

Solar Powered Farming Equipment Market Forecasts to 2032 – Global Analysis By Product Type (Solar Panels / PV Modules, Mounting, Racking, & Tracking Systems, Inverters, Batteries and Storage Systems, Pumps and Irrigation Systems, Fencing, Tractors and Carts and Other Product Types), Component (PV Modules, Batteries & Energy Storage, Controllers, MPPTs, Inverters, Pumps, Motors, Actuators & Nozzles, Sensors, Telemetry & Farm Management Software and Other Components), Deployment, Power Source, Application and By Geography

<https://marketpublishers.com/r/SB2F78FBE93FEN.html>

Date: July 2025

Pages: 200

Price: US\$ 4,150.00 (Single User License)

ID: SB2F78FBE93FEN

Abstracts

According to Statistics MRC, the Global Solar Powered Farming Equipment Market is accounted for \$14.7 billion in 2025 and is expected to reach \$25.5 billion by 2032 growing at a CAGR of 8.2% during the forecast period. Solar powered farming equipment are agricultural machinery and tools that operate using energy harnessed from solar panels. These systems convert sunlight into electricity to power devices such as irrigation pumps, tractors, harvesters, and lighting units. Designed to reduce dependency on fossil fuels, they promote sustainable farming by lowering operational costs and minimizing environmental impact. Ideal for remote or off-grid areas, solar-powered solutions enhance energy efficiency, support climate-resilient agriculture, and contribute to long-term productivity in modern farming practices.

According to study published in Renewable Energy (2023) estimates that solar-powered irrigation systems in India alone could replace over 30 million diesel pumps, potentially

saving 10 billion liters of diesel annually and reducing CO₂ emissions by 26 million tons per year.

Market Dynamics:

Driver:

Escalating and volatile fossil fuel/energy costs

Solar-powered farming equipment offers a compelling value proposition by reducing dependence on diesel and grid electricity, thereby lowering operational expenses. This shift is particularly relevant in regions with high solar irradiance, where farmers can harness abundant renewable energy. Additionally, government incentives and carbon reduction mandates are accelerating the adoption of solar technologies in agriculture. As energy prices continue to fluctuate, solar-powered machinery provides long-term cost stability and energy independence.

Restraint:

Intermittency and energy storage dependency

Equipment such as irrigation systems, autonomous tractors, and grain dryers often need uninterrupted energy supply, which solar alone cannot guarantee. This limitation necessitates robust energy storage systems, increasing upfront investment and maintenance complexity. Moreover, battery degradation over time and limited storage capacity can hinder performance during cloudy days or peak usage periods. These technical constraints may slow adoption in regions with less predictable weather patterns or limited access to advanced storage infrastructure.

Opportunity:

Development of solar-powered autonomous equipment

Innovations in solar-powered drones, robotic weeders, and self-driving tractors are enabling efficient, low-emission farming operations. These systems can operate in remote areas without grid connectivity, making them ideal for large-scale or off-grid farms. Advances in lightweight photovoltaic materials and integrated AI systems are further enhancing the functionality and scalability of such equipment. As labor shortages persist and sustainability becomes a priority, solar-autonomous solutions are poised to

redefine agricultural productivity and resource management.

Threat:

Competition from other renewable sources

In regions with strong wind currents or abundant organic waste, farmers may opt for wind turbines or biogas systems that offer more consistent energy output. These alternatives can sometimes deliver higher efficiency or lower lifecycle costs depending on local conditions. Additionally, hybrid systems combining multiple renewable sources may divert investment away from purely solar-powered solutions. This competitive landscape could fragment market growth and slow the dominance of solar technologies in farming.

Covid-19 Impact:

The COVID-19 pandemic had a dual impact on the solar-powered farming equipment market. On one hand, supply chain disruptions led to delays in component availability, particularly for photovoltaic panels and lithium-ion batteries. On the other hand, the crisis underscored the importance of resilient and decentralized energy systems, prompting increased interest in solar-powered solutions. Lockdowns and labor shortages accelerated the need for automation and remote-controlled equipment, aligning with the capabilities of solar-autonomous technologies.

