

Hydropower Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The hydropower installed capacity reached 1330 GW in 2020, and it is anticipated to install approximately 1520 GW by 2027, at a CAGR of 1.93% during the forecast period of 2022-2027. The outbreak of COVID-19 significantly impacted the global hydropower market due to disruption in the international supply chain and a reduction in investment for the upcoming projects. Although annual additions correspond to the driven market, some projects are expected to be delayed during the forecast period due to COVID-19 related lockdown measures. Factors such as the increasing number of new hydropower projects backed by government support and the rising demand for reliable electricity are expected to drive the market during the forecast period. However, negative environmental consequences of hydropower projects are likely to hinder the market growth during the forecast period.

Key Highlights

Large hydropower (greater than 100 MW) is likely to be the largest segment, owing to the factors such as increasing investment in large hydropower and pumped storage projects coupled with several major countries' efforts to reach the renewable energy targets and shift towards cleaner energy sources.

Emerging technological trends aimed at increasing hydropower generation are expected to provide significant opportunities for the hydropower market in the coming years.

Asia-Pacific is expected to be the fastest-growing market during the forecast period, with the majority of the demand coming from countries like China, India, Japan, etc.

Hydropower Market Trends

The Large Hydropower (Greater Than 100 MW) Segment to Dominate the Market

Large-scale hydropower is a form of renewable energy generation derived from flowing water, which is used to drive large water

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turbines. In order to generate large amounts of hydroelectricity for cities, lakes, reservoirs, and dams are needed to store and regulate water for later release for power generation, irrigation, and domestic or industrial use. Since large-scale hydropower facilities can easily be turned on and off, hydropower has become more reliable than most other energy sources for meeting peak electricity demands throughout the day.

Conventional hydroelectric dams, pumped storage, and run-of-the-river are the different types of large-scale hydropower plants across the world.

The levelized cost of energy (LCOE) of large-scale hydropower projects at high-performing sites can be as low as USD 0.020/kWh, while the average cost of the new capacity added in 2019 was slightly less than USD 0.050/kWh. For large-scale hydropower projects, the weighted average LCOE of new projects added over the past decade (2009-2019) in China and Brazil was USD 0.040/kWh, around USD 0.080/kWh in North America, and USD 0.120/kWh in Europe.

China, Brazil, the United States, Canada, India, and Japan are the major countries in the deployment of large-scale hydropower projects across the world. Factors such as a shift towards cleaner energy sources and plans to increase the share of renewable energy in the total power generation mix across all the major developed and emerging economies across the world are expected to drive the large hydropower segment during the forecast period.

In addition to the major hydropower countries, smaller countries from the Southeast Asia region are also moving forward at a rapid pace in the large hydropower development. Increasing demand for energy to boost the Mekong economies has attracted riparian countries' keen interest in hydropower development. This is evidenced by extensive investment in hydropower projects across the region over the last few decades.

For instance, the Lao government announced that it is planning to complete 12 hydropower dam projects, with a total capacity of 1,950 MW. So far, 20 dams have been inspected, while the rest 50 are expected to be checked by 2021. Hydropower development is a central priority of the Lao government's plan to export around 20,000 MW of electricity to its neighboring countries by 2030. In February 2021, GE Renewable Energy completed the Lower Kalekoy Hydropower plant at the Lower Kalekoy Dam in Turkey. The last three units were connected to the grid, and the plant has gone into full commercial operation. With its 500 MW installed capacity, Lower Kalekoy is the sixth-largest Hydropower plant by installed capacity in Turkey, developed by a private player. Therefore, based on the above-mentioned factors, the large hydropower (greater than 100 MW) segment is expected to dominate the global hydropower market during the forecast period.

Asia-Pacific to Dominate the Market

The Asia-Pacific region has dominated the hydropower market in recent years, and it is likely to maintain its dominance during the forecast period. As of 2020, China is the global leader in the hydropower market, accounting for almost 27.8% of the global hydropower installed capacity.

China's hydropower era began in the 1950s. In 2020, the country's hydropower installed capacity reached 370 GW, representing a slight increase of approximately 3.35% compared to the previous year's value.

China announced its plan to become carbon neutral by 2060 and peak coal consumption by 2025. This led to increased investment in the renewable sector, and in 2020, around 13.76 GW of new hydropower was installed, including 1.2 GW of pumped storage from the last four units of the Jixi project.

Further, in January 2021, India approved a USD 724 million investment for the 850 megawatts (MW) Rattle hydropower project on the Chenab River in Jammu and Kashmir. A joint venture is expected to be formed for this project by National Hydroelectric Power Corporation (NHPC), India's largest organization for hydropower development, and Jammu & Kashmir State Power Development Corporation (JKSPDC). The project is expected to start its commercial operation by 2026.

As of 2020, there are no plans to develop large hydropower plants in Japan. However, in April 2020, the Japanese government included renewable energy in its JPY 108 trillion economic stimulus package to improve the country's economy during the COVID-19 crisis. The measure has been included under the Development of Resilient Economic Structures section, with almost USD 1 billion to support corporate PPAs to facilitate the development of onsite renewables. It may also cover part of the upfront

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installation costs.

Therefore, based on the above-mentioned factors, Asia-Pacific is expected to dominate the global hydropower market during the forecast period.

Hydropower Market Competitor Analysis

The hydropower market is moderately fragmented. Some of the major players include GE Renewable Energy, Siemens Energy AG, Andritz AG, Voith GmbH & Co. KGaA, and PJSC RusHydro.

Additional Benefits:

The market estimate (ME) sheet in Excel format

3 months of analyst support

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