

Saudi Arabia Onshore Floating Solar Market By Component (PV Modules, Lightning Protection System, Anchoring System, Inverter, Others), By Type (Stationary, Tracking), By Application (Irrigation, Hydroelectric Dam, Water Treatment, Quarry, Mining), By Region, Competition, Forecast and Opportunities, 2019-2029F

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Abstracts

Saudi Arabia Onshore Floating Solar Market was valued at USD 17.9 million in 2023 and is anticipated to project robust growth in the forecast period with a CAGR of 27.5% through 2029. The Saudi Arabia Onshore Floating Solar Market is experiencing a notable upswing as the kingdom strategically endeavors to diversify its energy portfolio. In a concerted effort to reduce dependence on conventional fossil fuels and mitigate environmental impact, the government has increasingly turned its attention to renewable energy sources. The unique geography of Saudi Arabia, characterized by expansive desert landscapes and abundant sunlight, makes onshore floating solar installations particularly attractive. This innovative approach to solar energy deployment not only capitalizes on the vast available land but also addresses the country's water scarcity challenges. With an ambitious commitment to sustainable energy goals, the onshore floating solar market in Saudi Arabia is witnessing heightened investment, technological advancements, and growing collaboration between public and private sectors, positioning the kingdom at the forefront of the global shift towards clean and renewable energy solutions.

Key Market Drivers

Strategic Renewable Energy Initiatives

The Saudi Arabia Onshore Floating Solar Market is experiencing significant growth, driven by the government's strategic initiatives to integrate renewable energy sources into the national energy mix. Central to this drive is the ambitious roadmap outlined in Saudi Vision 2030, signaling a comprehensive effort to diversify the economy and reduce dependence on traditional oil exports. At the forefront of these initiatives is the Renewable Energy Project Development Office (REPDO), playing a pivotal role in propelling the onshore floating solar market forward. This governmental body has been instrumental in fostering collaborations, formulating policies, and introducing incentives that encourage the widespread deployment of renewable energy technologies, specifically emphasizing the potential of onshore floating solar solutions. The strategic alignment of Saudi Arabia's efforts with global sustainability goals positions the kingdom as a frontrunner in the global transition towards a low-carbon economy. By actively embracing onshore floating solar initiatives, Saudi Arabia not only demonstrates a commitment to environmental responsibility but also secures its position at the forefront of the evolving energy landscape, contributing significantly to the global discourse on sustainable and diversified energy sources. The multifaceted approach, encompassing policy frameworks, collaborative partnerships, and a focus on cutting-edge technologies, underscores Saudi Arabia's dedication to reshaping its energy sector and exemplifies its role as a leader in driving the adoption of renewable energy solutions on a global scale.

Abundant Solar Resources and Geographic Advantage

The onshore floating solar market in Saudi Arabia is flourishing due to the country's vast and untapped solar potential, with abundant sunlight across its expansive desert landscapes. The geographic advantage of having large open spaces enables the efficient deployment of onshore floating solar installations. These installations, leveraging photovoltaic technology, harness solar energy from reservoirs, providing an innovative solution to address the dual challenges of energy production and water conservation. The utilization of water bodies for solar installations not only maximizes land use but also helps mitigate water evaporation, showcasing a sustainable synergy between energy and environmental considerations.

Water Scarcity Mitigation and Dual-Use Applications

Saudi Arabia confronts a critical challenge in the form of water scarcity, and the onshore floating solar market stands out as a proactive solution by introducing innovative dual-use applications. Beyond its primary function of generating clean and renewable

energy, onshore floating solar installations play a dual role as shades, strategically mitigating water evaporation from reservoirs. This dual-use approach seamlessly aligns with the country's overarching vision for resource efficiency and sustainable development. As Saudi Arabia grapples with the urgent need to address both its energy and water challenges, the onshore floating solar market emerges not merely as a technological advancement but as a strategic investment with profound implications for the resilience and sustainability of the kingdom's infrastructure. By tackling these two critical challenges concurrently, onshore floating solar initiatives contribute substantially to the diversification of Saudi Arabia's energy mix while also bolstering its water conservation efforts, reflecting a holistic and integrated approach to solving complex environmental issues. This innovative synergy not only exemplifies the country's commitment to embracing sustainable technologies but also positions the onshore floating solar market as a cornerstone in the broader strategy for fostering resilience and sustainability across critical sectors of the nation's infrastructure.

