capture opportunities. Policy frameworks for CCUS remain underdeveloped in most LATAM countries.

Critical Minerals Link

CCUS technologies require specialty steels and alloys for high-pressure CO2 transport pipelines. Capture solvents and sorbents use various chemical compounds. Direct air capture systems require significant quantities of potassium hydroxide or solid sorbent materials. The mineral intensity of CCUS is moderate but the steel demand for CO2 pipeline networks is substantial.

Cleantech Taxonomy Crosswalk

Maps to Cleantech Taxonomy sectors: IN (Industry) — industrial carbon capture, BECCS; ES (Energy Systems) — power sector CCS, DAC; XS (Cross-Sectoral) — CO2 transport infrastructure, carbon utilization, negative emissions.

Revisión #2
Creado 2026-05-27 03:38:42 UTC por Gideon Blaauw
Actualizado 2026-05-27 03:50:02 UTC por Gideon Blaauw