Wind (onshore & offshore)

Source Metadata

Field	Value
source	iea
source_version	ETCS 2025
source_id	IEA-SUP-002
iea_category	energy_supply
technology	Wind (onshore & offshore)
technology_readiness	commercial
mitigation	Y
adaptation	N
last_checked	2026-05-26

IEA Technology Definition

The IEA classifies wind energy under renewable electricity supply, distinguishing onshore and offshore wind as separate technology tracks. Onshore wind uses turbines installed on land to convert kinetic wind energy into electricity, while offshore wind deploys turbines in marine environments (fixed-bottom or floating). Both are categorized as mainstream clean energy technologies in the ETP Clean Energy Technology Guide.

Technology Readiness & Deployment

Onshore wind is fully commercial with over 1,000 GW installed globally. Offshore wind has reached early commercial maturity, with approximately 75 GW installed, led by China, the UK, and Northern Europe. Floating offshore wind remains at demonstration stage with less than 200 MW deployed. The IEA tracks wind as broadly on track for net zero but flags permitting delays and supply chain bottlenecks as risks to meeting 2030 targets.

Key Metrics & Benchmarks

Onshore wind LCOE ranges from USD 25-50/MWh in favorable locations. Offshore wind costs have fallen to USD 60-100/MWh for fixed-bottom installations. Modern onshore turbines reach 6-7 MW capacity with rotor

diameters exceeding 170 meters. Offshore turbines now exceed 15 MW per unit. Capacity factors range from 25-45% onshore and 40-55% offshore.

LATAM Relevance

Brazil is Latin America's wind leader with over 30 GW installed, primarily onshore in the northeast. Colombia's La Guajira region has world-class wind resources with several GW of projects under development. Chile and Argentina also have significant onshore wind potential in Patagonia and central regions. Offshore wind is nascent in LATAM but Brazil and Colombia have begun regulatory frameworks for offshore development.

Critical Minerals Link

Wind turbines require rare earth elements (neodymium and dysprosium for permanent magnet generators), copper (generators and cabling), steel (towers), and fibreglass or carbon fibre (blades). Offshore installations require significantly more copper for subsea cables. Brazil holds notable rare earth reserves that could support regional wind supply chains.

Cleantech Taxonomy Crosswalk

Maps to Cleantech Taxonomy sectors: ES (Energy Systems) — wind generation, grid integration, and offshore infrastructure; IN (Industry) — turbine manufacturing and installation; XS (Cross-Sectoral) — hybrid wind-storage systems.

Revisión #2
Creado 2026-05-27 03:38:24 UTC por Gideon Blaauw
Actualizado 2026-05-27 03:49:05 UTC por Gideon Blaauw