The mounting, racking, & tracking systems segment is expected to be the largest during the forecast period

The mounting, racking, & tracking systems segment is expected to account for the largest market share during the forecast period as these components are essential for optimizing the orientation and efficiency of solar panels used in agricultural machinery and infrastructure. Innovations in dual-axis tracking and corrosion-resistant materials are enhancing durability and energy yield. Their widespread applicability across irrigation setups, greenhouse operations, and solar-powered fencing systems contributes to their market leadership.

The batteries & energy storage segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the batteries & energy storage segment is predicted to witness

the highest growth rate as solar-powered equipment becomes more sophisticated, reliable energy storage is critical to ensure continuous operation during low sunlight conditions. Lithium-ion and solid-state battery technologies are gaining momentum due to their high energy density and longer lifecycle. The rising demand for off-grid farming solutions and autonomous machinery is further driving investment in advanced storage systems, positioning this segment for rapid expansion.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share driven by strong policy support and technological innovation. The region benefits from a well-developed agricultural infrastructure and high adoption of precision farming practices. Federal and state-level incentives for renewable energy deployment are encouraging farmers to transition to solar-powered machinery. Moreover, the presence of leading manufacturers and research institutions is fostering continuous product development. The growing emphasis on sustainable agriculture and carbon-neutral operations is reinforcing North America's leadership in this domain.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR fueled by rapid agricultural modernization and expanding rural electrification programs. Countries like India, China, and Vietnam are investing heavily in solar infrastructure to support smallholder farmers and reduce dependency on fossil fuels. Government-backed initiatives promoting solar pumps, autonomous tractors, and smart irrigation systems are catalyzing market growth. Additionally, rising awareness about climate resilience and resource optimization is driving adoption across diverse farming landscapes.

Key players in the market

Some of the key players in Solar Powered Farming Equipment Market include John Deere, Mahindra & Mahindra, Kubota Corporation, Valmont Industries, SMA Solar Technology, Tractors and Farm Equipment Limited (TAFE), Solar Electric Power Company (SEPCO), SunCulture, AgriSolar Solutions, Bright Solar Limited, Suncity Solar, Ecozen Solutions, Claro Energy, SolarTech, Solis Tractors, Lorentz GmbH, Ennos AG, SunPower Corporation, Greenlight Planet, and SimpliPhi Power.

Key Developments:

In July 2025, Bright Solar Limited announced a strategic expansion into outdoor media partnerships, enhancing its presence in billboard advertising across urban centers. This move aligns with its diversification strategy beyond solar infrastructure. The company also appointed a new CEO to lead the initiative.

In July 2025, Solis Tractors (International Tractors Ltd.) launched the Solis Yanmar tractor range in India, targeting 50,000 units in five years and 400 dealerships in two. The collaboration with Japan's Yanmar introduces advanced 4WD and SMARTASSIST REMOTE technology. This marks Solis' entry into India's domestic market after global success.

In April 2025, Ennos AG partnered with Uganda's Innovex to locally manufacture IoT-enabled solar water pumps, launched at Uganda's Deep Tech Centre. The collaboration aims to deliver 2,000 units by year-end and create 30 high-value jobs. It combines Swiss engineering with African innovation for sustainable irrigation.

Product Types Covered:

Solar Panels / PV Modules

Mounting, Racking, & Tracking Systems

Inverters

Batteries and Storage Systems

Pumps and Irrigation Systems

Fencing

Tractors and Carts

Other Product Types

Components Covered:

PV Modules

Batteries & Energy Storage

Controllers, MPPTs, Inverters

Pumps, Motors, Actuators & Nozzles

Sensors, Telemetry & Farm Management Software

Other Components

Deployments Covered:

Direct Sale

Turnkey Installation & O&M Services

Pay-As-You-Grow

Project Developers for Agrivoltaics

Other Deployments

Power Sources Covered:

Off-Grid Solar Systems

Battery-Backed Solar Systems

Grid-Tied Solar Systems

Applications Covered:

Crop Farming

Livestock Management

Aquaculture

Horticulture

Cold Chain & Storage

Post-Harvest Processing & Drying

Other Applications

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants

- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

Contents

1 EXECUTIVE SUMMARY

2 PREFACE

- 2.1 Abstract
- 2.2 Stake Holders
- 2.3 Research Scope
- 2.4 Research Methodology
 - 2.4.1 Data Mining
 - 2.4.2 Data Analysis
 - 2.4.3 Data Validation
 - 2.4.4 Research Approach
- 2.5 Research Sources
 - 2.5.1 Primary Research Sources
 - 2.5.2 Secondary Research Sources
 - 2.5.3 Assumptions

