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Vietnam Hydropower Market Assessment, By Type [Impoundment, Diversion, and Pumped Storage], By Size [Large Hydropower (Above 30 MW), Small Hydropower (100 kW to 10 MW), Micro Hydropower (up to 100 kW)], By Components [Electromechanical Equipment's, Electric Infrastructure, Civil Works], By Sector [Public and Private], By End-user [Residential, Commercial, Industrial], By Region, Opportunities, and Forecast, 2016-2030F

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Abstracts

In 2022, the Vietnam hydropower market will witness a net addition of 33 MW. This will increase to a net addition of 54.6 MW in 2030, growing at a CAGR of 6.5%. Vietnam has a rapidly growing economy with increasing energy demands. Hydropower helps diversify Vietnam's energy mix, reducing the country's dependence on fossil fuels like coal and oil. By harnessing the power of flowing water, Vietnam can decrease its reliance on imported energy resources and promote energy security. Moreover, Vietnam is prone to seasonal floods due to its geography and monsoon climate. Constructing hydropower dams provides flood control measures, regulating the flow of water during the wet season and preventing destructive flooding. Additionally, hydropower reservoirs can be used for irrigation, improving agricultural productivity and water management.

The Son La Hydropower Plant in Vietnam is the largest project in Southeast Asia and a significant milestone in the country's energy development. It addresses Vietnam's growing power needs and generates economic, political, and social benefits. The project has created opportunities for the Northwestern region to enhance infrastructure,

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promote environmental improvement, mitigate floods, provide irrigation water, ensure security, and establish stability for ethnic communities in the mountainous areas. It has also facilitated Vietnamese economic development and improved quality of life, augmenting the overall hydropower market in Vietnam.

Construction of Highly Efficient Dams and Reservoirs

The construction of highly efficient dams and reservoirs in Vietnam is essential to the country's hydropower development and water management. Highly efficient dams and reservoirs are designed to optimize energy generation. Advanced engineering techniques, such as improved turbine designs and efficient water flow management, are employed to extract the maximum potential from the available water resources. This, in turn, helps maximize the electricity output of hydropower projects, enhancing their overall efficiency, saving construction times, and contributing to the country's energy needs.

The Lai Chau Hydropower Plant in Vietnam utilizes advanced technology for speed governor, excitation, and plant control, including the ALSPA system. The project's timely completion has resulted in significant advantages for the country, including 4.7 billion kWh of electricity and cost savings of USD 307 million. The construction of efficient dams and reservoirs drives market growth, highlighting the importance of efficient dams and reservoirs in the energy sector.

The Advent Water Management Programs

Vietnam has implemented water management programs for hydropower projects, focusing on efficient operation and optimization of reservoirs. These programs aim to optimize benefits from hydropower development, balancing energy generation, flood control, and water supply for irrigation, domestic use, and environmental conservation.

In June 2022, a training session in Da Nang focused on capacity building on integrated water resource management in the Vu Gia – Thu Bon River Basin. The basin, spanning 10,035 square kilometers, has experienced a continuous rise in water demand, leading to the exploitation of surface and underground water resources for irrigation, domestic use, and environmental conservation. This has fueled Vietnam's hydropower market growth, as various water management programs are being implemented to meet the increasing water requirements. The collaboration between the Center for Environment and Community Research, the Center for Sustainable Development for Water Resources and Climate Change Adaptation, and the Department of Natural Resources

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and Environment of Da Nang demonstrates the importance of effective water management in Vietnam's hydropower sector.

Government Regulations

Various government policies and regulations regulate the Vietnam hydropower market. These regulations aim to ensure sustainable development, environmental protection, and efficient operation of hydropower projects. The Vietnamese Government acknowledges the capacity of renewable energy to facilitate the sustainable progress of the nation and bridge the electricity gap, especially in rural regions. By expanding renewable energy markets, particularly in hydropower, Vietnam can produce up to 7,400 megawatts (MW) of power, leading to a greener economy. Hence, the Vietnamese government introduced some programs to improve the hydropower efficacy within the country.

The Vietnam Renewable Energy Development Program, funded by the World Bank, is acquiring carbon credits from small hydropower projects. The Carbon Partnership Facility earns these credits, which are used to expand markets, enhance local government capabilities, and reinforce environmental monitoring efforts. The program also encourages sectoral reforms and contributes to achieving Nationally Determined Contributions (NDC) targets. Overall, the government's Renewable Energy Development Program is fueling the growth rate of the Vietnam hydropower market.

Impact of COVID-19

The pandemic has posed economic challenges for hydropower project developers and investors, causing reduced cash flows and market uncertainties. This has made securing funding for new projects or sustaining existing ones difficult. The economic slowdown has also reduced electricity demand across sectors, impacting industrial production, commercial activities, and tourism. This decline in energy consumption has impacted the revenue and profitability of hydropower projects. The pandemic has highlighted the importance of sustainability and environmental considerations in various sectors, including energy. The increasing emphasis on adhering to environmental regulations, biodiversity protection, and social impact assessment requirements may result in more stringent criteria and challenges in developing new hydropower projects in the future.

Key Players Landscape and Outlook

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The hydropower sector in Vietnam is witnessing notable expansion, prompting international companies to prioritize quality and brand positioning to retain their market share and expand their global presence. These companies are allocating increased resources towards research and development, marketing initiatives, and expanding their distribution networks. Manufacturers are actively studying consumer behavior to gain deeper insights into their preferences and regularly introducing new products to cater to these demands.

Andritz was awarded a contract by Thac Ba Hydropower Joint Stock Company in February 2023 to upgrade three generating units at the Thac Ba Hydropower Plant in Northern Vietnam. The rehabilitation project aims to ensure plant longevity and operational safety, while enhancing environmental performance through oil-free bearing systems, oil-free hubs, and cutting-edge hydro turbine governor technology. The plant holds the record for the longest-operating plant in the region.

In December 2022, GE Hydro Solutions successfully tested a 240MW turbine in Grenoble, France, marking a significant milestone in the expansion of the Hoa Binh Hydropower Plant in Vietnam. This expansion is part of a contractual agreement between GE Hydro Solutions and Vietnam Electricity (EVN). The project aims to increase the plant's installed capacity to 480MW and improve electricity generation to 264.4 million kWh per year during peak dry season periods.

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