EMIS

Latin America Renewable Energy Sector Report 2025-2026

An EMIS Insights Industry Report

Regional Overview

In 2024, electricity generation in Latin America and the Caribbean (LAC) grew by 5.5%, primarily driven by the expansion of wind and solar photovoltaic plants, as well as an increased share of natural gas in the energy matrix. In order of significance, the countries exerting the most influence on the growth of regional electricity generation in 2024 were Brazil, Mexico, Argentina, Chile and Colombia. This ranking is according to the size of the countries' energy systems and annual growth rates, as reported by the Latin American Energy Organisation (OLADE). Electricity generation by source in 2024 was split as follows: Hydropower (45%), Natural gas (25%), Wind (12%), Solar (7%), Bioenergy (4%), Mineral coal (2%), Nuclear (2%), Petroleum derivatives (2%) and Geothermal (1%). Sources of electricity generation to record growth were geothermal (48% y/y), solar (39.7% y/y), wind (37.3% y/y), natural gas (7.8% y/y), hydroelectric (5.9% y/y), nuclear (1.2% y/y) and bioenergy (1.7% y/y). In contrast, decreases were observed in the use of oil and its derivatives (-58.8% y/y) and coal (-36.9% y/y).

Climate seasonality continues to impact electricity generation due to the region’s high dependence on renewable sources, particularly hydropower, solar and wind energy. According to data from EMBER and OLADE, the highest levels of electricity generation were recorded in August 2023 (151 TWh) and May 2024 (159 TWh). Hydroelectric generation peaked in March 2023 (75 TWh) and January 2024 (76 TWh), while solar generation reached its highest level in December of both years (10 TWh in 2023 and 13 TWh in 2024). Wind generation had its highest output in July 2023 (16 TWh) and August 2024 (22 TWh), reflecting favourable seasonal conditions.

According to IRENA, renewable energy dominance in the region continues, with solar and wind expected to account for 90% of new installed capacity. However, infrastructure challenges persist, with transmission and energy storage investments remaining crucial for sustaining renewable growth. Without addressing these infrastructure needs, there are concerns that growth in renewables could be constrained, potentially delaying the region’s clean energy transition.

In terms of clean energy, EMBER reports that Latin America and the Caribbean generated 65% of its electricity from clean sources in 2024, significantly above the global average of 41%. The combined share of wind and solar in the region was 17%, exceeding the global average of 15%, while hydropower provided 41% of the region's clean power. Brazil and Chile emerged as regional leaders, with Brazil contributing the most significant share of wind and solar growth, while Chile led the adoption of wind and solar as a proportion of its energy matrix. In 2024, Brazil added 36 TWh of wind and solar generation, representing 78% of the region's growth in these sources and 7% of global growth, according to IRENA. Fossil fuels provided 35% of the region’s electricity, a decrease from 47% in 2015, largely due to increased renewable energy adoption. The carbon intensity of the region's energy mix was 255g CO2/kWh, compared to the global average of 473g CO2/kWh, reflecting a lower carbon footprint. However, fossil gas still accounted for 24% of electricity generation in 2024, a trend exacerbated by droughts that affected hydroelectric generation in countries such as Brazil, Colombia and Ecuador. This led to a 21 TWh increase in fossil gas consumption compared to 2023.

Fitch Ratings projects that the financial and operational performance of the power and availability-based projects sectors in Latin America will remain stable in 2025, despite facing challenges such as extreme weather events, regulatory uncertainties and inflation. The projected decrease in inflation and interest rates across most countries is expected to create a more favourable economic environment for financing new generation and transmission projects. Power prices are anticipated to rise slightly in 2025 due to ongoing extreme weather events, including droughts and heat waves, which will continue to affect

electricity production. Transmission capacity constraints in Chile and Brazil are expected to persist, resulting in high curtailment levels for renewable energy projects. However, positive steps have been taken, such as the planned capacity reserve auction for battery systems in Brazil and the ongoing development of LNG markets in the region. These initiatives are crucial for improving grid reliability and meeting growing energy demands. The success of these efforts will depend on the establishment of clear regulatory frameworks and supportive public policies.

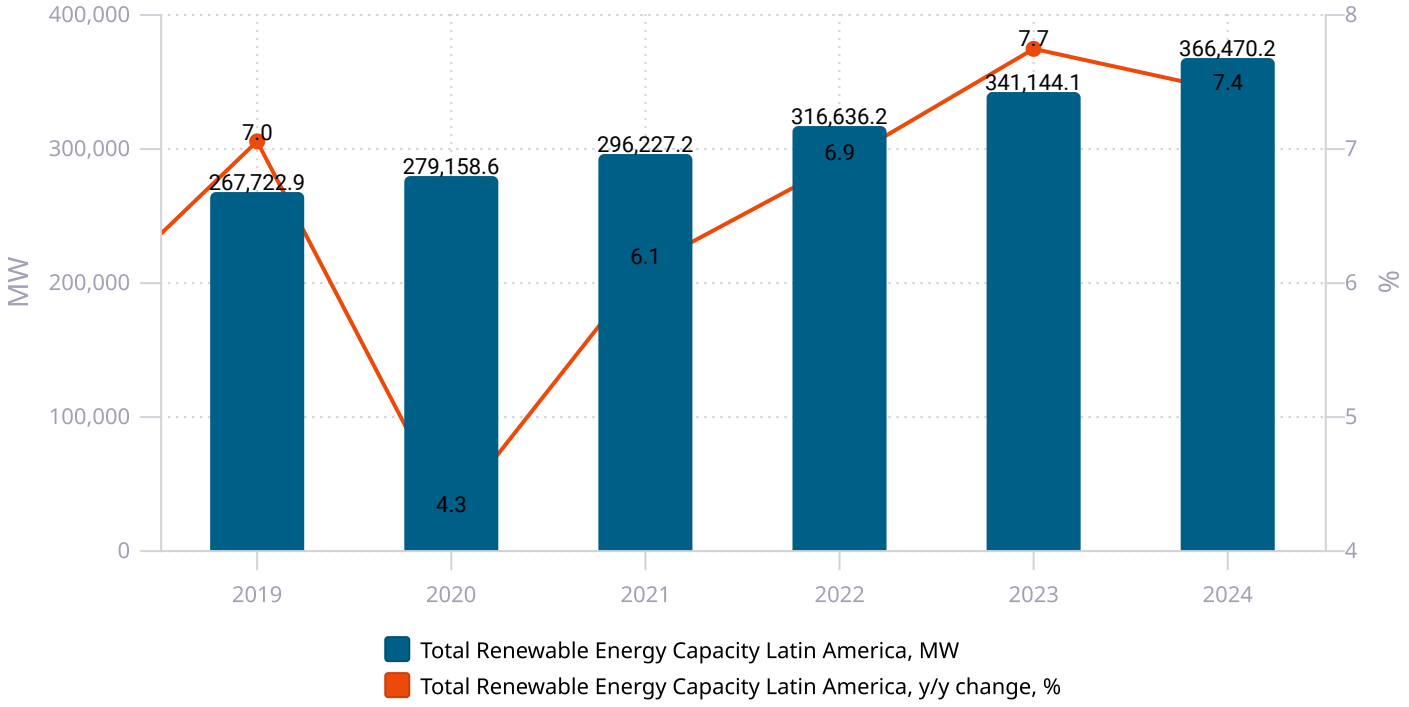
In terms of investment trends, Brazil, Chile and Mexico are expected to continue to lead the development of the energy sector in the region, attracting significant investments in renewable energy projects. These countries are set to play a key role in the region's energy transition, contributing to improved energy security and the creation of green jobs. According to both Fitch Ratings and IRENA, ongoing investment in renewable projects will help meet the region's growing energy demand, expand energy access to remote communities and strengthen energy security, positioning Latin America and the Caribbean as a leader in the global clean energy transition.

World Renewable Energy Installed Capacity, MW

Name	2020	2021	2022	2023	2024
Asia	1,380,651	1,541,924	1,724,633	2,064,363	2,499,773
Europe	657,278	699,552	758,076	834,322	902,165
North America	423,879	461,778	495,043	529,922	573,005
South America	232,868	247,043	266,748	289,173	313,162
Oceania	47,038	52,345	58,781	65,108	73,777
Africa	53,679	55,580	59,291	62,672	66,898
Middle East	23,318	25,876	30,485	35,542	40,219
Central America and the Caribbean	16,990	17,607	18,180	19,021	19,272
World	2,812,981	3,075,931	3,378,790	3,862,881	4,448,051

Sources: CEIC, IRENA, International Renewable Energy Agency

Renewable Energy Capacity Evolution in Latin America



Sources: CEIC, International Renewable Energy Agency

Country Profiles

Brazil remains the dominant renewable energy market in Latin America, accounting for over half of the region's installed renewable capacity. The country achieved 243.9 GW of total renewable installed capacity by end-2024, reflecting a robust 8% y/y increase. This expansion was primarily driven by wind and solar power, which together represented over 43% of new additions in 2024. Brazil continues to rank second globally in hydropower installed capacity, behind only China, with more than 109.9 GW of hydro assets. It also remains a global leader in bioenergy, totalling 17.8 GW in 2024. National energy policy continues to promote diversification through auctions, grid investments and integration of distributed solar energy, aligning with Brazil's commitment to decarbonise its power sector.

Mexico is the second largest renewable power market in Latin America, ending 2024 with 34 GW of installed renewable capacity. This represents a 3.3% y/y increase and reflects modest growth compared to historical performance. Hydropower remains the largest renewable source (37.7% of installed renewables), though stagnant investment has caused a plateau in capacity since 2021. Solar power stands out with a CAGR of 13.9% between 2019 and 2024, reaching 12 GW by end-2024, driven by distributed generation and large-scale PV projects such as the Sonora Solar Park. Wind capacity remained flat at 8.6 GW in 2024 due to policy uncertainty. The share of renewables in Mexico's total generation capacity declined slightly due to faster growth in thermal and natural gas assets. The Electric Power System Development Programme (PRODESEN) foresees an expansion to 176.5 GW by 2038, with 62.4% from clean sources (renewables, nuclear and storage), suggesting long-term reform is underway.

Colombia ranked fifth in renewable installed capacity in Latin America, reaching 15.4 GW by end-2024. Hydropower continues to dominate, with over 13.2 GW in operation, while solar PV grew to 1.4 GW and wind to just under 0.1 GW. Colombia's long-standing reliance on hydro means its share consistently exceeds 70% of renewable power generation. However, vulnerability to droughts and El Niño events has prompted diversification efforts, including the development of non-conventional renewables. The government has launched new auctions, FDI incentives and transmission plans to integrate solar and wind

in La Guajira and the Caribbean coast. Regulatory bottlenecks remain, but the long-term outlook is positive as Colombia strengthens its grid and ramps up energy transition policies.

Argentina ranked fourth in Latin America with 16.3 GW of renewable capacity as of 2024, a slight contraction from the previous year. Hydropower remains the dominant source at 10.1 GW, accounting for 62.3% of the renewable total. Wind power stood at 4.3 GW (26.5%) and solar reached 1.7 GW (10.3%), reflecting slowed growth due to limited auctions and macroeconomic uncertainty. Between 2016 and 2021, Argentina experienced rapid growth under the RenovAr programme, but momentum tapered post-2022 amid funding constraints and lower institutional certainty. Despite the slowdown, interest in off-grid and distributed systems has grown in provinces with reliability issues.

Chile consolidated its position as the third largest renewable power market in the region, with 24.9 GW of installed renewable capacity by the end of 2024, up 12.3% y/y. Solar PV has been the main growth engine, reaching 11.1 GW by 2024 and representing 46.1% of total renewable capacity. The country's strong policy framework, favourable irradiation conditions and merchant solar development continue to attract private investment. However, system constraints have emerged, including congestion and curtailments, particularly in northern regions. Wind power also expanded to 5.3 GW in 2024. Chile's regulatory push for energy storage and green hydrogen is expected to unlock further capacity and improve grid stability over the medium-term.

Latin America Renewable Energy Installed Capacity, MW

Name	2020	2021	2022	2023	2024
Brazil	179,505	190,574	206,451	225,952	243,917
Mexico	29,301	31,577	31,708	32,950	34,036
Chile	13,530	17,552	20,624	22,229	24,964
Argentina	14,834	15,836	15,897	16,581	16,312
Colombia	12,390	12,505	14,050	14,360	15,039

Sources: CEIC, ANEEL, IRENA, Generadoras, CAMMESA

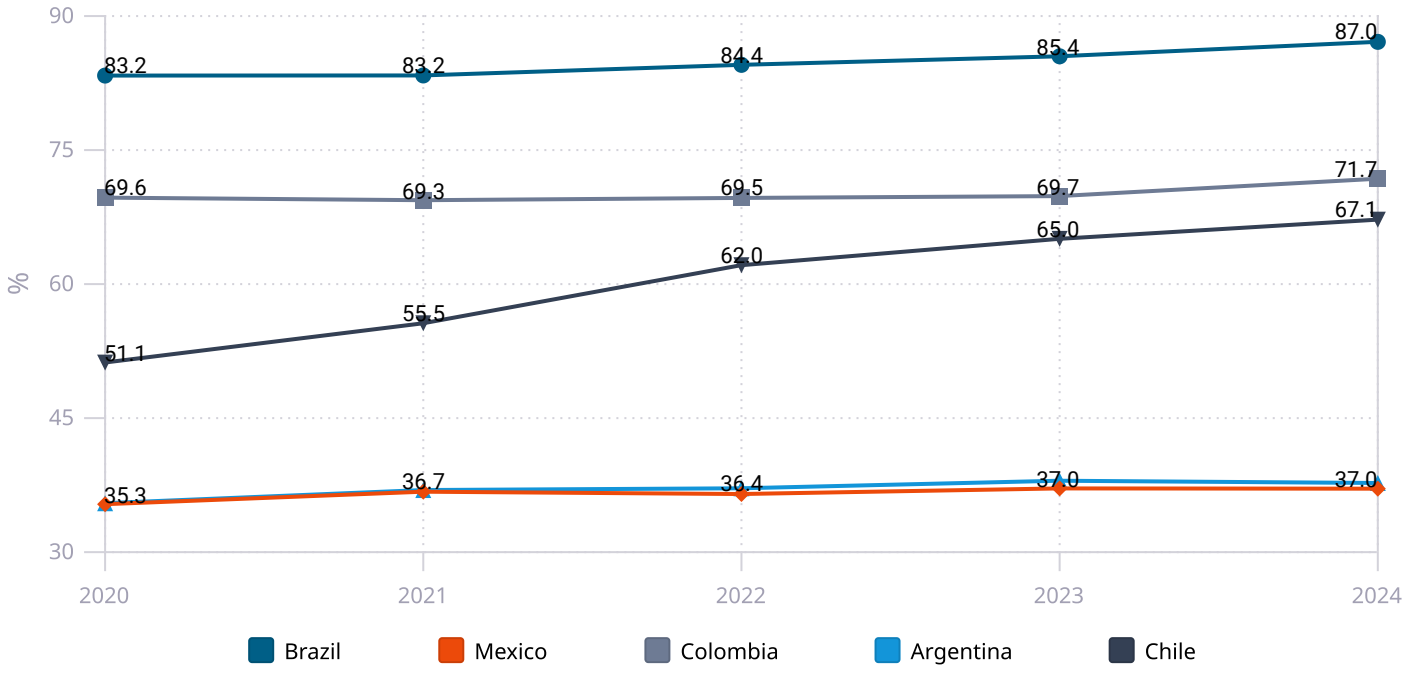
Latin America Global Positioning

Rank	Country	Total Renewable Capacity, MW	Share of Total	Hydropower Capacity, MW	Wind Capacity, MW	Solar Capacity, MW	Biomass Capacity, MW	Energy Transition Rank
1	China	1,827,270	41.1%	435,940	521,746	887,930	32,564	17
2	USA	428,405	9.6%	103,103	153,152	177,470	10,910	19
3	**Brazil**	213,857	4.8%	109,977	32,959	53,113	17,807	12
4	India	204,292	4.6%	52,293	48,163	97,384	11,237	63
5	Germany	178,655	3.0%	11,124	72,823	89,943	10,001	11
18	**Mexico**	34,036	0.8%	12,838	7,318	11,992	890	57
23	**Chile**	23,975	0.5%	7,419	4,807	11,054	599	20
30	**Argentina**	15,637	0.4%	10,169	4,320	1,741	380	82