3 MARKET TREND ANALYSIS

- 3.1 Introduction
- 3.2 Drivers
- 3.3 Restraints
- 3.4 Opportunities
- 3.5 Threats
- 3.6 Product Analysis
- 3.7 Application Analysis
- 3.8 Emerging Markets
- 3.9 Impact of Covid-19

4 PORTERS FIVE FORCE ANALYSIS

- 4.1 Bargaining power of suppliers
- 4.2 Bargaining power of buyers
- 4.3 Threat of substitutes
- 4.4 Threat of new entrants
- 4.5 Competitive rivalry

5 GLOBAL SOLAR POWERED FARMING EQUIPMENT MARKET, BY PRODUCT TYPE

- 5.1 Introduction
- 5.2 Solar Panels / PV Modules
- 5.3 Mounting, Racking, & Tracking Systems
- 5.4 Inverters
- 5.5 Batteries and Storage Systems
- 5.6 Pumps and Irrigation Systems
- 5.7 Fencing
- 5.8 Tractors and Carts
- 5.9 Other Product Types

6 GLOBAL SOLAR POWERED FARMING EQUIPMENT MARKET, BY COMPONENT

- 6.1 Introduction
- 6.2 PV Modules
- 6.3 Batteries & Energy Storage
- 6.4 Controllers, MPPTs, Inverters
- 6.5 Pumps, Motors, Actuators & Nozzles
- 6.6 Sensors, Telemetry & Farm Management Software
- 6.7 Other Components

7 GLOBAL SOLAR POWERED FARMING EQUIPMENT MARKET, BY DEPLOYMENT

- 7.1 Introduction
- 7.2 Direct Sale
- 7.3 Turnkey Installation & O&M Services
- 7.4 Pay-As-You-Grow
- 7.5 Project Developers for Agrivoltaics
- 7.6 Other Deployments

8 GLOBAL SOLAR POWERED FARMING EQUIPMENT MARKET, BY POWER SOURCE

- 8.1 Introduction
- 8.2 Off-Grid Solar Systems
- 8.3 Battery-Backed Solar Systems

8.4 Grid-Tied Solar Systems

9 GLOBAL SOLAR POWERED FARMING EQUIPMENT MARKET, BY APPLICATION

9.1 Introduction

9.2 Crop Farming

9.3 Livestock Management

9.4 Aquaculture

9.5 Horticulture

9.6 Cold Chain & Storage

9.7 Post-Harvest Processing & Drying

9.8 Other Applications

10 GLOBAL SOLAR POWERED FARMING EQUIPMENT MARKET, BY GEOGRAPHY

10.1 Introduction

10.2 North America

10.2.1 US

10.2.2 Canada

10.2.3 Mexico

10.3 Europe

10.3.1 Germany

10.3.2 UK

10.3.3 Italy

10.3.4 France

10.3.5 Spain

10.3.6 Rest of Europe

10.4 Asia Pacific

10.4.1 Japan

10.4.2 China

10.4.3 India

10.4.4 Australia

10.4.5 New Zealand

10.4.6 South Korea

10.4.7 Rest of Asia Pacific

10.5 South America

10.5.1 Argentina

- 10.5.2 Brazil
- 10.5.3 Chile
- 10.5.4 Rest of South America
- 10.6 Middle East & Africa
 - 10.6.1 Saudi Arabia
 - 10.6.2 UAE
 - 10.6.3 Qatar
 - 10.6.4 South Africa
 - 10.6.5 Rest of Middle East & Africa

11 KEY DEVELOPMENTS

- 11.1 Agreements, Partnerships, Collaborations and Joint Ventures
- 11.2 Acquisitions & Mergers
- 11.3 New Product Launch
- 11.4 Expansions
- 11.5 Other Key Strategies

12 COMPANY PROFILING

- 12.1 John Deere
- 12.2 Mahindra & Mahindra
- 12.3 Kubota Corporation
- 12.4 Valmont Industries
- 12.5 SMA Solar Technology
- 12.6 Tractors and Farm Equipment Limited (TAFE)
- 12.7 Solar Electric Power Company (SEPCO)
- 12.8 SunCulture
- 12.9 AgriSolar Solutions
- 12.10 Bright Solar Limited
- 12.11 Suncity Solar
- 12.12 Ecozen Solutions
- 12.13 Claro Energy
- 12.14 SolarTech
- 12.15 Solis Tractors
- 12.16 Lorentz GmbH
- 12.17 Ennos AG
- 12.18 SunPower Corporation
- 12.19 Greenlight Planet