Technological Advancements and Cost Competitiveness

The thriving onshore floating solar market in Saudi Arabia is positioned at the forefront of technological innovation in solar energy, continuously benefiting from the evolution of solar technology. This progress is marked by a series of advancements that collectively enhance the efficiency and cost-effectiveness of floating solar installations. Noteworthy innovations encompass refined floating platforms, cutting-edge solar panels, and streamlined energy storage solutions, all contributing significantly to the heightened feasibility and economic viability of onshore floating solar projects. The continuous refinement and enhancement of these technological components align with the broader trend of declining costs in solar technologies worldwide. Saudi Arabia strategically harnesses these global trends to bolster the appeal of onshore floating solar projects, making them increasingly enticing for investors. This deliberate alignment with technological advancements and cost reductions not only propels the market's growth trajectory but also solidifies Saudi Arabia's pioneering role in the adoption of state-of-the-art renewable energy solutions. The kingdom's proactive approach to leverage cutting-edge innovations not only positions onshore floating solar as a financially sound investment but also underscores the nation's commitment to remaining at the forefront of the global transition toward sustainable and advanced renewable energy solutions. As these technological strides persist, Saudi Arabia stands poised to play a pivotal role in shaping the future landscape of onshore floating solar technology, setting a compelling example for sustainable energy adoption on a global scale.

Public-Private Partnerships and Investment Incentives

Public-private partnerships and favorable investment incentives play a pivotal role in driving the growth of the onshore floating solar market in Saudi Arabia. The government has actively engaged with private enterprises, both domestic and international, to collaborate on solar projects. Initiatives such as the National Renewable Energy Program (NREP) and competitive bidding processes have attracted significant investments. Through long-term power purchase agreements (PPAs) and other financial incentives, the government ensures a conducive environment for private investors, fostering a robust ecosystem for the development of onshore floating solar projects. This collaborative approach enhances project scalability, accelerates deployment, and reinforces Saudi Arabia's commitment to sustainable and diversified energy sources.

Key Market Challenges

Technical and Operational Challenges

The burgeoning Onshore Floating Solar Market in Saudi Arabia faces technical and operational challenges that stem from the unique nature of floating solar installations. These challenges include the need for robust engineering solutions to ensure the stability and durability of floating platforms in harsh environmental conditions, such as high temperatures and sandstorms prevalent in the region. Additionally, the maintenance and cleaning of solar panels over water present logistical challenges that demand innovative solutions to maximize energy yield. Overcoming these technical hurdles is crucial for the long-term viability and efficiency of onshore floating solar projects, requiring ongoing research and development efforts to address the specific challenges associated with this innovative approach.

Water Resource Management and Ecological Impact

While onshore floating solar installations offer dual-use benefits by reducing water evaporation from reservoirs, they also raise concerns about water resource management and potential ecological impact. The shading effect of floating solar panels can affect the aquatic ecosystem beneath, impacting flora and fauna. Striking a balance between water conservation and ecological preservation is a complex challenge that requires thorough environmental assessments and sustainable design practices. Managing the coexistence of floating solar projects with aquatic ecosystems is critical to ensuring the overall environmental sustainability of these installations in Saudi Arabia.

Regulatory and Policy Framework

The Onshore Floating Solar Market in Saudi Arabia encounters challenges related to the regulatory and policy framework governing renewable energy projects. While the government has shown commitment to fostering renewable energy development, evolving regulatory frameworks and permitting processes can introduce uncertainties for investors and project developers. Streamlining and standardizing these regulations, ensuring transparency, and providing consistent long-term policies are essential to creating a favorable investment climate. Clear guidelines will facilitate the efficient implementation of onshore floating solar projects, attracting both domestic and international investors, and contributing to the sustained growth of the market.

Financing and Economic Viability

Financing and economic viability pose significant challenges to the widespread adoption of onshore floating solar projects in Saudi Arabia. Despite decreasing costs of solar technologies globally, the initial capital investment for floating solar installations remains relatively high. Securing financing, especially for large-scale projects, requires collaboration between financial institutions, the government, and private investors. Demonstrating the long-term economic viability of onshore floating solar through effective risk mitigation strategies and financial incentives is essential. Striking a balance between encouraging investments and ensuring affordability for end consumers is crucial for the market to thrive and contribute substantially to Saudi Arabia's renewable energy goals. Overcoming these financial hurdles will be instrumental in accelerating the development and deployment of onshore floating solar projects in the kingdom.