32	**Colombia**	15,039	0.3%	13,224	34	1,392	388	35
-	World	4,448,051	-	1,425,374	1,132,837	1,865,490	150,763	-

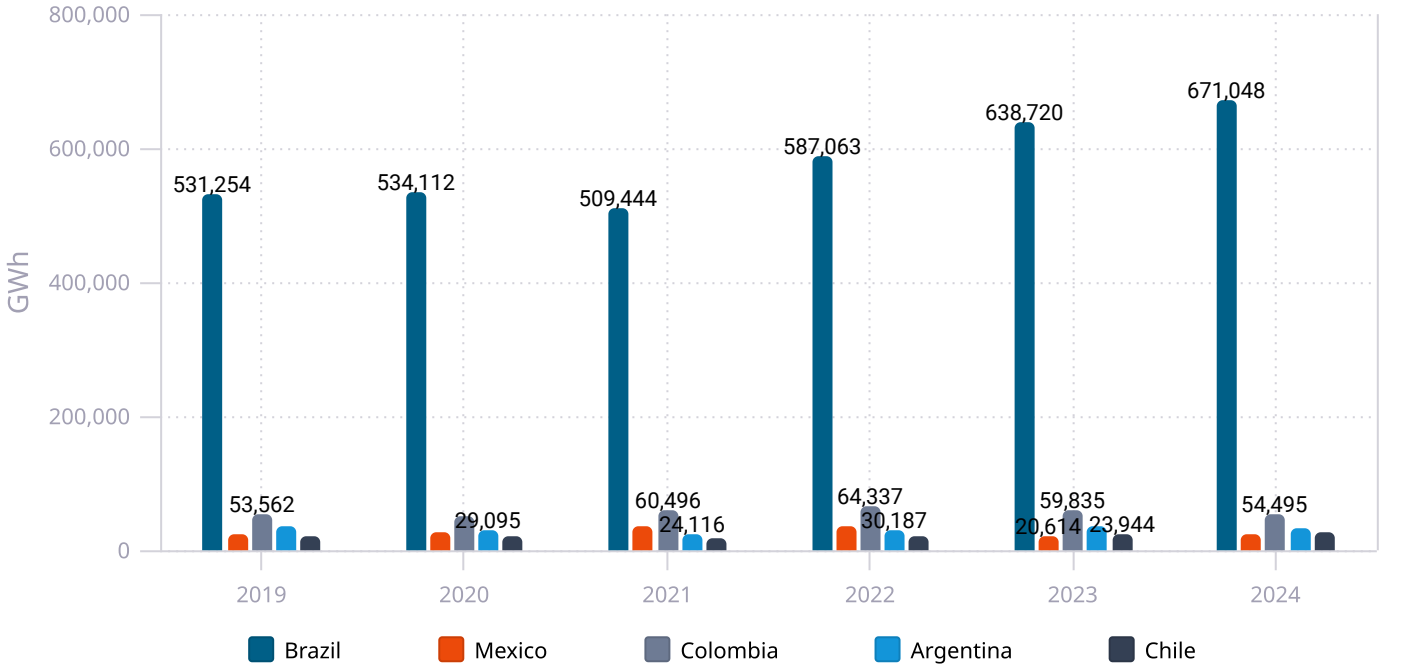
Source: IRENA, World Economic Forum

Renewable Energy as a Share of Total Generation, %



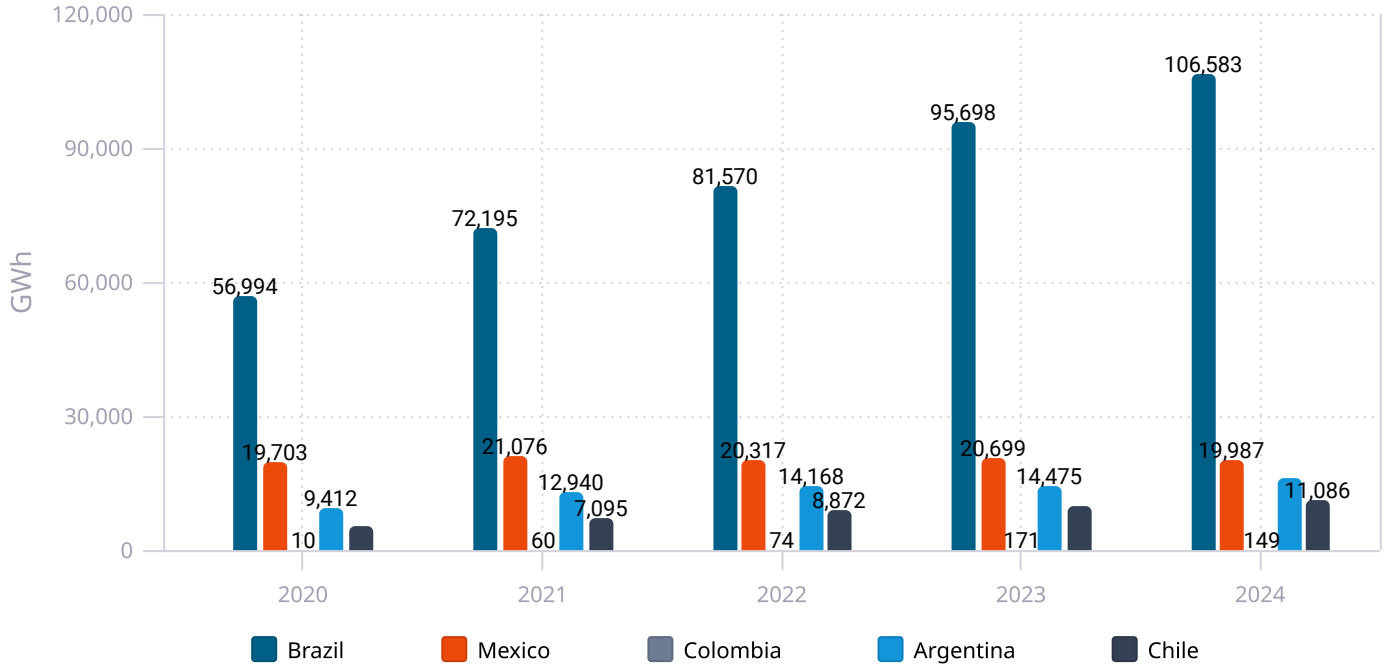
Sources: CEIC, ANEEL, SENER, SIMEC, CAMMESA, Generadoras

Hydropower Generation



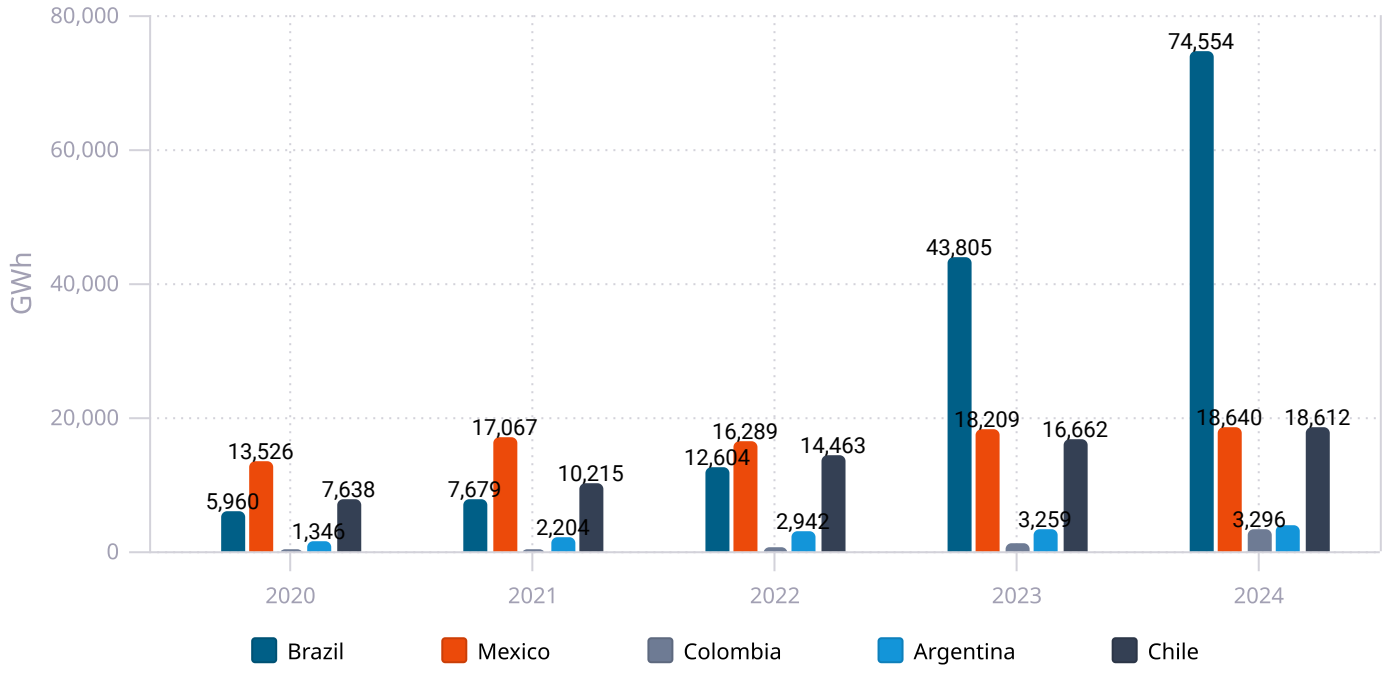
Sources: CEIC, ONS, IMCO, XM, CAMMESA, Generadoras

Wind Power Generation



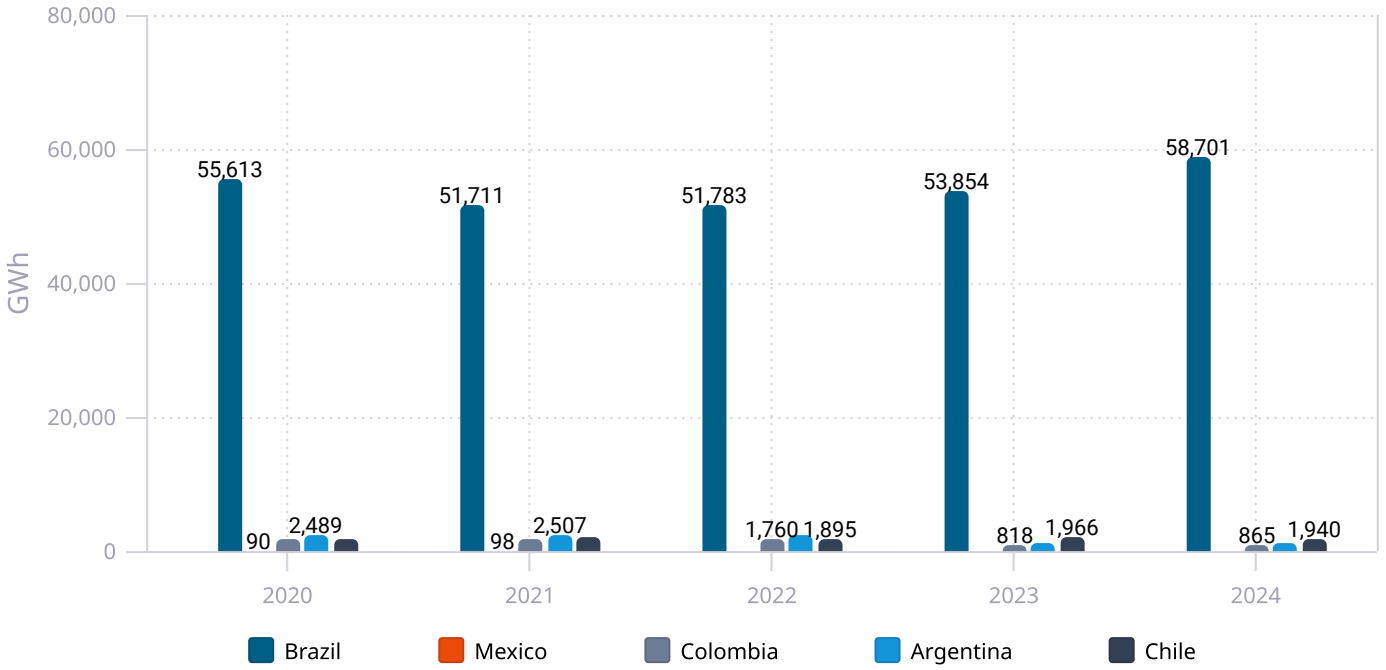
Sources: CEIC, ONS, IMCO, International Renewable Energy Agency, Generadoras

Solar Power Generation



Sources: CEIC, ONS, IMCO, International Renewable Energy Agency, Generadoras

Bioenergy Power Generation



Sources: CEIC, Energy Research Company, IMCO, International Renewable Energy Agency, Generadoras

Sources

ACERA, CAMMESA, EMBER, FitchRatings, GEM, Generadoras de Chile, IMCO, IRENA, OLADE, SENER, UPME, XM, World Economic Forum

Brazil

Sector Outlook

In 2024, Brazil's energy sector underwent a significant transformation, underpinned by robust growth in renewable energy. By year-end, total installed capacity had reached 243,917 MW, of which 86.9% came from renewable sources, according to the Energy Research Company (EPE). The sector expanded by 17,966 MW over the year, with solar and wind leading new additions, while hydropower remained the dominant source, representing 41% of total capacity.

