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Coal Fired Power Generation Market Forecasts to 2032 – Global Analysis By Component (Boilers, Turbines, Generators, Air Quality Control Systems and Other Components), Plant Type (Base Load Plants and Peak Load Plants), Fuel Type, Capacity, Technology, Application and By Geography

https://marketpublishers.com/r/C681FF52F305EN.html
Date: August 2025
Pages: 200
Price: US$ 4,150.00 (Single User License)
ID: C681FF52F305EN

Abstracts

According to Stratistics MRC, the Global Coal Fired Power Generation Market is accounted for $108.5 billion in 2025 and is expected to reach $152.8 billion by 2032 growing at a CAGR of 5% during the forecast period. The process of burning coal in a thermal power plant to generate electricity is known as coal-fired power generating. This process produces high-pressure steam by heating water in a boiler by burning coal in a furnace. A turbine that is attached to an electric generator is powered by this steam, which transforms thermal energy into electrical energy. Because coal is plentiful and reasonably priced, coal-fired power plants are frequently employed, particularly in developing nations. Nonetheless, they are a major source of greenhouse gas emissions and air pollution, which makes them a hot topic in international energy and environmental discussions.

Market Dynamics:

Driver:

High electricity demand in emerging economies

The demand for a reliable, extensive power supply is heightened by the fast urbanisation and industrialisation of the world. A dependable and affordable way to

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satisfy this growing need is through coal-fired power facilities. Because of its widespread availability and well-established infrastructure, coal is still used in many developing countries. Coal's place in the power mix is further supported by the limited availability of alternative energy sources. Investments in coal-fired facilities are therefore still increasing in these areas.

Restraint:

Stringent environmental regulations and emissions norms

Scrubbers and carbon capture systems are expensive pollution control technology that power plants must purchase in order to meet requirements. Coal-based energy's economics and appeal are diminished by these additional costs. In order to further discourage the use of coal, governments sometimes impose fines or fees on excessive emissions. Stricter regulations also restrict the approval of new coal-fired plants, which slows market expansion. Coal is struggling to stay a viable energy source as cleaner alternatives gain popularity.

Opportunity:

Technological advancements in carbon capture and storage (CCS)

Coal power plants can now be made environmentally feasible by more effectively capturing CO? from flue gases thanks to new CCS techniques. These developments enable factories to comply with strict emission standards without having to halt operations. Improved CCS integration raises overall plant efficiency and lowers operating costs. Additionally, governments are providing financial and policy incentives to assist the development of CCS. Therefore, in an energy landscape that is concerned with carbon, CCS technology is prolonging the operating life and significance of coal-fired power stations.

Threat:

Rising competition from renewable energy sources

Alternatives like solar, wind, and hydroelectric power are becoming more affordable and cleaner. Carbon taxes, regulations, and subsidies are some of the ways that governments around the world are encouraging renewable energy. Coal plants become less economically viable as a result of this change in the demand for coal-based energy.

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The dependability of renewable energy sources is further reinforced by technological developments in energy storage. As a result, market expansion is impacted by the ongoing drop in investment in coal infrastructure.

Covid-19 Impact

The COVID-19 pandemic significantly disrupted the coal-fired power generation market, leading to reduced electricity demand due to industrial slowdowns and nationwide lockdowns. Many power plants faced operational constraints, labor shortages, and logistical challenges, resulting in lower coal consumption. Investment in coal-based infrastructure declined as countries prioritized renewable energy projects in recovery plans. Additionally, the volatility in global supply chains impacted coal transportation and availability. The pandemic also accelerated the retirement of older, less efficient coal plants, especially in regions shifting toward cleaner energy alternatives. This created long-term implications for the market.

The generators segment is expected to be the largest during the forecast period

The generators segment is expected to account for the largest market share during the forecast period, due to ensured consistent and efficient electricity output from coal combustion. Advanced generator technologies enhance overall plant efficiency, reducing operational costs and increasing energy reliability. High-capacity generators are essential to meet rising power demands, especially in industrial and urban areas. Continuous innovations in generator design contribute to improved thermal efficiency and lower emissions. As developing nations expand their energy infrastructure, demand for robust coal-fired generators continues to drive market growth.

