

# Hydropower Market Opportunity, Growth Drivers, Industry Trend Analysis, and Forecast 2025 - 2034

<https://marketpublishers.com/r/H9189E08704CEN.html>

Date: December 2024

Pages: 80

Price: US\$ 4,850.00 (Single User License)

ID: H9189E08704CEN

## Abstracts

The Global Hydropower Market was valued at 1.43 TW in 2024 and is projected to grow at a CAGR of 1.8% between 2025 and 2034, fueled by the increasing global shift toward renewable energy to meet sustainability goals. Hydropower continues to gain traction for its ability to produce clean and consistent electricity.

Technological advancements are reshaping the hydropower landscape, enhancing efficiency, and reducing operational costs. Innovations in turbine design, digital automation, and advanced monitoring systems are optimizing energy output and improving plant reliability. The integration of artificial intelligence and machine learning enables smarter operations, ensuring precise control and minimizing downtime. Furthermore, the rising adoption of pumped storage systems is boosting hydropower's significance in energy storage and grid stabilization, complementing intermittent renewable sources like wind and solar.

The market is categorized by capacity into mini, micro & pico, small, and large hydropower systems. Among these, the large hydropower segment is set to grow at a CAGR of 0.8% through 2034. Large-scale projects, often involving extensive dam and reservoir construction, remain a cornerstone for achieving renewable energy targets and maintaining grid stability. Technological advancements drive greater turbine efficiency, while environmental considerations push the adoption of more sustainable practices and eco-friendly technologies within this segment.

The U.S. hydropower market is anticipated to achieve 106 GW by 2034, driven by increased demand for renewable energy and government policies to reduce carbon emissions. Hydropower plays a vital role in the country's energy portfolio, offering a dependable and stable electricity supply. While large-scale projects dominate the

market, there is a growing interest in small and micro-hydropower systems, particularly in rural and remote areas where distributed generation is becoming more viable.

The hydropower sector's steady growth reflects its ability to address modern energy challenges, such as reducing greenhouse gas emissions and ensuring grid resilience. With ongoing technological advancements and expanding applications in energy storage, hydropower is well-positioned to remain a key player in the global renewable energy mix for decades to come.

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