According to the National Electric System Operator (ONS), Brazil's total electricity generation reached 745,089 GWh in 2024 – an increase of 6.4% y/y. Renewable energy generation continued to lead the energy mix, growing by 5.1% y/y, although its share declined slightly due to adverse climatic conditions. Prolonged droughts and reduced hydro reservoir inflows contributed to a 3% y/y contraction in hydropower output. This shortfall prompted a sharp rise in non-renewable generation, which increased by 20.7% y/y. Among renewable sources, solar energy exhibited the highest growth rate, surging by 70.2% y/y, followed by wind power (11.4% y/y) and biomass (9% y/y). In contrast, natural gas generation spiked by 54.7% y/y, oil derivatives by 50.1% y/y and coal by 20.0% y/y – reflecting a temporary deviation from Brazil's decarbonisation trajectory. Consequently, the share of renewables in total electricity generation declined slightly to 94.9% in 2024, from 96.7% in 2023, according to the Electric Energy Trading Chamber (CCEE). Despite this adjustment, hydropower remained the leading source, accounting for 61.4% of electricity generation.

External trade dynamics deteriorated notably in 2024, with Brazil recording a trade deficit of -6,100.37 GWh. Electricity exports declined by 70% y/y to 2,455.23 GWh – virtually all directed to Argentina – while imports surged to a record 8,555.60 GWh. This reversal was largely attributable to drought-driven hydropower shortfalls in the Southeast and Central-West regions, prompting increased reliance on imported electricity. The majority of imports originated from Paraguay (95.2%), followed by Argentina (3.2%) and Uruguay (1.6%). Domestic electricity consumption rose by 5.3% y/y, while increased thermoelectric dispatch, due to low reservoir levels, put pressure on the trade balance by boosting demand for higher-cost external energy. Investment flows into the sector remained resilient. Foreign Direct Investment (FDI) in electricity reached USD 3.8bn in 2024, up 3.5% y/y, supported primarily by renewable and grid infrastructure projects. However, the regulatory environment and market concentration continued to act as barriers to new entrants.

On the labour front, employment in the energy sector rose to 132,175 registered workers by December 2024, a 2.4% y/y increase, according to data from Novo Caged (Ministry of Labour). Growth was particularly concentrated in segments related to solar, wind and energy storage technologies, reflecting the sector's ongoing structural shift away from fossil fuels.

Drivers and Constraints

Drivers

Brazil's renewable energy sector continues to expand, driven by favourable policies, investment incentives and technological advancements. Hydropower, while facing a declining share in the energy matrix, remains the backbone of the grid due to its reliability. Improved hydrological conditions in 2023 strengthened reservoir levels, enabling stable generation and mitigating short-term supply risks. However, the focus has

shifted towards modernisation and small-scale projects, as seen in the Decennial Energy Plan 2034 (PDE 2034), which allocates 98% of new hydropower capacity to upgrading existing plants, leaving just 118 MW for large-scale developments. Wind energy benefits from world-class natural resources, particularly in the Northeast, where average capacity factors of 45-55% ensure competitive generation costs. The sector has attracted growing private investment, with foreign manufacturers such as China's Goldwind expanding local turbine production to comply with Brazil's 90% local content requirement. By the end of 2023, total investments in the wind sector had reached USD 48.58bn, with USD 4.4bn injected during that year alone, representing 18% of total renewable energy investments. Brazil has also emerged as a global leader in the Renewable Energy Certificates (I-RECs) market, with the number of certified plants increasing from 429 (2022) to 581 (2023), positioning the country as the second largest I-REC issuer after China.

The biomass sector is gaining traction, leveraging Brazil's vast agricultural resources. If fully exploited, sugarcane bagasse alone could generate up to 151,000 GWh annually, covering over 30% of national electricity consumption. The sector's growth is further supported by policies promoting energy diversification and emission reduction. Bioelectricity enhances grid stability by providing a dispatchable power source, complementing intermittent solar and wind generation. In addition, Brazil's Fuel of the Future Law (October 2024) mandates increased ethanol blending and establishes the National Sustainable Aviation Fuel Programme (ProBioQAV), reinforcing the role of biofuels in the country's energy transition. Solar energy is expanding rapidly, driven by regulatory frameworks such as Law 14,300/2022, which guarantees distributed generation incentives and exempts grid usage fees until 2045. As a result, distributed solar capacity grew by 58.2% in 2023, reaching 34.7 GW by early 2024. The sector has attracted BRL 245.1bn in investments from 2012 to 2024, benefiting from Brazil's high solar irradiance, particularly in the Northeast, where levels reach 2,000 kWh/m^2/year. Recent measures by ANEEL, such as Resolution No. 1,000/2021, aim to streamline the connection of small-scale solar projects, introducing a "fast track" process for systems up to 7.5 kW, reducing bureaucratic hurdles and accelerating deployment.

Constraints

Despite its critical role in the national grid, hydropower faces increasing socio-environmental constraints, particularly in ecologically sensitive regions like the Amazon. Large-scale projects have encountered significant opposition, as evidenced by the cancellation of the 140 MW UHE Castanheira project in April 2024 after a decade of Indigenous-led resistance. Climate variability poses another challenge, with extreme weather events such as El Niño affecting rainfall patterns and complicating long-term reservoir management. The sector's reliance on stable water inflows makes it vulnerable to prolonged droughts, exacerbating energy security risks. Wind energy, while expanding, is hindered by grid bottlenecks, particularly in the Northeast. Ageing transmission infrastructure results in curtailments exceeding 1.2 GW annually, causing financial losses estimated at BRL 700mn (USD 128mn) in 2023, according to ABEEólica. The issue is most acute in high-resource regions where the transmission network struggles to keep pace with growing generation capacity. Offshore wind, an emerging segment, faces delays in federal licensing as IBAMA finalises its regulatory frameworks. Although 97 offshore projects have been registered with IBAMA, with a potential capacity of 234 GW, initial operations are not expected until the 2030s due to long development cycles and permit challenges.

The biomass sector is constrained by high generation costs and logistical limitations. In the 2022 New Energy Auctions (LEN 36 & 37), biomass electricity had an average contracted price of BRL 336.61/MWh, significantly higher than wind (BRL 198.86/MWh) and solar (BRL 194.57/MWh). The sector's scalability is further restricted by the need for proximity between biomass sources and power plants to avoid high transportation costs and supply chain inefficiencies. Solar energy, while growing rapidly, faces challenges related to large-scale grid integration. The expansion of utility-scale solar projects necessitates significant

infrastructure upgrades to accommodate increased intermittency. Inconsistent regulations across states create investment uncertainty, while workforce shortages in system installation and maintenance further slow deployment. In addition, the sector is heavily reliant on foreign-manufactured components, exposing it to supply chain disruptions and price fluctuations. The durability of critical components such as inverters and batteries also remains a long-term concern, particularly as the industry expands.

Market Opportunities

Market Entries

Brazil's renewable energy market has been reshaped by government policies and private investments, creating a dynamic and increasingly consolidated sector. The market is characterised by a dual structure, with state-run entities and large holding companies dominating multiple subsectors. Eletrobras remains a major player in hydropower, controlling a significant share of the country's capacity and limiting opportunities for smaller competitors. In the wind energy sector, multinational corporations such as Neoenergia (Iberdrola, Spain), Enel Green Power (Enel, Italy), and EDP Renováveis (EDP, Portugal) dominate, particularly in large-scale wind farms in the Northeast. The solar market, while more fragmented, is also seeing consolidation, with companies like Vale and Eneva expanding their portfolios and capturing significant shares in both utility-scale and distributed generation assets. These large corporations often integrate renewable energy into their operations, particularly in energy-intensive industries such as mining, gas exploration and power production. Between January 2023 and July 2024, Brazil's renewable energy sector saw dynamic M&A activity, with 55 deals and a total disclosed investment of USD 5.1bn. Solar projects were the most sought-after by investors, leading to the largest expansion in the sector, with a 41% y/y increase in installed capacity, followed by wind energy at 14.5% y/y. Key deals included Vibra Energia's acquisition of a 50% stake in Comerc Energia for BRL 3.52bn (USD 646.9mn) in August 2024. Comerc Energia operates 2.1 GW of wind and solar capacity. In June 2024, BP acquired the remaining 50% of BP Bunge Bioenergia from Bunge for USD 800mn – the company produces 50,000 barrels per day of ethanol equivalent. In March 2024, Vale purchased the remaining 45% of Allianca Energia for BRL 2.7bn (USD 540.8mn), which owns a portfolio of hydroelectric and wind assets totalling 1,438 MW. In January 2024, I Squared Capital invested USD 400mn in Origo, a Brazilian distributed generation company, acquiring a 49% stake to fund 2 GW of solar projects across 20 states. Additionally, in April 2024, Emae sold a 39% stake for BRL 1.04bn (USD 198mn) to Trustee via the Phoenix FIPP Multiestrategia fund. Emae owns hydroelectric assets, including the Henry Borden plant, with an installed capacity of 960.8 MW.

Government Support Enhances the Development of Renewable Energy Sources

Brazil has introduced a range of government incentives to promote private investment in its renewable energy sector, fostering growth and enhancing energy security. Key initiatives include the **Programme for Alternative Sources of Energy (PROINFA)**, which facilitates the development of wind, biomass and small hydropower plants through financing and 20-year contracts with state-run utility Eletrobras. The programme has contributed to the construction of 119 power plants, adding 2,650 MW of capacity. The 2023 PROINFA budget was set at BRL 5.5bn, with a focus on purchasing 11.2 GWh of electricity. The **Programme for Development of Distributed Power Generation (ProGD)** encourages the adoption of photovoltaic and wind power systems by offering higher electricity sales prices, tax incentives and financing options. By 2030, ProGD aims to deploy 23.5 GW of distributed solar capacity, benefiting 2.7mn consumers.

Further support comes from the **National Biofuels Policy (RenovaBio)**, which offers tax benefits and aims to increase sugarcane bagasse power generation by 60% by 2030. The **National Photovoltaic Solar**

Energy Policy (PRONASOLAR) promotes solar power through favourable financing conditions, tax exemptions and regulatory support. Additionally, the government has introduced the **Fuel of the Future Law**, which provides incentives for biofuels such as ethanol, biomethane and **Sustainable Aviation Fuel (SAF)**, aiming to reduce CO_2 emissions and strengthen Brazil's position in the transition to green energy. The law also introduces a National Programme for Sustainable Aviation Fuel and a carbon capture framework. Offshore wind energy has been boosted by the 576/2021 Bill, which provides legal certainty for offshore wind projects, with Brazil's potential estimated at over 1,200 GW. The development of this sector will contribute to Brazil's decarbonisation and the global green energy market, particularly in the export of green hydrogen. Lastly, the **Programme for the Acceleration of Energy Transition (Paten)**, enacted in January 2025, aims to accelerate low-carbon projects, with a focus on solar, wind and natural gas, supported by the Green Fund, which will finance energy transition projects without requiring real guarantees. These initiatives position Brazil as a leader in renewable energy and green technology development, offering significant opportunities for investors in the sector.

On 12 December 2024, Brazil's Senate approved the 576/2021 Bill, establishing a legal framework for **offshore wind energy projects**, marking a significant step in the country's ecological transformation. This law provides the legal certainty needed to attract investors, which is essential for diversifying Brazil's energy matrix and reducing dependence on fossil fuels. The approval supports Brazil's climate commitments and its green neo-industrialisation, which requires a higher renewable energy supply, particularly from offshore wind. The bill paves the way for future energy auctions, enabling the growth of the wind energy sector and the development of a robust local supply chain, including the manufacturing of wind turbine components and materials. Brazil has vast offshore wind potential, with over 1,200 GW available, positioning the country as one of the world's largest markets for this energy source. Currently, 97 projects, representing 234 GW, are registered with Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA), pending legal definitions. The first offshore wind projects are expected to begin operating in the early 2030s, given the lengthy development process, including licensing, which can take up to five years. The law does not include subsidies for offshore wind generation but focuses on enabling studies and energy auctions for this sector. Offshore wind energy will also support Brazil's decarbonisation efforts and contribute to global sustainability through the export of green hydrogen and other green products.

Novo PAC

Launched in August 2023 by the Office of the Chief of Staff under President Luiz Inácio Lula da Silva's administration, the **Novo PAC (Growth Acceleration Programme)** is a federal initiative designed to drive economic growth, social inclusion and sustainability through large-scale infrastructure investments. Of the total planned investment of BRL 1.8tn, BRL 666.3bn is allocated to the Energy Transition and Security axis, with BRL 446.5bn earmarked for execution by 2026 and BRL 219.8bn to be invested post-2026. These funds focus on expanding electricity generation and transmission capacity, integrating renewable energy sources and improving the reliability of the National Interconnected System (SIN). Under the Novo PAC, BRL 87.1bn of private investment has been directed towards 458 energy projects with a strong focus on renewables. The largest share of this investment is in solar energy, which accounts for 252 projects valued at BRL 52.8bn, followed by wind energy, with 160 projects receiving BRL 29.0bn. In addition, 35 small hydro plants have been contracted with an investment of BRL 2.4bn, ten renewable thermal biomass plants with BRL 2.7bn, and one large hydro project receiving BRL 0.2bn. As of July 2024, 72 wind farms, 96 solar photovoltaic plants, three small hydro plants and one biomass thermal plant had been completed. Public-Private Partnerships (PPPs) have been established in various municipalities, driving BRL 1.6bn in public lighting modernisation across 18 cities, improving energy efficiency, cutting costs, ensuring long-term maintenance and generating employment. An additional 19 projects, valued at BRL 46mn, are set to

generate BRL 714mn in energy efficiency improvements, benefiting 3.5mn people. As of July 2024, 157 contracts had been executed under the National Efficient Public Lighting Programme (ReLuz), with an investment of BRL 114mn.

Energy Auctions

As reported by the Electric Energy Commercialisation Chamber (CCEE), between July 2023 and December 2024, Brazil conducted five existing energy generation auctions, securing 37.3 TWh for BRL 6.1bn, a sharp increase from 13.1 TWh contracted in 2022. The December 2023 auctions (30th and 31st A-1 & A-2) secured an 751 MW average, generating BRL 234.5mn in savings, while the December 2024 auctions (32nd and 33rd A-1 & A-2) contracted an average of 2,130.3 MW, delivering BRL 1.15bn in savings. However, the 34th auction (A-3) failed to attract bidders, reflecting limited market interest in long-term procurement contracts.

According to ANEEL's calendar published in December 2024, the agency will hold several key auctions to enhance Brazil's electricity infrastructure and capacity.

1. Existing Energy Auctions (*Leilões de Energia Existente*): Scheduled for December 2025.

2. New Energy Auctions (*Leilões de Energia Nova*): An A-5 Auction, scheduled for July 2025, will target small-scale hydroelectric plants with capacities between 1 MW and 50 MW, including Small Hydroelectric Plants (PCHs) and Hydroelectric Generating Centres (CGHs). Supply is set to start on 1 January 2030. Two more auctions (A-4 and A-6) are planned for August 2025. The scope of the A-4 includes new hydroelectric projects up to 50 MW, and wind, solar and thermoelectric plants with zero variable costs, with supply starting in 2028. A-6 focuses on wind, solar photovoltaic and thermoelectric sources, with supply beginning in 2030.

