

Floating Solar Panels Market worth \$775.44 million by 2030 - Exclusive Report by 360iResearch

The Global Floating Solar Panels Market to grow from USD 287.07 million in 2022 to USD 775.44 million by 2030, at a CAGR of 13.22%.

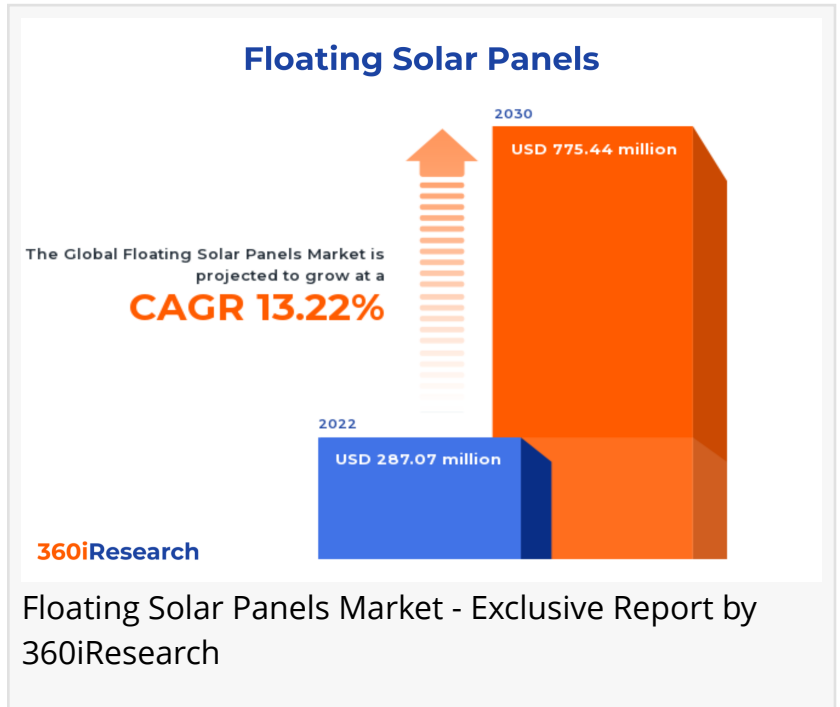
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-- The "[Floating Solar Panels Market](#) by Product (Stationary Floating Solar Panels, Tracking Floating Solar Panels), Component (Cabling, Combine Box, Floaters), Capacity, Deployment, Implementation - Global Forecast 2023-2030" report has been added to 360iResearch.com's offering.

The Global Floating Solar Panels

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Floating solar panels are an array of photovoltaics that are designed and installed on buoyant structures to keep them afloat in water bodies such as water treatment ponds, hydroelectric dams, mining ponds, industrial ponds, lakes, and lagoons. Floating solar often consists of solar modules, frames, footrests, and mounting assembly, and the floating structures are anchored and moored. The technology provides higher gains in energy production, reduces water evaporation in water resources, and complements operations with hydroelectric power plants. The surging demand for power worldwide with increasing industrialization, coupled with private and public sector investments in renewable energy, drives the need for floating solar panels. On the other hand, cost-intensive deployment and maintenance and operational complexities in extreme weather conditions hinder market growth. However, the improvements in floating solar panel



design and integration of AI and IoT technologies for maintenance and management are expected to proliferate their usage in the coming years.

Implementation: Growing demand for integrated solar power projects along with hydroelectric power

Integrated floating solar panels are solar panel systems that have been seamlessly incorporated into the design of existing water facilities, such as hydroelectric dams or reservoirs. This unique approach allows for the simultaneous utilization of land and water resources, maximizing power generation potential. A key advantage of integrated systems is their ability to mitigate issues related to evaporation by reducing the exposed surface area of the water body. Need-based preferences for integrated systems typically arise in locations with limited available land for conventional PV installations or where water conservation efforts are paramount. Standalone floating solar panels are designed specifically for independent operation on open bodies of water such as lakes, ponds, or lagoons. These systems offer numerous benefits over traditional ground-mounted panels, particularly regarding reduced installation costs and higher power output due to natural cooling effects from water bodies. A need-based preference for standalone floating solar panels may arise in regions experiencing rapid urbanization or industrial development where available land is scarce. Additionally, these systems can be advantageous in areas prone to flooding or extreme temperature fluctuations. Integrated systems are well-suited for synergistic deployment alongside existing water infrastructure projects, offering dual power generation and water conservation benefits. In contrast, standalone systems offer greater flexibility regarding installation locations and size variation.