The residential segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the residential segment is predicted to witness the highest growth rate, due to the continuous rise in electricity demand from growing urban populations. Many developing countries still rely heavily on coal-based electricity to meet household energy needs, especially in areas with limited access to renewable sources. The affordability and established infrastructure of coal-fired power make it a preferred choice for residential consumption. Additionally, seasonal peaks in residential heating and cooling further drive consistent coal power usage. This steady demand helps sustain coal-fired plants and supports market growth.

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Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share due to its high dependency on coal for electricity, particularly in China, India, and Indonesia. Rapid urbanization, industrial growth, and rising electricity demand have sustained coal's role despite growing renewable energy adoption. Governments continue investing in cleaner coal technologies like supercritical and ultra-supercritical boilers to balance economic and environmental goals. However, increasing pressure from international climate accords and local pollution concerns are encouraging a gradual shift toward renewable and hybrid systems across the region.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR, owing to the region aggressively shifts toward cleaner energy sources. The United States and Canada have retired numerous coal plants, driven by stringent environmental regulations, cheaper natural gas, and investments in renewables. Despite a few operational units with carbon capture capabilities, overall coal consumption has dropped significantly. Public policies, corporate sustainability goals, and evolving investor preferences further discourage coal-based generation. The market's future in the region is primarily tied to decommissioning activities and repurposing coal infrastructure.

Key players in the market

Some of the key players profiled in the Coal Fired Power Generation Market include General Electric Company, Siemens Energy AG, Mitsubishi Heavy Industries, Ltd., Babcock & Wilcox Enterprises, Inc., Doosan Enerbility Co., Ltd., Toshiba Corporation, Harbin Electric Corporation, Shanghai Electric Group Co., Ltd., Dongfang Electric Corporation, Larsen & Toubro Limited, China Energy Engineering Corporation, Thermax Limited, BWX Technologies, Inc., MAN Energy Solutions SE, Alstom SA and Hitachi, Ltd.

Key Developments:

In May 2025, Siemens Energy partnered with 8 Rivers Capital and Navajo Transitional Energy Company to explore a gigawatt-scale decarbonized coal power plant using Allam-Fetvedt Cycle (AFC) technology. This follows collaboration to develop a direct-fired supercritical CO? turbine for carbon-capture-based power generation.

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In August 2024, Toshiba ESS signed a MoU with PLN Nusantara Power to deploy carbon capture technology at thermal power plants, including coal-fired units like Paiton 1 and 2. This partnership supports Indonesia's 2060 carbon neutrality goal by enhancing emissions reduction at existing fossil-fueled facilities.

Components Covered:

- Boilers
- Turbines
- Generators
- Air Quality Control Systems
- Control Systems
- Auxiliary Equipment
- Other Components

Plant Types Covered:

- Base Load Plants
- Peak Load Plants

Fuel Types Covered:

- Bituminous Coal
- Sub-bituminous Coal
- Lignite
- Anthracite

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Other Fuel Types

Capacities Covered:

Less than 500 MW

500 MW – 1000 MW

More than 1000 MW

Technologies Covered:

Pulverized Coal Combustion (PCC)

Fluidized Bed Combustion (FBC)

Integrated Gasification Combined Cycle (IGCC)

Applications Covered:

Residential

Commercial

Industrial

Utility

Other Applications

Regions Covered:

North America

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- US
- Canada
- Mexico

Europe

- Germany
- UK
- Italy
- France
- Spain
- Rest of Europe

Asia Pacific

- Japan
- China
- India
- Australia
- New Zealand
- South Korea
- Rest of Asia Pacific

South America

- Argentina

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- Brazil
- Chile
- Rest of South America

Middle East & Africa

- Saudi Arabia
- UAE
- Qatar
- South Africa
- Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

- Company Profiling

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Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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