3. Capacity Reserve Auction (*Leilão de Reserva de Capacidade*): Scheduled for 27 June 2025, and is looking to secure additional capacity from new and existing gas and biofuel-fired plants, as well as existing hydroelectric plants, to ensure grid reliability.

4. First Battery Storage Auction: Brazil's inaugural auction dedicated to battery energy storage systems (BESS) is scheduled for June 2025. It is anticipated to attract approximately BRL 452mn in investments. The auction seeks to integrate battery storage into the national grid, enhancing the stability and reliability of renewable energy sources like wind and solar.

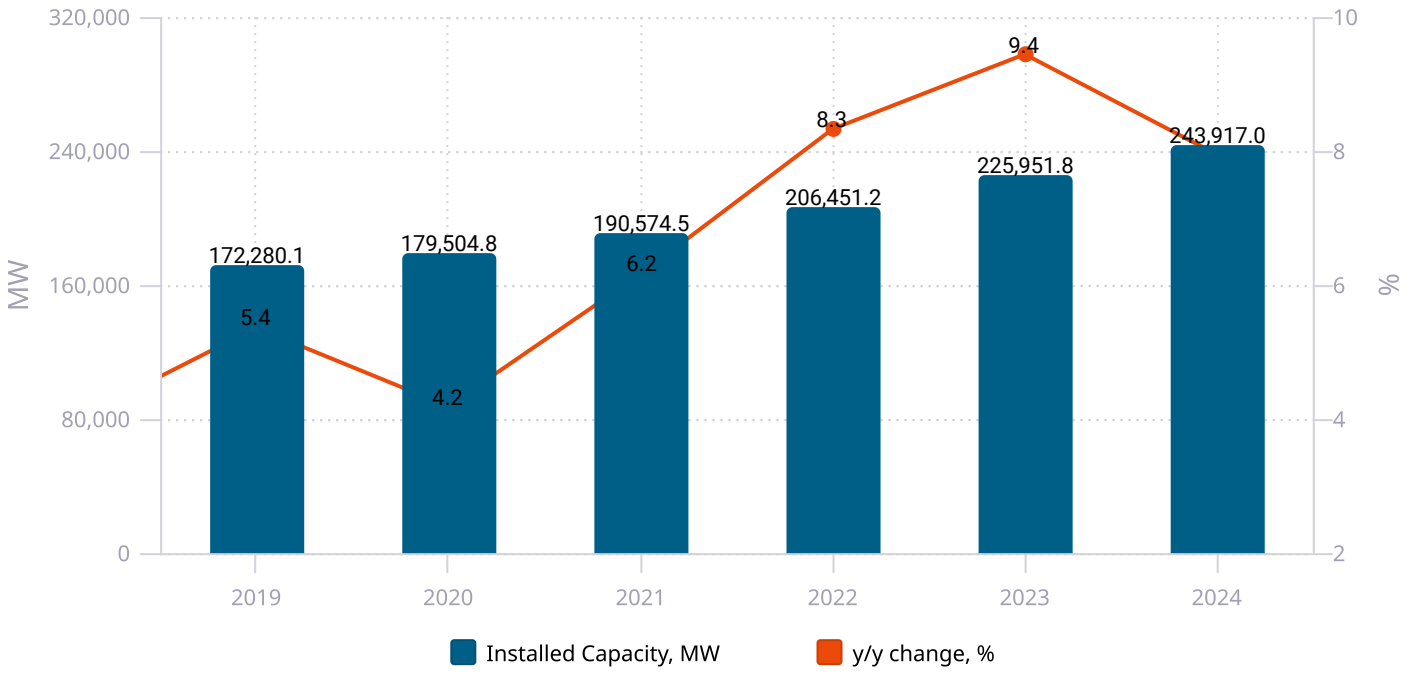
Installed Capacity

The year 2024 marked a significant milestone in Brazil’s electricity expansion, driven by a sharp increase in renewable energy capacity. By year-end, Brazil’s total installed capacity had reached 243,917.0 MW, with 86.9% derived from renewable sources, according to the Energy Research Company (EPE). The country added 17,966 MW during the year – the second largest annual increase recorded by EPE since the previous year. At the state level, Minas Gerais led the expansion, adding 3,164.9 MW (up 16.2% y/y), primarily from solar power. Bahia followed closely with 3,071.6 MW (up 20.1% y/y), driven mainly by wind energy. At the regional level, the Northeast spearheaded national growth, contributing 8,912.3 MW – an increase of 132.7% y/y – followed by the Southeast, which added 5,905.6 MW (up 44.1% y/y).

According to the National Electric System Operator (ONS), Brazil’s installed capacity within the National Interconnected System (SIN) stood at 208,889 MW as of December 2024, excluding independent distributed generation (GD). Including GD, total capacity rises to 243,917 MW, according to the Ministry of Mines and Energy (MME). This discrepancy is particularly notable in the solar segment, which has seen

rapid growth in residential and commercial installations, largely driven by government incentives. Just 33.4% of total solar capacity is connected to the SIN, while the remaining 66.6% falls under mini and micro distributed generation (MMGD). Geographically, the Southeast and Central-West regions jointly accounted for 127,776.5MW (47.6% of the national total), representing a 0.8pp increase in share. Meanwhile, the Northeast reached 69,312.8MW (25.8% of total capacity), reflecting a robust 22.6% y/y increase. Among all sources, solar energy registered the highest annual growth in installed capacity in December 2024, up 52.3% y/y. This surge occurred alongside a decline in fossil fuel-based generation. Oil-fired capacity fell by 5.7% y/y and natural gas by 3.3% y/y, reinforcing Brazil's continued shift towards low-carbon energy. As of 2024, hydropower remained the backbone of Brazil's electricity mix, representing 52.6% of total installed capacity within the SIN, according to EPE, and 41% of total installed capacity in the country.

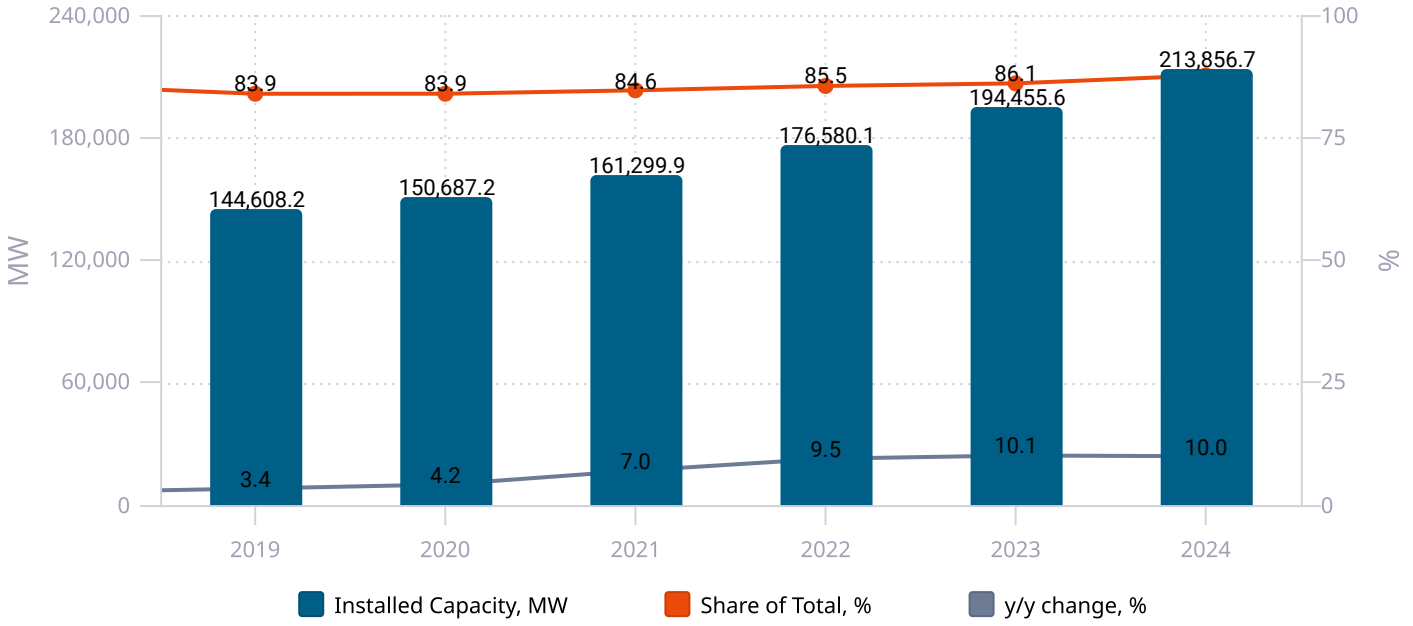
Installed Capacity, MW, period-end



Sources: CEIC, Energy Research Company

Renewable Power Installed Capacity, MW, period-end*

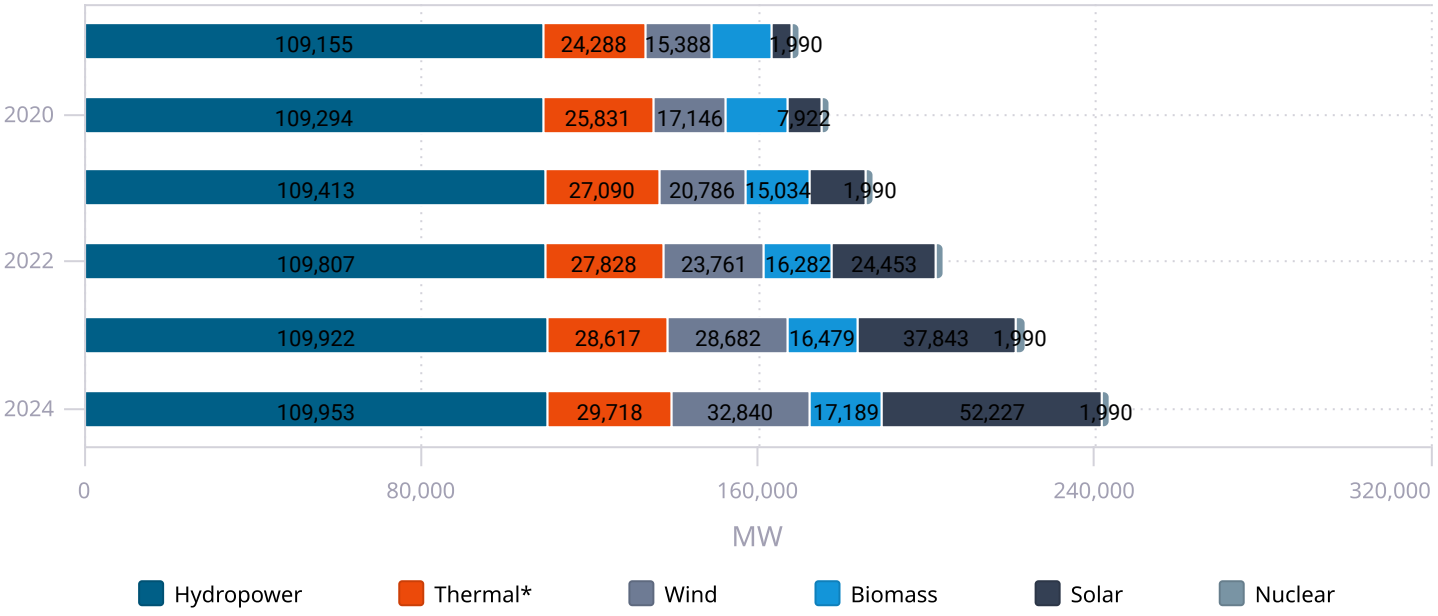
*Data for 2024 from ANEEL



Sources: CEIC, International Renewable Energy Agency

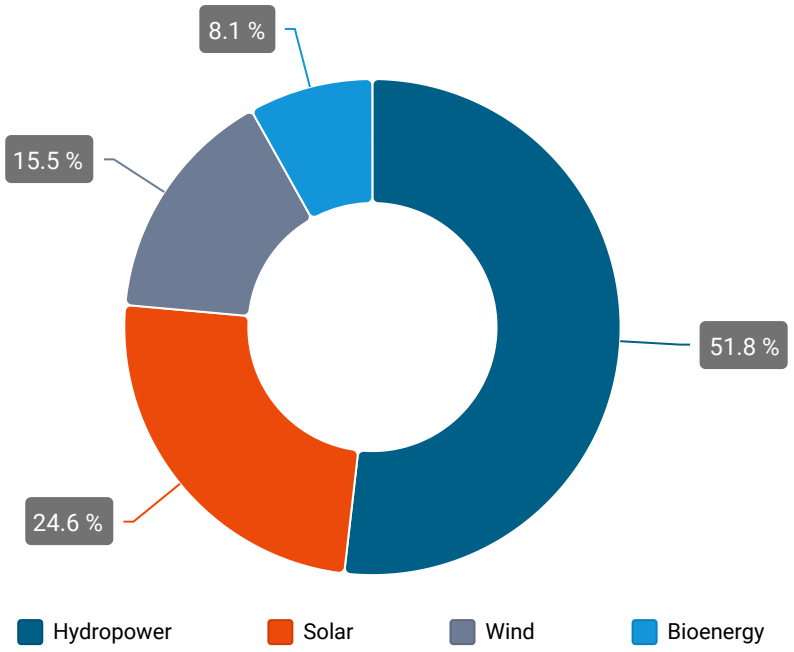
Installed Capacity by Energy Source, MW, period-end

* Thermal Power includes natural gas, petroleum products and mineral coal.