Component: Developments in PV modules for higher efficiencies and improved power output

The cabling in floating solar panel systems ensures proper electrical connections between panels and other components, such as inverters and transformers. There is a preference for UV-resistant and waterproof cables to withstand the harsh conditions of water-based installations. A combined box consolidates electrical output from multiple photovoltaic (PV) modules before connecting to the transformer or inverter. Floaters provide buoyancy to the PV modules, enabling them to float on water surfaces while maintaining stability against waves and wind forces. Material preferences include high-density polyethylene (HDPE) for durability and resistance to degradation under UV exposure or chemical reactions with water. A mooring system anchors the floating solar installation to the bed of a body of water or another fixed point to maintain stability and prevent drifting due to currents or winds. PV modules convert sunlight into electricity and are the primary component of a floating solar panel system. High-efficiency modules with durable encapsulation materials are preferred to maximize power output and withstand environmental challenges. Monocrystalline cells are made from a single-crystal silicon structure, resulting in higher efficiency rates but at a higher cost. Polycrystalline cells, composed of multiple smaller silicon crystals, have lower efficiency rates but are less expensive, making them a popular choice for large-scale projects. Transformers adjust voltage levels between the floating solar plant and the grid connection point, ensuring smooth electricity transmission to the grid or local energy consumers. The transmission system facilitates efficient delivery of generated power from the floating solar plant to end users or the grid infrastructure.

Cable quality, distance from shore, and voltage level determine AC or DC transmission system preferences.

Capacity: Growing preference for capacity of 1-50MW floating solar panels across medium to large-scaled commercial projects

The 1-50MW capacity is the common scale for floating solar panel installations, catering to the needs of medium to large-sized utility projects. This capacity range is ideal for countries and regions with limited land space but abundant water bodies such as lakes, reservoirs, and wastewater treatment ponds. These installations help save valuable land resources while generating clean energy without significant environmental impacts. 1-50MW floating solar plants can provide a higher return on investment owing to their potential for economies of scale. Floating solar panels with capacities less than 1MW cater to small-scale installations primarily for residential usage, private businesses, or facilities with limited energy requirements. Less than 1MW capacity enables users to harness green energy from unused water bodies such as small ponds or reservoirs without occupying land space. More than 50MW floating solar panels cater to large-scale utility projects that require massive electricity generation capacities. These installations are ideal for governments and utility companies looking to generate a significant portion of their renewable energy goals from water bodies without sacrificing vast tracts of land. More than 50MW systems have the highest upfront costs but also offer greater economies of scale and long-term returns on investment compared to smaller installations.

Deployment: Evolving on-grid deployment of floating solar panels to fulfill large-scale power demand through grid connectivity

Off-grid floating solar panel systems are designed for remote locations where connection to the main power grid is not feasible or expensive. These standalone systems often serve as a reliable and sustainable power source for rural communities, island nations, and individual consumers needing electricity for basic needs such as lighting, pumping water, or running small appliances. The preference for off-grid floating solar panel systems is high due to reduced land-use conflicts by utilizing under-utilized water bodies such as reservoirs, ponds, or lakes instead of occupying valuable agricultural or forest land. On the other hand, on-grid floating solar panel systems are linked to the main power grid and aim to fulfill large-scale energy demands. These installations are ideal for densely populated urban areas, industrial facilities, and utility companies looking to diversify their energy portfolio with clean and renewable sources. The preference for on-grid floating solar panels is driven by the need for large-scale power generation without occupying vast land areas traditionally required for solar farms. On-grid floating solar systems also benefit from economies of scale, resulting in more competitive electricity costs compared to off-grid options.

