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Floating Solar Panel Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Capacity (Up to 1MW, 1MW-5MW, Above 5MW), By Type (Stationary, Solar Tracking), By Connectivity (On Grid, Off Grid), By Region & Competition, 2021-2031F

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Abstracts

The Global Floating Solar Panel Market is projected to expand from USD 62.51 Million in 2025 to USD 233.35 Million by 2031, reflecting a CAGR of 24.55%. Floating solar photovoltaic systems involve solar modules attached to buoyant structures located on water bodies like lakes, industrial ponds, and reservoirs. Growth is primarily fuelled by the limited availability of land for large-scale energy projects and the increased module efficiency resulting from the natural cooling properties of water. Additionally, integrating these installations with existing hydropower plants allows developers to stabilize energy output and maximize grid infrastructure usage. As per the International Energy Agency Photovoltaic Power Systems Programme, the global cumulative installed capacity of floating solar reached 7.7 gigawatts in 2023.

However, market growth faces a significant hurdle due to the substantial capital expenditures needed for specialized anchoring and mooring systems capable of handling fluctuating water levels. These technical requirements raise initial costs above those of traditional ground-mounted systems, which can discourage investment in regions sensitive to price. Furthermore, the scarcity of longitudinal data on ecological impacts has led to undefined or hesitant regulatory frameworks. Such uncertainty regarding environmental compliance and the long-term durability of these systems hampers project bankability, thereby limiting the speed of widespread commercial adoption.

Market Driver

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The increasing deployment of hybrid hydro-floating solar power systems acts as a major driver for industry growth. By combining floating photovoltaic modules with existing hydroelectric infrastructure, developers utilize established transmission lines, which substantially lowers capital costs associated with land preparation and grid connection. This setup also alleviates solar energy intermittency, as hydropower can offset variations in photovoltaic generation to improve overall grid stability. According to pv magazine in March 2024, the Electricity Generating Authority of Thailand (EGAT) began commercial operations of a 24-megawatt floating hydro-solar hybrid project, a step within a larger roadmap aiming to install 2,725 megawatts of combined capacity at its dams, highlighting the value of maximizing asset utility at reservoir sites for reliable renewable baseloads.

Concurrently, the scarcity of suitable land for ground-mounted solar initiatives forces energy stakeholders to turn to water surfaces. This transition preserves essential agricultural and terrestrial land while enhancing energy generation efficiency due to water's natural cooling effect. Research cited by pv magazine in January 2024 suggests that implementing floating solar on Chinese reservoirs could save roughly 7,117 square kilometers of land and decrease annual water evaporation by 5.8 cubic kilometers. Emphasizing the vast magnitude of this opportunity, the National Renewable Energy Laboratory (NREL) estimated in July 2024 that the technical potential for floating photovoltaics on federally managed reservoirs in the United States ranges between 861 and 1,042 gigawatts, indicating significant untapped capacity for future market expansion.

Market Challenge

The substantial capital expenditures necessary for specialized anchoring and mooring systems constitute a major obstacle to the Global Floating Solar Panel Market's growth. Unlike ground-mounted systems, floating arrays require complex aquatic engineering to ensure stability against water currents, wind loads, and changing water levels. These technical demands markedly elevate balance-of-system costs, resulting in initial project expenses that are significantly higher than traditional land-based options. Consequently, developers in price-sensitive markets are often reluctant to invest in floating projects when more affordable terrestrial alternatives exist, effectively limiting the technology to niche scenarios where land is either expensive or scarce.

This price gap directly impacts the economic viability of floating technologies compared to standard utility-scale solar, which has reached historically low pricing. According to

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the International Renewable Energy Agency, the global weighted average levelized cost of electricity for newly commissioned utility-scale solar photovoltaic projects dropped to 0.043 U.S. dollars per kilowatt-hour in 2024. Floating solar projects, encumbered by the extra costs of sub-surface mooring and buoyant structures, find it difficult to compete with this ultra-low cost benchmark. Consequently, the elevated levelized cost of energy for floating systems acts as a financial deterrent that delays their widespread commercial uptake and hinders overall market expansion.

Market Trends

The progression into near-shore and offshore marine environments marks a significant market shift, taking the technology from calm inland reservoirs to the immense potential of the open seas. This evolution overcomes the constraints of inland water surface availability but requires the creation of durable floating structures designed to endure strong ocean currents, corrosive saltwater, and high waves. Developers are increasingly launching gigawatt-scale marine initiatives that employ sophisticated anchoring and mooring systems built for severe nautical environments. As reported by TaiyangNews in November 2024, the magnitude of this maritime transition was highlighted when CHN Energy connected the initial phase of a massive 1 gigawatt offshore floating solar plant located 8 kilometers off the coast of Dongying City.

At the same time, the integration of bifacial modules is reshaping system design by leveraging the reflective nature of water surfaces to enhance energy production. In contrast to standard monofacial panels that generate power only from the front, bifacial modules absorb albedo light reflected from the water onto the panel's rear side, substantially boosting the floating array's overall power output density. This technical advancement is especially potent in aquatic settings where the water provides a diffuse reflective surface, offering a clear benefit over many ground-based alternatives. According to PV Magazine Australia in September 2024, experimental research using optimized floating setups demonstrated a high-accuracy bifacial gain of 10.39% over standard monofacial counterparts, confirming the performance advantages of this technology.

Key Market Players

Ciel & Terre International

Kyocera Corporation

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JA Solar Co., Ltd.

Trina Solar Limited

Sharp Corporation

Yingli Solar

SPG Solar

Vikram Solar Limited

Solaris Synergy

Novaton AG

Report Scope

In this report, the Global Floating Solar Panel Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Floating Solar Panel Market, By Capacity

Up to 1MW

1MW-5MW

Above 5MW

Floating Solar Panel Market, By Type

Stationary

Solar Tracking

Floating Solar Panel Market, By Connectivity

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On Grid

Off Grid

Floating Solar Panel Market, By Region

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

Spain

Asia Pacific

China

India

Japan

Australia

South Korea

South America

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Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Floating Solar Panel Market.

Available Customizations:

Global Floating Solar Panel Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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