Sources: CEIC, ANEEL

Installed Capacity by Renewable Energy Source, 2024



Source: CEIC, IRENA

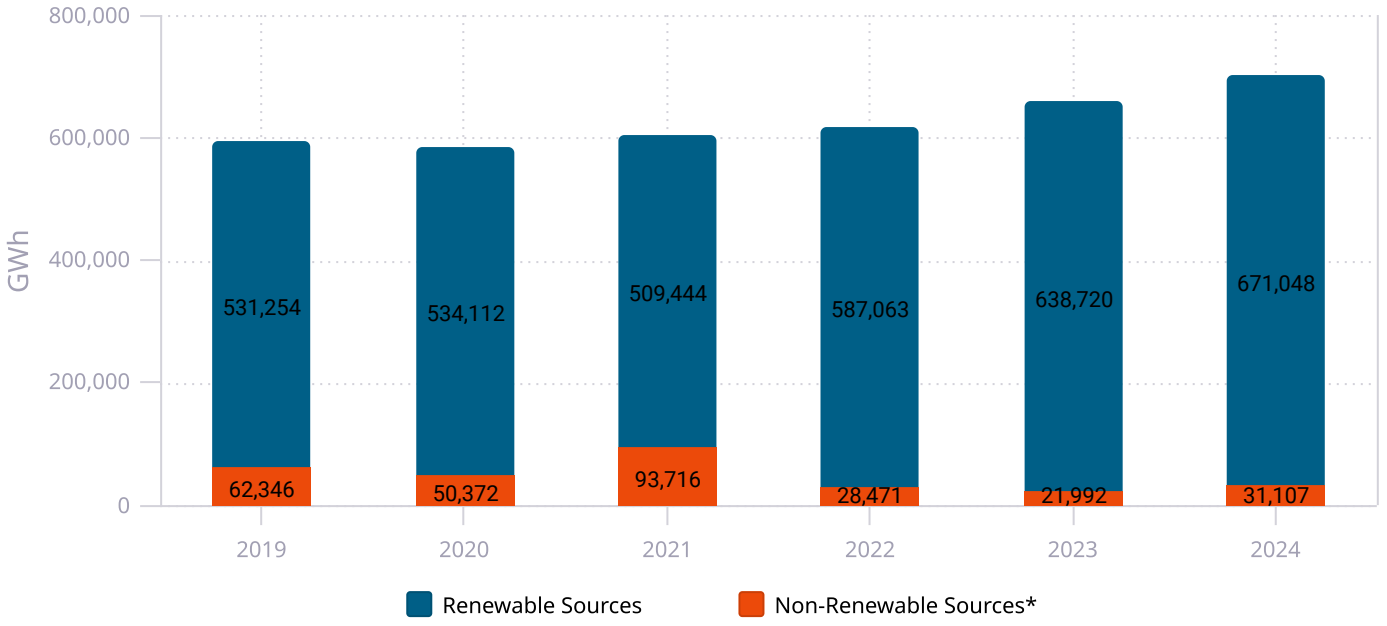
Power Generation

According to data from the National Electric System Operator (ONS), Brazil's total electricity generation reached 745,089 GWh in 2024, marking a 6.4% y/y increase. Renewable energy sources continued to dominate, although their growth moderated, rising by 5.1% y/y. In contrast, non-renewable generation expanded significantly, up 20.7% y/y. This shift was largely due to drought conditions and low water reserves in hydroelectric reservoirs, leading to a slight setback in the renewable share of the energy matrix. Specifically, hydropower generation declined by 3% y/y by the end of 2024.

Among renewable sources, solar energy recorded the fastest growth, surging 39.1% y/y, followed by wind power (up 11.4% y/y) and biomass (up 9% y/y). In response to the reduced hydropower availability, Brazil was compelled to increase reliance on traditional non-renewable generation. Consequently, output from natural gas rose sharply by 54.7% y/y, oil derivatives by 50.1% y/y and coal by 20% y/y – marking a temporary deviation from the country's long-term decarbonisation trend. As a result, the share of renewables in Brazil's total electricity generation fell slightly to 94.9% in 2024, compared to 96.7% the previous year, according to the Electric Energy Trading Chamber (CCEE). Despite this marginal decline, hydropower remained the primary energy source, accounting for 61.4% of total generation.

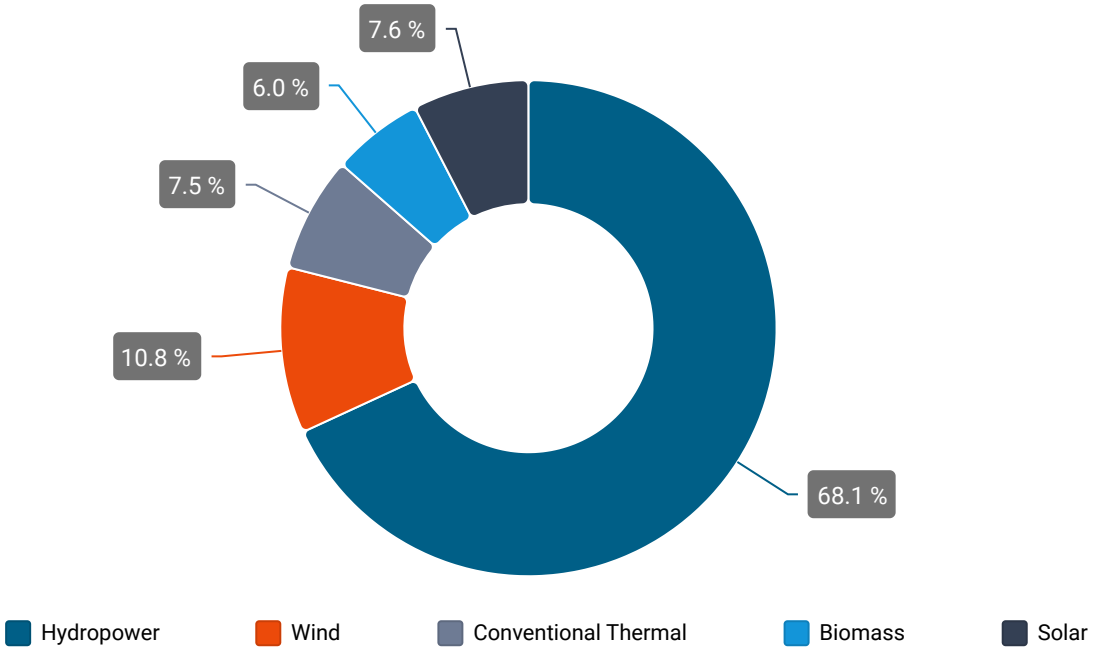
Power Generation by Source, GWh

* Includes natural gas, nuclear, gas, oil and mineral coal power generation



Sources: CEIC, ONS

Power Generation by Source, 2024



Source: CEIC, IRENA

External Trade

Brazil's energy landscape has undergone a remarkable transformation. Between 2017 and 2021, the country relied heavily on energy imports from neighbouring nations to meet domestic demand, constrained by unfavourable hydrological conditions and limited generation capacity. However, from 2022 onwards, improved hydrology and the expansion of alternative generation sources enabled Brazil to transition to a net energy exporter. This shift was further facilitated by the implementation of the

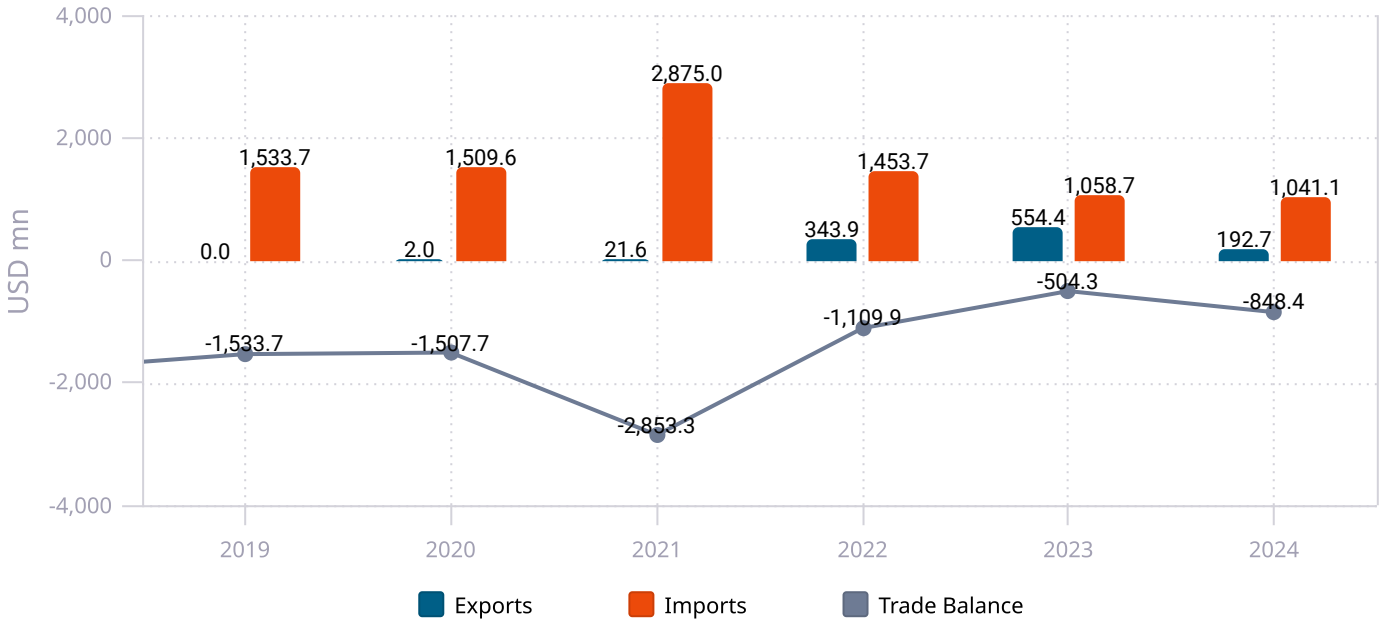
Exportação de Vertimento Turbinável (EVT) programme, which allowed the commercialisation of surplus hydropower generation to neighbouring markets.

In 2023, Brazil achieved a historic turnaround in its energy trade, recording a trade surplus of 2,545.23 GWh, the first in years. Exports surged to 8,224.99 GWh – a 141% y/y increase from 3,411.54 GWh in 2022 – while imports declined to 5,679.76 GWh. This shift was largely driven by favourable rainfall, which boosted hydropower output, stabilised domestic supply and enabled greater electricity exports to neighbouring countries, particularly Argentina and Uruguay. The expansion of renewable energy capacity, coupled with reduced volatility in domestic demand, reinforced this export-oriented position.

By contrast, 2024 saw a sharp reversal, with Brazil returning to a trade deficit of -6,100.37 GWh. Exports plummeted by 70% y/y to 2,455.23 GWh, with 99.9% directed to Argentina, while imports surged to a record 8,555.60 GWh. This deterioration was primarily driven by severe drought conditions throughout the year in key hydropower regions, particularly in the Southeast/Central-West, which reduced domestic reservoir inflows. As a result, Brazil was forced to increase energy imports, mainly from Paraguay (95.2%), Argentina (3.2%) and Uruguay (1.6%), to meet rising domestic demand, which grew by 5.3% y/y in 2024. In addition, higher thermoelectric dispatch due to low reservoir levels contributed to increased reliance on costlier external sources, further straining the trade balance.

External Trade in Electricity*

* HS code: 271600



Sources: CEIC, SECINT,COMEXSTAT

External Trade in Electricity,* GWh

* HS code: 271600

Year	Exports	Imports	Trade Balance
2019	0	889.194	-889.19
2020	33.478	867.591	-834.11
2021	274.505	7,652.948	-7,378.44

2022	3,411.535	5,840.886	-2,429.35
2023	8,224.985	5,679.756	2,545.23
2024	2,455.228	8,555.597	-6,100.37

Sources: CEIC, UN Comtrade

Competitive Landscape

Brazil's renewable energy market is marked by a dual structure, with state-run entities and large holding companies exerting control over multiple firms. Eletrobras (Brazil) remains dominant in hydropower, managing a substantial share of the country's capacity and limiting opportunities for smaller competitors. Similarly, in the wind energy sector, multinational corporations like Neoenergia (group Iberdrola, Spain), Enel Green Power (Italian Enel) and EDP Renováveis (Portuguese EDP) control the majority of installed capacity, particularly in large-scale wind farms in the Northeast. While the solar market is more fragmented, consolidation is also on the rise, with companies like Vale (a global mining company) and Eneva (Brazil) expanding their portfolios and capturing significant shares in both utility-scale and distributed generation assets. These large corporations often integrate renewable energy into their operations, particularly in energy-intensive industries such as mining, gas exploration and power production. In the biomass sector, Raízen Energia (a joint venture between Shell and Cosan) leads, capitalising on Brazil's agricultural resources, particularly sugarcane for cogeneration. Many biomass companies are also increasing the use of waste by-products for energy production, contributing to both sustainability and Brazil's renewable energy capacity. Despite this diversity, the market remains dominated by a few major players, creating challenges for smaller competitors to gain significant market share.

As of December 2024, Eletrobras (Brazil) remains a dominant player in Brazil's renewable energy sector, with 42.2 GW of installed hydropower capacity across its subsidiaries Chesf, Eletronorte, CGT Eletrosul and Furnas. Brazilian Norte Energia (in which Eletrobras holds a 49.9% stake and Light and CEMIG own 10%), manages Belo Monte, Brazil's largest hydropower plant, with 11.2 GW of installed capacity. In the wind power sector, Enel Green Power leads with 4.7 GW, followed by Serena Generation (formerly Omega Geração) and Neoenergia. Vale, a global mining company, is notable for its solar power projects, which are primarily intended for self-consumption in its mining operations, followed by Eneva (Brazil). In the biomass sector, domestic pulp giants Suzano and Klabin jointly contribute over 2.2 GW of biomass-based generation, while the Brazilian Cooperative of Sugarcane, Sugar and Alcohol Producers (Copersucar) generated an estimated 8,000 GWh of biomass-based electricity. Raízen Energia is a major player, expanding its renewable energy portfolio beyond sugar and ethanol, with a focus on biofuels and renewable power generation.

Top Ten Hydropower Companies by Installed Capacity in Brazil, MW, December 2024

Ranking	Company	Installed Capacity, MW
1	Norte Energia	11,233.1
2	Eletrobras Chesf	10,262.3
3	Eletrobras Eletronorte	9,122.3
4	Eletrobras Furnas	9,010.8

5	China Three Gorges Brasil Energia (CTG Brasil)	8,948.1
6	Itaipu Binacional (Eletrobras 50%)	7,000.0
7	Engie Brasil	4,425.1
8	Energia Sustentavel do Brasil	3,750.0
9	Santo Antonio Energia	3,568.0
10	COPEL	3,365.4

Sources: CEIC, ANEEL

Top Ten Solar Power Companies by Installed Capacity in Brazil, MW, December 2024

Ranking	Company	Installed Capacity, MW
1	Vale	681.3
2	Telefonica Brasil	190.0
3	Spe Futura 4	157.4
4	Sol do Sertao II	149.7
5	Sol do Sertao I	142.9
6	Sol Serra do Mel I	137.5
7	Spe Futura 1	125.9
-	Spe Futura 2	125.9
-	Spe Futura 3	125.9
10	Corsan	124.1

Sources: CEIC, ANEEL

Top Ten Wind Power Companies by Installed Capacity in Brazil, MW, December 2024

Ranking	Company	Installed Capacity, MW
1	Omega (Serena Chui I Energia Sa)	582.8
2	Eletrobras Eletrosul CGT	339.6
3	CPFL Energias Renovaveis	314.6
4	Eletrobras Chesf	198.1
5	New Energy Options	151.7
6	Ventos do Sul Energia	150.0
7	Central Eolica Jau	98.7
8	Bons Ventos da Serra	86.1
9	Enel Green Power Delfina	84.0

10	Ventos de Sao Fernando	83.2

Sources: CEIC, ANEEL

Top Ten Biomass Power Companies by Installed Capacity in Brazil, MW, December 2024

Ranking	Company	Installed Capacity, MW
1	Suzano	1,589.1
2	Klabin	649.6
3	Bracell Celulose	449.7
4	Tereos Acucar	367.1
5	Bioenergia Barra	323.0
6	Bionergia Brenco	305.0
7	Quata	302.9
8	Cofco International	295.2
9	Raizen Centro-Sul	288.4
10	CMPC Celulose	264.9

Sources: CEIC, ANEEL

Sources

ABEEolica, ABSOLAR, Agencia Brasil, ANEEL, BCB, CCEE, CMSE, EPE, Government of Brazil, IEA, IHA, IRENA, MME, Office of the Chief of Staff, ONS, UN Comtrade

Mexico

Sector Outlook

According to May 2024 projections in the Electric Power System Development Programme (PRODESEN 2024-2038) published by Mexico's Energy Secretariat (SENER), the country will add 82,728 MW of capacity between 2024 and 2038. Total capacity is forecast to reach 176,516 MW by 2038 –a net increase of 84,194 MW – of which 31,739 MW (62.4 %) will come from "clean energy" (a category that SENER defines to include renewables, nuclear power and energy-storage batteries), alongside a substantial shift toward natural gas and green hydrogen in combined-cycle plants. For the first phase (2024-2027), PRODESEN includes only firm projects with signed interconnection agreements and infrastructure deemed strategic under the National Development Plan (PND 2019-2024). From 2028 onwards, the plan incorporates additional schemes identified through medium- and long-term optimisation modelling, designed to ensure the National Electric System (SEN) meets demand with maximum efficiency, quality, reliability and security, while achieving legislated clean energy targets and international greenhouse gas commitments at minimal total system cost. Over 2028-2038, technology-mix additions are projected as 33 % wind, 22.8 % solar (12.8 % utility-scale and 10 % distributed generation) and 12.2 % battery storage.