Product: Increasing scope for tracking floating solar panels with technological advancements
In stationary floating solar panels, solar panels are attached to fixed systems. They are the most common type of mounting commercially used in projects due to their affordability, simple deployment, and strength. Tracking floating solar panels are solar panels installed on solar trackers or tracking systems, which are mounting systems designed to ensure maximum power

generation by following the position of the sun. Although their installation is complex and slightly cost-intensive compared to conventional technology, tracking floating solar panels receives over 20% more sunlight than stationary floating solar panels, ensuring higher efficiency as the panels are aligned perpendicular to the sun's rays for an extended period. When comparing stationary and tracking floating solar panels, key factors to consider include efficiency, cost, installation complexity, and maintenance requirements. Stationary floating solar panels are more economically accessible due to their lower costs and simpler designs, but may not generate as much energy as tracking systems. On the other hand, tracking FPVs can produce significantly more electricity by following the sun's path throughout the day; however, it comes with increased costs and complexities in design and installation. The choice between these two options primarily depends on the specific needs of each project or industry.

Regional Insights:

In the Americas, particularly North America, the floating solar panels market has witnessed a positive growth trajectory in recent years due to the considerable investments in renewable energy and increasing deployment of floating solar projects in countries. South America also presents opportunities for floating solar panels, rising interest, and investments in floating solar farms with the entry of global players in the region. In the Asia-Pacific region, countries including Japan, China, India, and South Korea are emerging as frontrunners in adopting clean energy solutions that involve solar energy due to investments made by the private sector and initiatives launched by the regional governments. Moreover, the easy access to raw materials and advancements in floating solar technology with continuous research efforts support the market growth in the region. In the EMEA region, Europe is actively pursuing the installation of floating solar panels as a key strategy for achieving its ambitious low-carbon energy goals. The Middle East and Africa also hold potential for floating solar expansion due to their growing interest in sustainable energy solutions.

FPNV Positioning Matrix:

The FPNV Positioning Matrix is essential for assessing the Floating Solar Panels Market. It provides a comprehensive evaluation of vendors by examining key metrics within Business Strategy and Product Satisfaction, allowing users to make informed decisions based on their specific needs. This advanced analysis then organizes these vendors into four distinct quadrants, which represent varying levels of success: Forefront (F), Pathfinder (P), Niche (N), or Vital(V).

Market Share Analysis:

The Market Share Analysis offers an insightful look at the current state of vendors in the Floating Solar Panels Market. By comparing vendor contributions to overall revenue, customer base, and other key metrics, we can give companies a greater understanding of their performance and what they are up against when competing for market share. The analysis also sheds light on just how competitive any given sector is about accumulation, fragmentation dominance, and amalgamation traits over the base year period studied.

Key Company Profiles:

The report delves into recent significant developments in the Floating Solar Panels Market, highlighting leading vendors and their innovative profiles. These include Adani Green Energy Limited, Adtech Systems Limited, Ciel et Terre International SAS, EDF Renewables SA, First Solar, Inc, Hanwha Group, HelioRec S.A.S., Iberdrola, S.A., JA SOLAR Technology Co., Ltd., JinkoSolar Holding Co., Ltd., Kyocera Corporation, KYORAKU Co., Ltd., Larsen & Toubro Limited, LERRI Solar Technology Co., Ltd. by LONGi Green Energy Technology Co. Ltd., LG CNS Co., Ltd., Masdar, Nouria Energy Corporation, NRG ISLAND s.r.l., Ocean Sun AS, Pristine Sun LLC, Q ENERGY Solutions SE, REC Solar Holdings AS, RWE AG, Scotra Co., Ltd., SPG Solar, Inc., Sungrow Power Supply Co., Ltd., Swinsol GmbH, Tata Power Solar Systems Limited, The Sumitomo Mitsui Construction Company, Ltd., Trina Solar Co., Ltd., Vikram Solar Limited, Wuxi Suntech Power Co., Ltd., Xiamen Mibet New Energy Co., Ltd., and Yingli Energy Development Co., Ltd..