Key Market Trends

Growing Embrace of Utility-Scale Floating Solar Projects

The Onshore Floating Solar Market in Saudi Arabia is witnessing a notable trend towards the development of utility-scale floating solar projects. As the technology matures and gains wider acceptance, there is a shift from smaller pilot projects to larger, more ambitious installations. Utility-scale projects offer economies of scale, enabling more efficient use of resources and driving down the overall cost of solar energy production. This trend reflects the industry's confidence in the scalability and long-term viability of onshore floating solar as a key contributor to the kingdom's renewable energy portfolio. The momentum towards utility-scale projects aligns with Saudi Arabia's commitment to achieving substantial contributions from renewable sources in its energy

mix.

Integration of Energy Storage Solutions

A prominent trend in the Saudi Arabia Onshore Floating Solar Market is the integration of energy storage solutions to address intermittency and enhance grid stability. As the industry matures, stakeholders are recognizing the importance of optimizing energy output and ensuring a consistent power supply. Energy storage technologies, such as advanced batteries, enable the storage of excess energy generated during peak sunlight hours for use during periods of low solar irradiance. This trend not only contributes to grid reliability but also positions onshore floating solar as a dependable and dispatchable source of renewable energy. The integration of storage solutions aligns with global advancements in energy storage technology and supports Saudi Arabia's vision for a reliable and resilient energy infrastructure.

Technological Advancements in Floating Solar Platforms

Advancements in technology are driving innovations in floating solar platforms within the Saudi Arabian market. Manufacturers and developers are investing in research and development to enhance the efficiency, durability, and adaptability of floating solar structures. This trend includes the development of modular and customizable floating platforms that can be tailored to specific water bodies, optimizing the deployment of solar panels. Additionally, improvements in materials and design contribute to the resilience of floating platforms in challenging environmental conditions. The emphasis on technological advancements reflects the industry's commitment to overcoming technical challenges and ensuring the long-term success of onshore floating solar projects in Saudi Arabia.

Increasing Collaboration and Partnerships

Collaboration and partnerships among government entities, private companies, and international players are emerging as a key trend in the Saudi Arabia Onshore Floating Solar Market. Recognizing the complexity and scale of renewable energy projects, stakeholders are joining forces to leverage collective expertise, resources, and funding. Public-private partnerships facilitate the sharing of risks and responsibilities, creating a conducive environment for investment and project development. International collaborations bring in global best practices and technological know-how, further accelerating the growth of the onshore floating solar market. This trend reflects a holistic approach to sustainable development, aligning with Saudi Arabia's commitment to

fostering a collaborative ecosystem for the successful implementation of renewable energy initiatives.

Increasing Focus on Environmental, Social, and Governance (ESG) Criteria

There is a discernible trend in the Saudi Arabia Onshore Floating Solar Market towards a heightened focus on Environmental, Social, and Governance (ESG) criteria. Investors, developers, and policymakers are recognizing the importance of ensuring that renewable energy projects adhere to stringent environmental and social standards. This trend involves comprehensive environmental impact assessments, community engagement initiatives, and the incorporation of sustainable practices throughout the project lifecycle. As ESG considerations become integral to investment decisions, projects that align with these criteria are likely to receive increased support and funding. This trend underscores the industry's commitment to responsible and sustainable development, contributing to both the energy transition and broader societal well-being in Saudi Arabia.