In parallel, the Federal Electricity Commission (CFE) has launched its 2025-2030 Strengthening and Expansion Plan for the SEN, a 22.7 GW, USD 23.4bn capex programme spanning 51 projects. Twenty-six carry-over schemes (7.2 GW) from the previous administration will be commissioned by 2027. Between 2027 and 2028, CFE will add 2.47 GW of onshore wind (seven projects, USD 3.25 bn), 4.67 GW of solar PV (nine projects, USD 4.91 bn) and a 240 MW internal-combustion plant (one project, USD 370mn). Combined-cycle gas capacity (five projects, 3.43 GW, USD 2.66 bn) follows in 2028-29, and three CFE–PEMEX cogeneration plants (2.42 GW, USD 2.06 bn) are due in 2029-30. A 2.22 GW battery energy storage portfolio (USD 2.33 bn) will be deployed through 2030 to firm intermittent renewables and bolster grid stability. Meanwhile, the private sector is expected to contribute an additional 6.4 GW of clean energy capacity through separate auctions. In total, Mexico's power system will expand by nearly 29.1 GW over 2025-2030, rebalancing the generation mix, alleviating regional bottlenecks and underpinning the country's energy transition objectives.

According to the World Economic Forum's 2024 Energy Transition Index (ETI), Mexico climbed one place to 57th of 120 countries. The country scores highly on system performance, driven by universal energy access and clear policy commitments to decarbonisation, but lags on transition readiness. Its readiness score is held back by a shortage of skilled human capital for both R&D and field operations, as well as by underinvestment in transmission infrastructure. Moreover, Mexico attracts relatively low levels of foreign direct investment and allocates a small share of GDP to renewable energy projects, signalling clear opportunities to bolster the enablers – namely workforce development, grid expansion and financing mechanisms – that underpin a successful energy transition.

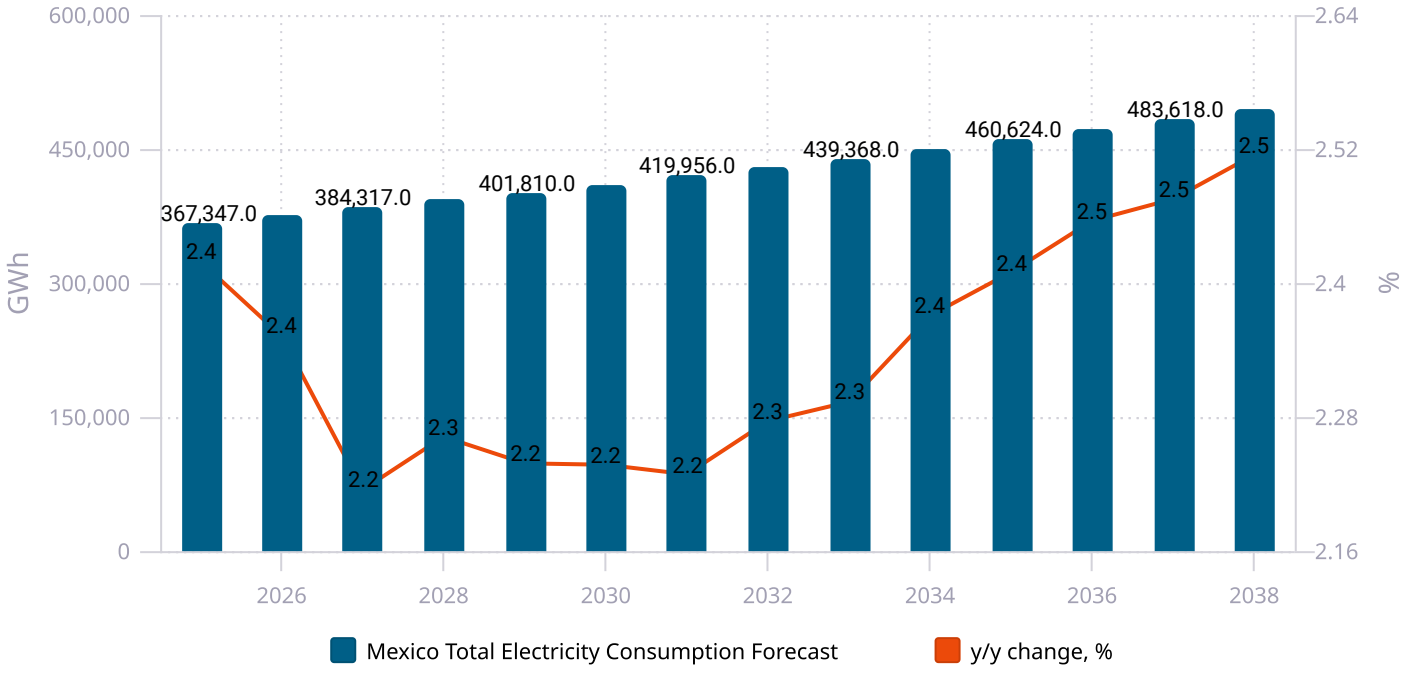
Share of Net Capacity Additions by Source, PRODESEN 2024-2038

Technology	2024-2027	2028-2038
Non-Renewable	29%	21.8%
Solar	27%	22.8%
Storage	20.2%	12.2%

Hydropower	3.8%	4.8%
Wind Power	19.9%	33.0%
Other	0.1%	5.4%

Source: SENER

Mexico Total Electricity Consumption Forecast



Sources: CEIC, SENER

Drivers and Constraints

Drivers

- **State-Centred Initiatives:** Mexico's renewable energy sector is propelled by state-led initiatives, nearshoring trends and vast solar potential. The Strengthening and Expansion Plan for the National Electric System 2025-2030 (Plan de Fortalecimiento y Expansión del Sistema Eléctrico Nacional) aims to add 29,000 MW of capacity by 2030. Announced on 9 April 2025, the plan designates the state-owned Federal Electricity Commission (CFE) to ensure grid reliability, with private entities supporting the transition. Key projects include the rehabilitation of nearly 60 CFE-operated hydropower plants and the USD 48bn Sonora Solar Complex in the Sonoran Desert. This solar project, which upon completion will be Latin America's largest, will feature 1 GW of solar capacity, 192 MW of storage and a 315km high-voltage transmission line. As of May 2025, phase I and II were operational with a combined installed capacity of 420 MW, while the tender offer process for phase III was underway. The project is expected to be completed in 2030. In addition, CFE launched its first green hydrogen pilot plant in late 2023, targeting industrial decarbonisation.
- **Nearshoring:** Mexico's strategic position in North America has made it a prime beneficiary of nearshoring, with multinational firms relocating production to align with regional supply chains. This trend is accelerating renewable energy demand, as corporations seek to meet strict clean energy mandates. Manufacturing expansions, particularly in automotive and electronics, are projected to drive a 9% annual increase in commercial renewable power purchases to 2030. Companies like Tesla and Ford, expanding operations in Nuevo León and Guanajuato, are prioritising solar and wind procurement to meet net-zero targets.

- **Solar Power Potential:** According to the Mexican Association of Solar Energy (ASOLMEX), Mexico boasts an average solar irradiation of 6.36 kWh/m² per day, surpassing solar leaders like China and India. With vast land areas offering capacity factors exceeding 20%, the country's technical potential exceeds 1,800 GW, equivalent to 28 times the current capacity of the National Electric System (SEN). Despite this, just 12 GW of solar PV had been deployed by 2024, highlighting untapped opportunities. Northern states like Sonora and Chihuahua, with irradiation levels above 7 kWh/m² per day, are focal points for utility-scale projects, while distributed generation has gained traction in industrial hubs like Querétaro.

Constraints

- **High Energy Losses.** Losses in Mexico's National Transmission Network (Red Nacional de Transmisión, RNT) and Regional Distribution Grids (Redes de Distribución, RGD) remain one of the sector's greatest operational challenges. Total losses – comprising technical losses (thermal dissipation in conductors and transformers) and non-technical losses (theft, meter tampering, equipment failures and administrative errors) – amounted to 12.2 % of net consumption in 2023, only marginally below the 12.3 % recorded in 2022. Such losses erode revenues, reduce system efficiency and increase the unit cost of electricity for all users.
- **Transmission-Grid Constraints.** Mexico's existing transmission infrastructure is ill-suited to the large-scale integration of variable renewable technologies. Without significant grid reinforcement and the deployment of smart-grid innovations, wind and solar plants cannot reliably meet demand, particularly during periods of low resource availability, without complementary energy-storage systems. Continuous investment is needed to rehabilitate ageing lines, deploy dynamic line-rating and build new high-voltage corridors that connect renewable-rich regions to major load centres.
- **Education and Skilled-Labour Shortages.** The World Economic Forum's 2024 Energy Transition Index (ETI) assigns Mexico a low Transition Readiness score for human capital (19.9/100). There is a shortage of professional institutions and limited capacity to train engineers, technicians and project managers with the specialised skills required for the energy transition. Workforce participation in the power sector remains low, both in quantity and quality, hampering the deployment, operation and maintenance of advanced renewable and storage assets.
- **Lack of innovation.** Mexico's innovation deficit is underscored by chronic underinvestment in research and development (R&D), which accounted for just 0.3% of GDP in 2023 and 0.31% in 2024 – far below the OECD average of 2.7%. This underfunding has resulted in minimal domestic clean-energy patent filings (only 12 patents per mn inhabitants in 2023) and limited adoption of advanced technologies in renewables, storage and grid management. The Energy Transition Index (ETI) highlights weak public R&D spending as a critical barrier, with state allocations stagnating at USD 1.2 bn annually (2023–2024), equivalent to 0.04% of GDP. Without urgent reforms – such as tax incentives for private sector R&D or partnerships with global cleantech leaders – Mexico risks perpetuating reliance on imported technologies, which currently make up 72% of its renewable energy infrastructure. For context, regional peers like Brazil invest 1.2% of GDP in R&D, while Chile allocates 0.36%.

Market Opportunities

Strengthening and Expansion Plan for the National Electric System (2025-2030)

The Mexican Government's Strengthening and Expansion Plan for the National Electric System (2025-2030) was unveiled on 9 April 2025, committing to add 29,000 MW of capacity by 2030. Of this, the state-owned Federal Electricity Commission (CFE) will deliver 22,674 MW of firm and flexible generation, while private investors will contribute 6,326 MW under six participation frameworks. Three of those frameworks address self-consumption – from distributed residential and commercial systems (0.5-0.7 MW) to isolated plants (0.7-20 MW) and grid-tied installations up to 0.7 MW – enabling end-users to generate their own power. The other three cover wholesale generation models – long-term energy-supply contracts with potential asset

transfer to CFE, mixed-investment special purpose vehicles in which CFE retains 54% equity and continued independent power-producer (IPP) sales into the national wholesale market.

Continued Growth of Distributed Energy

Distributed solar PV (DG-PV) is set for rapid growth under PRODESEN's 2024-2038 outlook. In the "planning" scenario, cumulative DG-PV capacity is projected to rise from 3.96 GW in 2024 to 13.07 GW by 2038 – a CAGR of 9.5% – while an "expanded" scenario reaches 18.91 GW (CAGR of 12.3%). This expansion is driven by the benefits DG delivers – improved reliability and power quality, fewer interruptions, cost savings, efficient energy use, renewable supply and lower emissions. Solar PV's proven performance makes it the leading DG technology.

Electric Mobility

As Mexico pivots towards electric mobility, charging infrastructure must scale accordingly. From 2,541 public charging points in 2021, the plan envisions 21,799 stations by 2038. CFE's Electric Mobility Promotion Project – run by its Energy-Saving Programme (PAESE) with SENER and the Energy Transition Fund (FOTEASE) – will install 100 universal, free fast-charging stations in Mexico City, Monterrey and Guadalajara, and establish nine high-capacity EV corridors across ten states. By 2038, the EV fleet is projected to total 6.4mn vehicles – 35.1% of annual sales – comprising battery-electric cars (70.3%), plug-in hybrids (15.1%), conventional hybrids (7%), light electric commercial vehicles (6.7%), electric buses (0.8%), heavy-duty electric trucks (0.01%) and cross-border coaches (0.04%).