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Market Segmentation & Coverage:

This research report categorizes the Floating Solar Panels Market in order to forecast the revenues and analyze trends in each of following sub-markets:

Based on Product, market is studied across Stationary Floating Solar Panels and Tracking Floating Solar Panels. The Stationary Floating Solar Panels commanded largest market share of 83.66% in 2022, followed by Tracking Floating Solar Panels.

Based on Component, market is studied across Cabling, Combine Box, Floaters, Mooring System, PV Modules, Transformer, and Transmission System. The PV Modules is further studied across Monocrystalline and Polycrystalline. The PV Modules commanded largest market share of 34.25% in 2022, followed by Combine Box.

Based on Capacity, market is studied across 1-50MW, Less than 1MW, and More than 50MW. The More than 50MW commanded largest market share of 70.57% in 2022, followed by 1-50MW.

Based on Deployment, market is studied across Off-Grid and On-Grid. The On-Grid commanded largest market share of 67.21% in 2022, followed by Off-Grid.

Based on Implementation, market is studied across Integrated and Standalone. The Integrated commanded largest market share of 85.77% in 2022, followed by Standalone.

Based on Region, market is studied across Americas, Asia-Pacific, and Europe, Middle East & Africa. The Americas is further studied across Argentina, Brazil, Canada, Mexico, and United

States. The United States is further studied across California, Florida, Illinois, Massachusetts, New Jersey, New York, Ohio, Pennsylvania, and Texas. The Asia-Pacific is further studied across Australia, China, India, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand, and Vietnam. The Europe, Middle East & Africa is further studied across Denmark, Egypt, Finland, France, Germany, Israel, Italy, Netherlands, Nigeria, Norway, Poland, Qatar, Russia, Saudi Arabia, South Africa, Spain, Sweden, Switzerland, Turkey, United Arab Emirates, and United Kingdom. The Asia-Pacific commanded largest market share of 40.14% in 2022, followed by Europe, Middle East & Africa.

Key Topics Covered:

1. Preface
2. Research Methodology
3. Executive Summary
4. Market Overview
5. Market Insights
6. Floating Solar Panels Market, by Product
7. Floating Solar Panels Market, by Component
8. Floating Solar Panels Market, by Capacity
9. Floating Solar Panels Market, by Deployment
10. Floating Solar Panels Market, by Implementation
11. Americas Floating Solar Panels Market
12. Asia-Pacific Floating Solar Panels Market
13. Europe, Middle East & Africa Floating Solar Panels Market
14. Competitive Landscape
15. Competitive Portfolio
16. Appendix

The report provides insights on the following pointers:

1. Market Penetration: Provides comprehensive information on the market offered by the key players
2. Market Development: Provides in-depth information about lucrative emerging markets and analyzes penetration across mature segments of the markets
3. Market Diversification: Provides detailed information about new product launches, untapped geographies, recent developments, and investments
4. Competitive Assessment & Intelligence: Provides an exhaustive assessment of market shares, strategies, products, certification, regulatory approvals, patent landscape, and manufacturing capabilities of the leading players
5. Product Development & Innovation: Provides intelligent insights on future technologies, R&D activities, and breakthrough product developments

The report answers questions such as:

1. What is the market size and forecast of the Floating Solar Panels Market?

2. Which are the products/segments/applications/areas to invest in over the forecast period in the Floating Solar Panels Market?
3. What is the competitive strategic window for opportunities in the Floating Solar Panels Market?
4. What are the technology trends and regulatory frameworks in the Floating Solar Panels Market?
5. What is the market share of the leading vendors in the Floating Solar Panels Market?
6. What modes and strategic moves are considered suitable for entering the Floating Solar Panels Market?

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