Segmental Insights

Type Insights

The Tracking segment asserted its dominance in the Saudi Arabia Onshore Floating Solar Market, positioning itself as the leading type segment, and it is anticipated to maintain this dominance throughout the forecast period. Tracking systems, designed to dynamically adjust the position of solar panels to optimize sunlight exposure, have gained prominence due to their ability to enhance energy yield and overall system efficiency. The Tracking segment's dominance is underpinned by the compelling advantages it offers in maximizing the capture of solar irradiance throughout the day, thereby significantly increasing the output of onshore floating solar installations. The dynamic orientation of solar panels in response to the sun's movement allows tracking systems to achieve higher energy production compared to stationary systems. As Saudi Arabia prioritizes the optimization of renewable energy resources, the Tracking segment aligns with the kingdom's commitment to leveraging cutting-edge technologies for enhanced energy generation. The efficiency gains and increased energy output associated with tracking systems make them a preferred choice for project developers and investors alike. Additionally, advancements in tracking technology, including robust control systems and precision algorithms, contribute to the segment's sustained dominance. The economic viability and performance benefits offered by Tracking systems make them integral to the strategic vision of expanding the onshore floating

solar capacity in Saudi Arabia. As the market continues to mature, the Tracking segment is expected to maintain its leading position, driven by ongoing innovations, improved reliability, and the clear advantages it presents in optimizing solar energy capture. The continued dominance of the Tracking segment underscores its pivotal role in shaping the trajectory of the Saudi Arabia Onshore Floating Solar Market, as the kingdom strives to harness renewable energy sources efficiently and sustainably.

Application Insights

The Irrigation segment emerged as the dominant force in the Saudi Arabia Onshore Floating Solar Market and is poised to maintain its leadership throughout the forecast period. The Irrigation application segment demonstrated a strong foothold due to the compelling synergy between onshore floating solar installations and the water-intensive needs of agricultural practices in the region. By providing a sustainable and energy-efficient solution to power irrigation systems, onshore floating solar projects enhance the overall efficiency and environmental sustainability of agricultural operations. The kingdom's commitment to optimizing water usage aligns seamlessly with the Irrigation segment's value proposition, making it a preferred choice for both public and private stakeholders. As the agricultural sector seeks eco-friendly alternatives to meet energy demands, the Irrigation segment is expected to continue its dominance, driven by ongoing investments, government incentives, and the increasing recognition of onshore floating solar as a key enabler for sustainable agricultural practices in Saudi Arabia. The continued reliance on onshore floating solar for irrigation underscores its pivotal role in addressing both energy and water challenges, making it a linchpin in the broader strategy for a more sustainable and resilient future in the kingdom.

Regional Insights

The Riyadh region emerged as the dominant in the Saudi Arabia Onshore Floating Solar Market, establishing itself as the frontrunner among the regions. Riyadh's dominance can be attributed to several factors, including the region's strategic significance as the capital and economic hub of Saudi Arabia. The Riyadh region has been at the forefront of the kingdom's efforts to diversify its energy mix and enhance sustainability, leading to substantial investments in onshore floating solar projects. Government initiatives, coupled with Riyadh's robust infrastructure and proactive approach to renewable energy adoption, have propelled the region to a prominent position in the onshore floating solar market. The capital city's commitment to renewable energy aligns with the broader goals of Saudi Vision 2030, contributing to the region's dominance. As Riyadh continues to prioritize and invest in sustainable energy

projects, it is expected to maintain its leadership in the onshore floating solar market during the forecast period. The combination of favorable policies, economic significance, and a commitment to renewable energy initiatives positions Riyadh as a key driver of the kingdom's transition towards a more sustainable and diversified energy landscape. The region's dominance is likely to persist as Riyadh serves as a model for other provinces, influencing the overall trajectory of the Saudi Arabia Onshore Floating Solar Market.

Key Market Players

First Solar Inc.

Yellow Tropus Pvt. Ltd.

Ocean Sun AS

Waaree Energies Ltd

Akuo Energy SAS

Kyocera TCL Solar LLC

Duke Energy Corporation

BELECTRIC GmbH

Report Scope:

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

Saudi Arabia Onshore Floating Solar Market, By Component:

PV Modules

Lightning Protection System

Anchoring System

Inverter

Others

Saudi Arabia Onshore Floating Solar Market, By Type:

Stationary

Tracking

Saudi Arabia Onshore Floating Solar Market, By Application:

Irrigation

Hydroelectric Dam

Water Treatment

Quarry

Mining

Saudi Arabia Onshore Floating Solar Market, By Region:

Riyadh

Makkah

Madinah

Jeddah

Tabuk

Eastern Province

Rest of Saudi Arabia

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Saudi Arabia Onshore Floating Solar Market.

Available Customizations:

Saudi Arabia Onshore Floating Solar Market report with the given market data, Tech Sci 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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