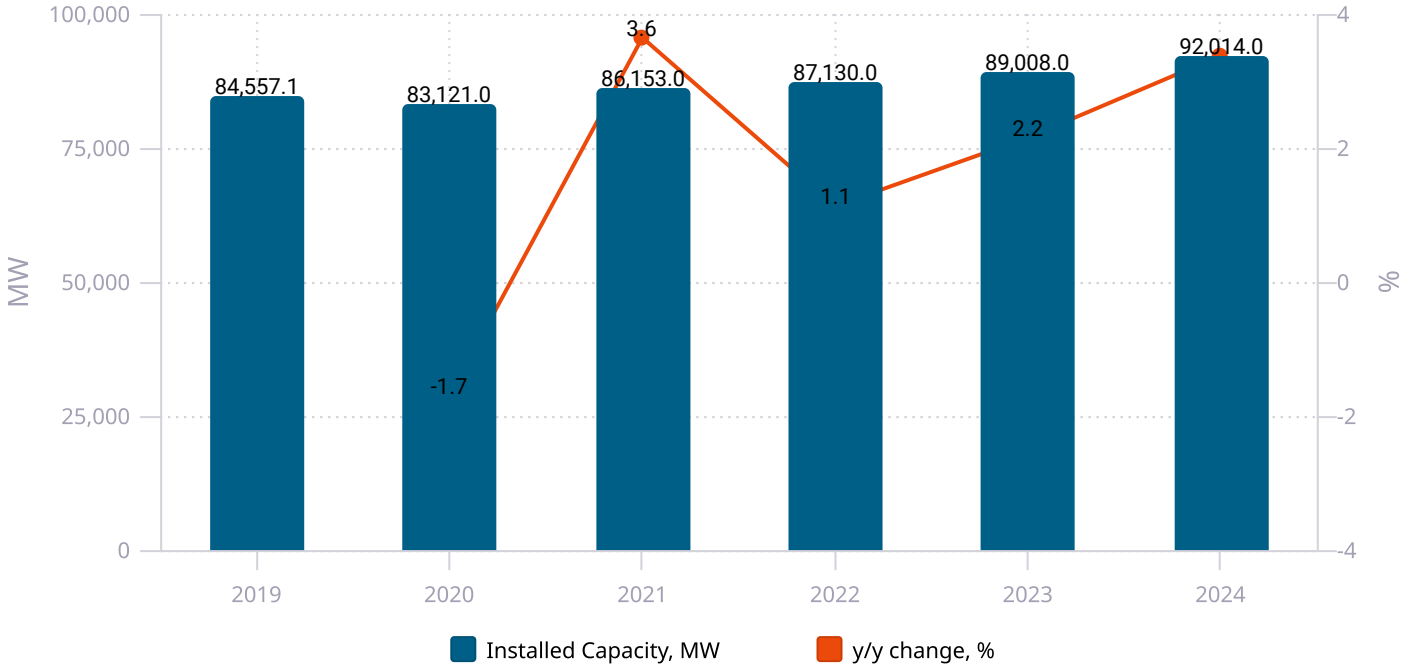
Installed Capacity

According to Mexico's Energy Secretariat (SENER), the country's total installed electric power generation capacity reached 92,014 MW by end-2024, reflecting a 3.4% y/y increase. This growth was primarily driven by the addition of 1,920 MW in thermal capacity and 1,086 MW in new solar photovoltaic installations. Overall, renewable power accounted for 37% of the national installed capacity in 2024, unchanged from the previous year.

Hydropower remains the largest renewable energy source by installed capacity, representing 37.7% of total renewable capacity as of end-2024. However, this segment is in structural decline due to diminishing public and private interest in its development and limited expansion opportunities. Its historical peak was reached in 2021 at 13,303 MW. Close behind is solar power, which has expanded significantly at a compound annual growth rate (CAGR) of 13.9% between 2019 and 2024. As of end-2024, solar accounts for 35.2% of total renewable capacity. Wind power ranks third with a 21.5% share. Similar to hydropower, wind is experiencing a contraction. After peaking at 7,634 MW in 2022, installed capacity declined to 7,318 MW by end-2023, with no additions recorded in 2024. This stagnation reflects regulatory uncertainty, limited grid access and a lack of competitive auction schemes. The remainder of Mexico's renewable capacity is composed of bioenergy (2.6%) and geothermal (2.9%), both of which remained virtually flat between 2019 and 2024 due to the absence of targeted policy incentives and weak investment signals.

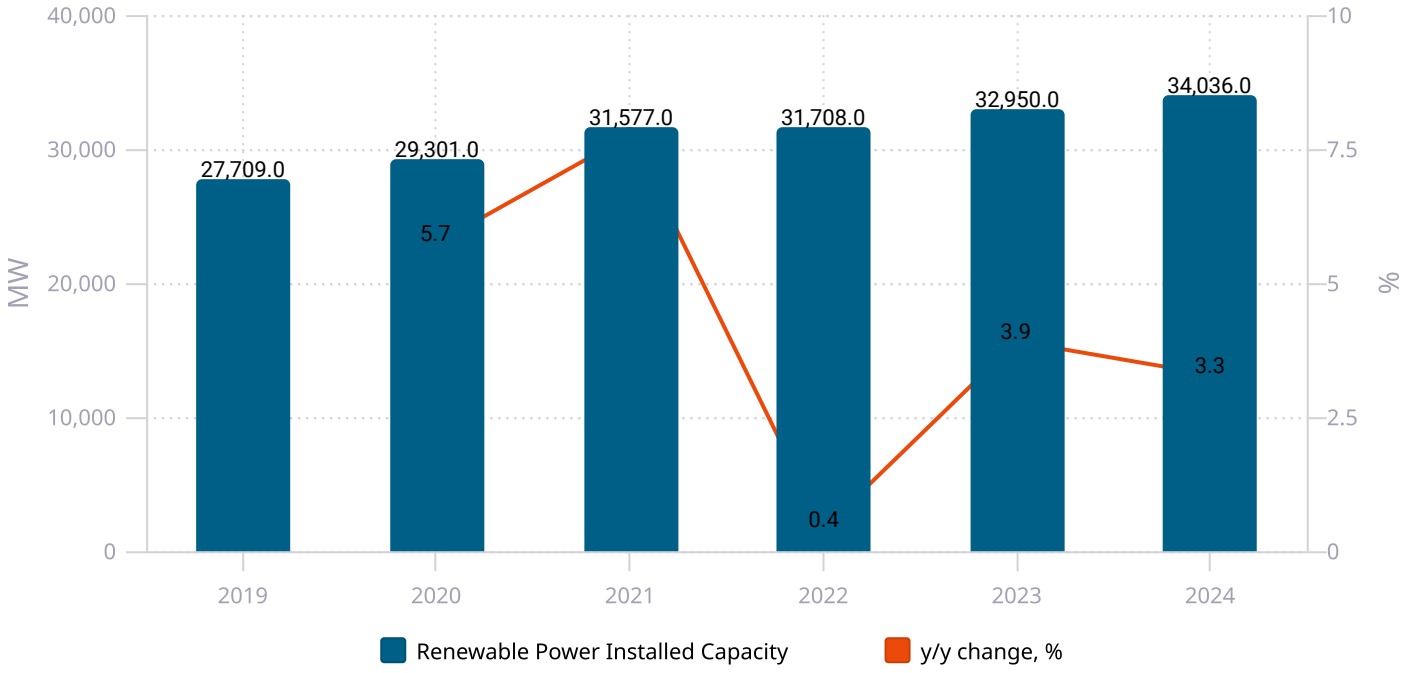
Mexico's limited progress in the energy transition is further highlighted by its position in the World Economic Forum's Energy Transition Index (ETI), where it ranked 57th of 120 countries. The ETI assesses a broad set of indicators, including system performance, capital availability, innovation and governance. While Mexico scores well on short-term system efficiency, it lags significantly in terms of long-term enablers, such as investment, infrastructure and human capital. Moreover, the energy transition faces strong headwinds from the dominance of fossil fuels in the national energy mix, particularly due to their embedded role in industrial employment, most notably in the automotive sector.

Total Power Installed Capacity, MW, period-end



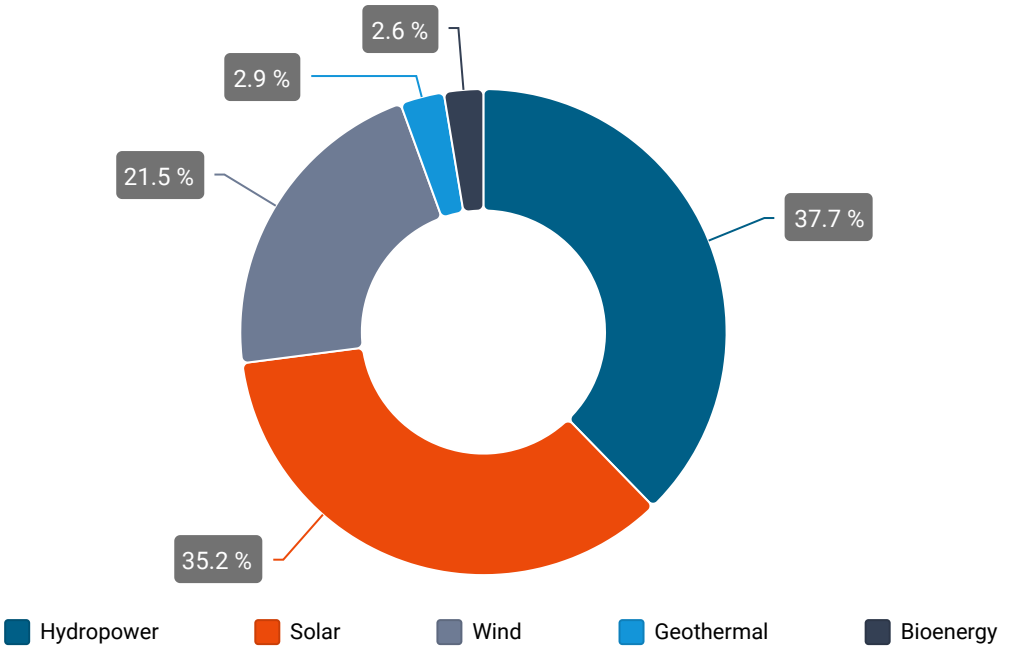
Sources: CEIC, SENER

Renewable Power Installed Capacity, MW, period-end



Sources: CEIC, SENER

Renewable Installed Capacity by Source, 2024



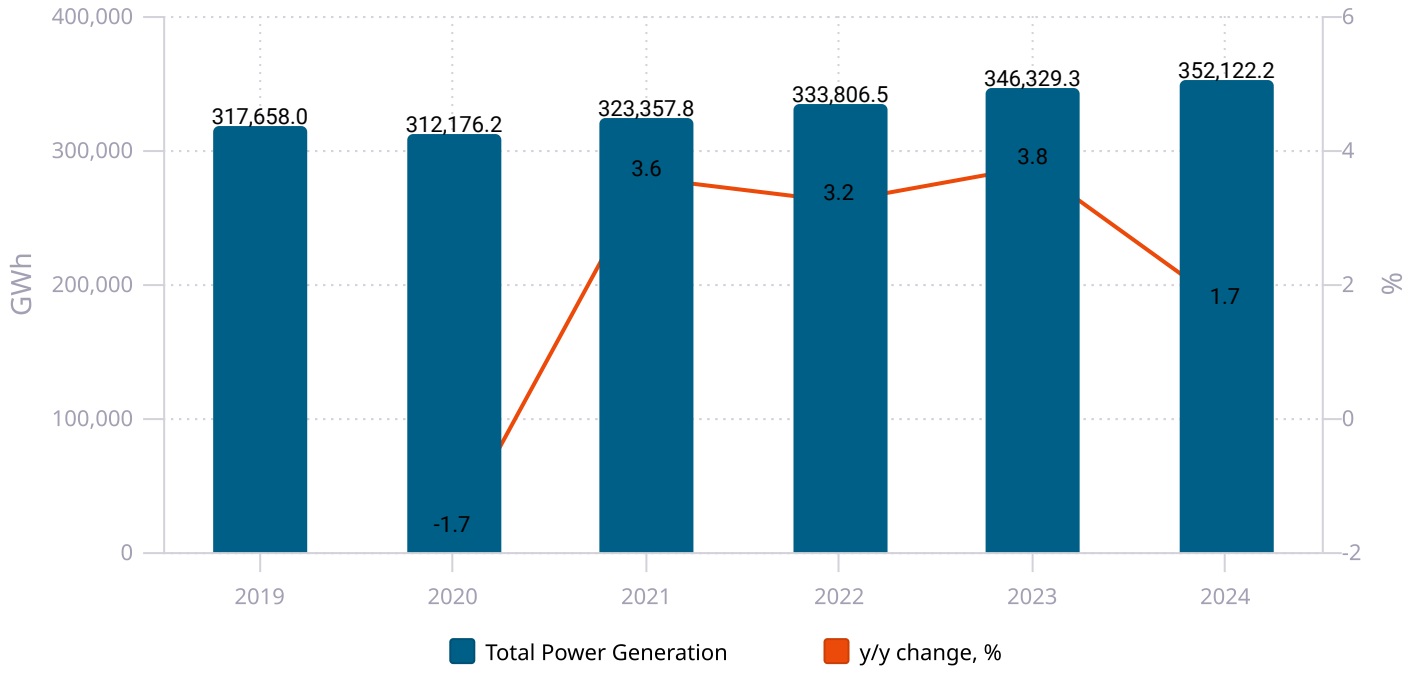
Source: CEIC, IRENA

Power Generation

In 2024, Mexico's renewable electricity generation rose by 3.7% y/y to a record 66,060 GWh, although its share in the national power mix declined to 18.8% – down from a peak of 23.9% in 2021 – as fossil fuel generation expanded more rapidly, particularly natural gas (5.2% y/y) and coal (1.8% y/y).

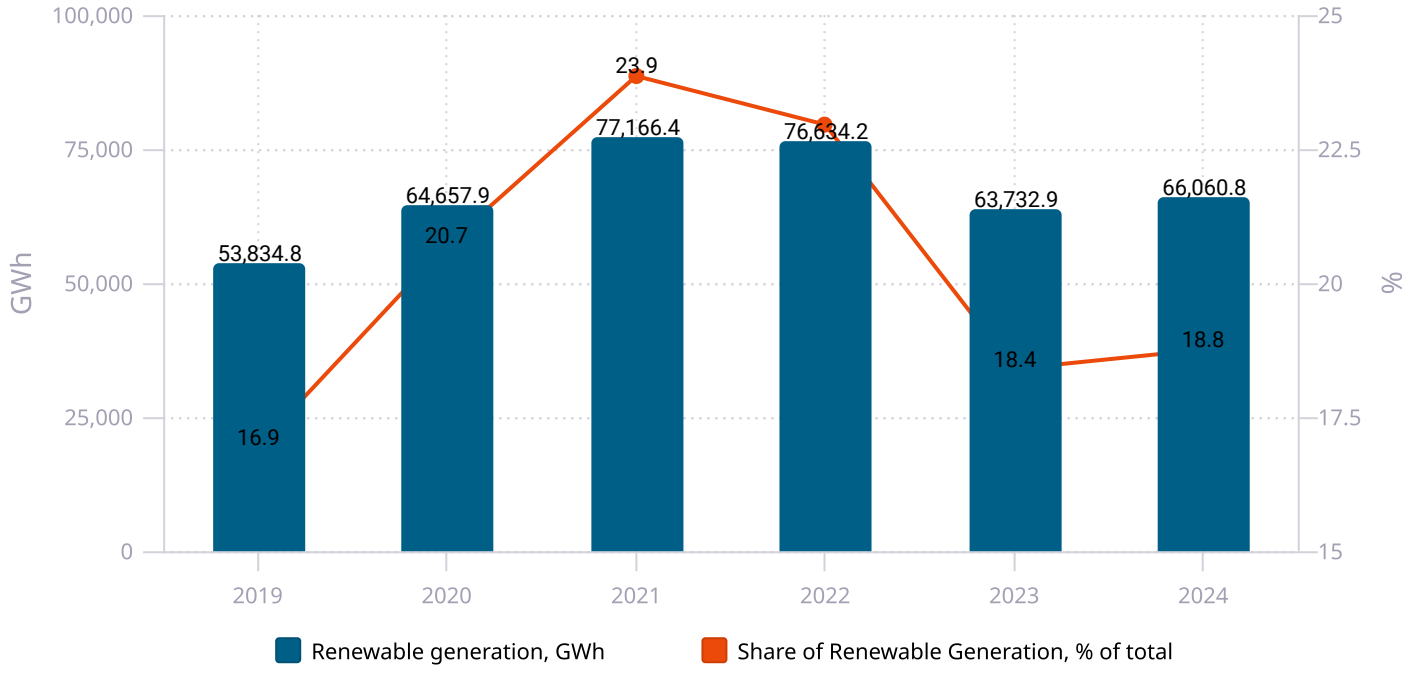
Hydropower remained the leading renewable source with 23,805 GWh (36% of total renewables), although output stagnated due to prolonged drought conditions, ageing infrastructure, delays in the 2,400 MW Chicoasén II project and limited reinvestment. Wind power contributed 19,986 GWh (30.2%), but the segment saw no new capacity added in 2024 amid persistent regulatory uncertainty and investor caution. Solar generation continued its upward trajectory, reaching 18,639 GWh (28.2%), supported by a CAGR of 17.3% during 2019-2024. Growth was led by distributed rooftop systems, which accounted for 32% of incremental solar output, and large-scale projects such as the 1 GW Sonora Solar Park. Geothermal generation declined to 3,501 GWh (5.3%), reflecting a CAGR of -6.7% since 2019 due to underinvestment and stagnation in plant modernisation. Bioenergy remained marginal, contributing just 66 GWh (0.1%), constrained by weak feedstock incentives and the absence of scale-driven policy support.

Total Power Generation, GWh, period-end



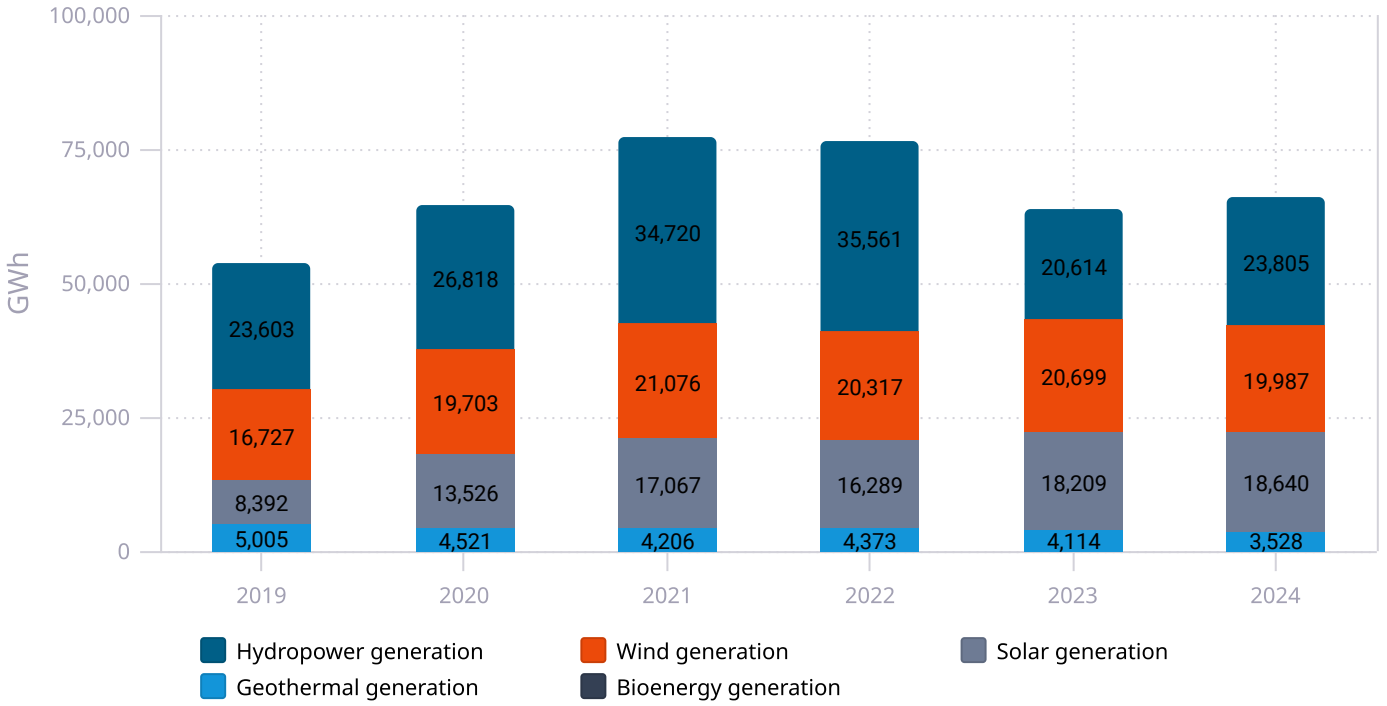
Sources: CEIC, IMCO

Renewable Electric Power Generation, GWh, period-end



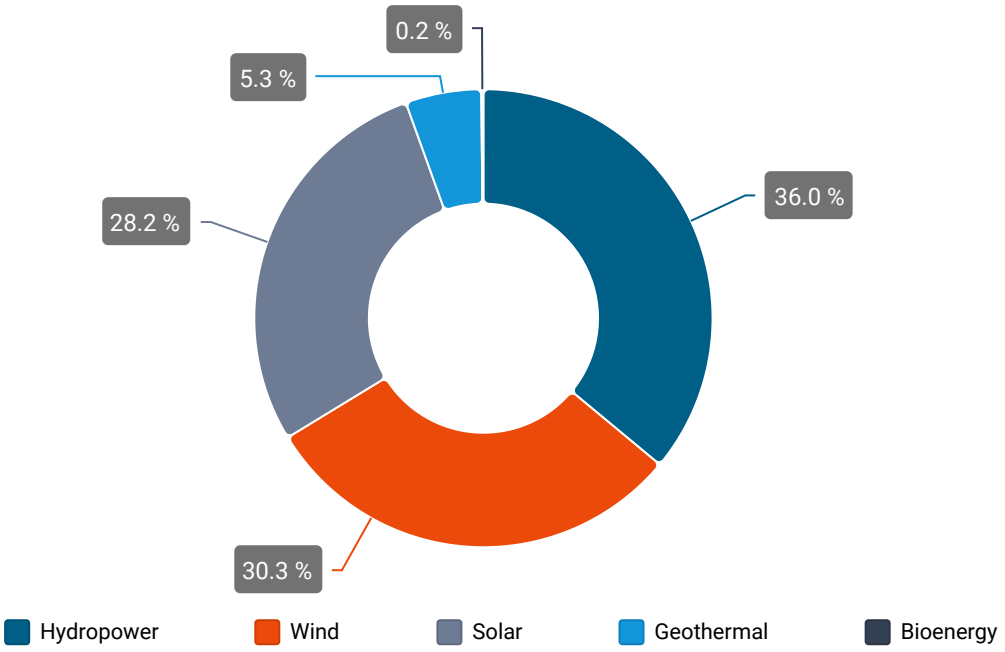
Sources: CEIC, IMCO

Gross Renewable Generation by Source, GWh



Sources: CEIC, IMCO

Gross Renewable Generation by Source, 2024



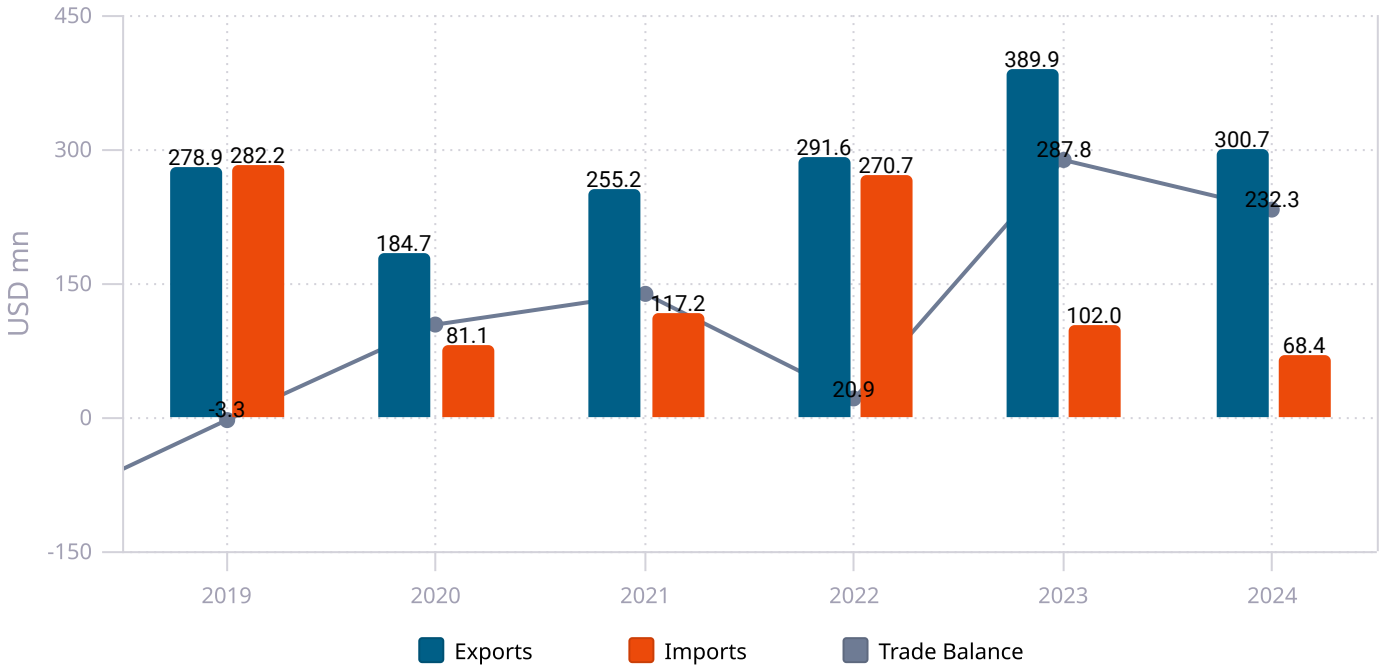
Source: CEIC, IRENA

External Trade

Mexico remains a net exporter of electricity, albeit with modest trade volumes relative to its domestic market. The bulk of its external trade flows through interconnections with the United States, its primary partner, supplemented by exports to Guatemala. In 2024, Mexico exported 3,044 GWh of electricity – 1,718 GWh (56%) to the US and 1,285 GWh (42%) to Guatemala – marking a 3.4% y/y decline attributed to reduced hydropower availability and grid constraints. Imports plummeted by 54.4% y/y to 947 GWh

(sourced primarily from US wind farms in Texas), according to UN Comtrade, driving a 98.5% surge in the volumetric trade surplus to 2,057 GWh. However, in value terms, the surplus contracted by 19.3% y/y to USD 232.3 mn, as export revenues fell to USD 300.7 mn (down 22.8% y/y from USD 389.8 mn in 2023) amid lower regional electricity prices, while imports amounted to USD 68.4 mn (down 32.9% y/y). This divergence highlights Mexico's exposure to volatile cross-border power pricing, particularly in the ERCOT (Texas) market, where rates averaged USD 32/MWh in 2024 versus USD 48/MWh in 2023.

Electrical Energy Trade Balance



Sources: CEIC, BDM, INEGI

Electric Power External Trade, GWh

Name	2023	2024	y/y change
Exports	3,111.1	3,004.5	-3.4%
Imports	2,075.0	947.0	-54.4%
Trade Balance	1,036.1	2,057.5	98.5%

Source: SENER, UN Comtrade

Competitive Landscape

Mexico's electric power sector remains highly centralised under the state-owned Federal Electricity Commission (Comisión Federal de Electricidad, CFE). As of December 2024, CFE accounted for 68.6% of total installed capacity – 45.1 GW operated directly and 17,996 MW managed under CFE-BANOBRAS and Independent Power Producer (IPP) concessions. Private companies held just 28.9 GW (31.4%). In 2023, total generation reached 346,329 GWh, of which CFE produced 41.9%, IPPs 29.7% and other private entities 27.7%.

Hydro and geothermal assets remain almost entirely under CFE control. Although CFE owns some wind and solar capacity, these markets are dominated by private operators and are highly fragmented. According to Global Energy Monitor (GEM) data for 2024, CFE only has 86 MW in the wind segment.

Abbreviations

Table of Abbreviations

ACERA	Chilean Association of Renewable Energies and Storage
ANEEL	Brazilian Electricity Regulatory Agency
ARS	Argentinean Peso
ASOLMEX	Mexican Association of Solar Power
BRL	Brazilian Real
CAGR	Compound annual growth rate
CAMMESA	Argentina’s Wholesale Power Market Manager
CCEE	Brazilian Electric Energy Trading Chamber
CEN	Chilean National Electric Coordinator
CENACE	Mexico’s National Energy Control Centre
CFE	Mexican Federal Electricity Commission
CLP	Chilean Peso
COVID-19	Coronavirus Disease 2019
COP	Colombian Peso
CRE	Mexico's Energy Regulatory Commission

EMBI	Emerging Market Bond Index
EPE	Brazil’s Energy Research Company
EPM	Colombia's Medellin Public Services Company
ETI	Energy Transition Index
FDI	Foreign Direct Investment
GD	Distributed generation
GEM	Global Energy Monitor
GW	Gigawatt
GWh	Gigawatt-hour
IBAMA	Brazilian Institute of the Environment and Renewable Natural Resources
IEA	International Energy Agency
IRENA	International Renewable Energy Agency
kw	Kilowatt
kWh	Kilowatt-hour
LAC	Latin America and the Caribbean
MATER	Renewable Energy Term Market
MME	Ministry of Mines and Energy
MW	Megawatt

MWh	Megawatt-hour
MXN	Mexican Peso
NREL	US National Renewable Energy Laboratory
OLADE	Latin American Energy Organization
ONS	Brazil’s National Electric System Operator
OWC	Offshore Wind Consultants
PDE	Brazilian Decennial Energy Plan
PELP	Long-Term Energy Planning
PND	Mexican National Development Plan
PPA	Power Purchase Agreement
PRODESEN	Mexican Electric Power System Development Programme
PV	Photovoltaic
SADI	Argentine Interconnection System
SENER	Mexico’s Energy Secretary
SIN	National Interconnected System
TIE	International Energy Transactions
TW	Terawatt

TWh	Terawatt-hour
UPME	Colombia’s Energy Planning Unit
XM	Administrator of the Colombian Wholesale Energy Market

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