12.20 SimpliPhi Power

List Of Tables

LIST OF TABLES

Table 1 Global Solar Powered Farming Equipment Market Outlook, By Region (2024-2032) (\$MN)

Table 2 Global Solar Powered Farming Equipment Market Outlook, By Product Type (2024-2032) (\$MN)

Table 3 Global Solar Powered Farming Equipment Market Outlook, By Solar Panels / PV Modules (2024-2032) (\$MN)

Table 4 Global Solar Powered Farming Equipment Market Outlook, By Mounting, Racking, & Tracking Systems (2024-2032) (\$MN)

Table 5 Global Solar Powered Farming Equipment Market Outlook, By Inverters (2024-2032) (\$MN)

Table 6 Global Solar Powered Farming Equipment Market Outlook, By Batteries and Storage Systems (2024-2032) (\$MN)

Table 7 Global Solar Powered Farming Equipment Market Outlook, By Pumps and Irrigation Systems (2024-2032) (\$MN)

Table 8 Global Solar Powered Farming Equipment Market Outlook, By Fencing (2024-2032) (\$MN)

Table 9 Global Solar Powered Farming Equipment Market Outlook, By Tractors and Carts (2024-2032) (\$MN)

Table 10 Global Solar Powered Farming Equipment Market Outlook, By Other Product Types (2024-2032) (\$MN)

Table 11 Global Solar Powered Farming Equipment Market Outlook, By Component (2024-2032) (\$MN)

Table 12 Global Solar Powered Farming Equipment Market Outlook, By PV Modules (2024-2032) (\$MN)

Table 13 Global Solar Powered Farming Equipment Market Outlook, By Batteries & Energy Storage (2024-2032) (\$MN)

Table 14 Global Solar Powered Farming Equipment Market Outlook, By Controllers, MPPTs, Inverters (2024-2032) (\$MN)

Table 15 Global Solar Powered Farming Equipment Market Outlook, By Pumps, Motors, Actuators & Nozzles (2024-2032) (\$MN)

Table 16 Global Solar Powered Farming Equipment Market Outlook, By Sensors, Telemetry & Farm Management Software (2024-2032) (\$MN)

Table 17 Global Solar Powered Farming Equipment Market Outlook, By Other Components (2024-2032) (\$MN)

Table 18 Global Solar Powered Farming Equipment Market Outlook, By Deployment

(2024-2032) (\$MN)

Table 19 Global Solar Powered Farming Equipment Market Outlook, By Direct Sale (2024-2032) (\$MN)

Table 20 Global Solar Powered Farming Equipment Market Outlook, By Turnkey Installation & O&M Services (2024-2032) (\$MN)

Table 21 Global Solar Powered Farming Equipment Market Outlook, By Pay-As-You-Grow (2024-2032) (\$MN)

Table 22 Global Solar Powered Farming Equipment Market Outlook, By Project Developers for Agrivoltaics (2024-2032) (\$MN)

Table 23 Global Solar Powered Farming Equipment Market Outlook, By Other Deployments (2024-2032) (\$MN)

Table 24 Global Solar Powered Farming Equipment Market Outlook, By Power Source (2024-2032) (\$MN)

Table 25 Global Solar Powered Farming Equipment Market Outlook, By Off-Grid Solar Systems (2024-2032) (\$MN)

Table 26 Global Solar Powered Farming Equipment Market Outlook, By Battery-Backed Solar Systems (2024-2032) (\$MN)

Table 27 Global Solar Powered Farming Equipment Market Outlook, By Grid-Tied Solar Systems (2024-2032) (\$MN)

Table 28 Global Solar Powered Farming Equipment Market Outlook, By Application (2024-2032) (\$MN)

Table 29 Global Solar Powered Farming Equipment Market Outlook, By Crop Farming (2024-2032) (\$MN)

Table 30 Global Solar Powered Farming Equipment Market Outlook, By Livestock Management (2024-2032) (\$MN)

Table 31 Global Solar Powered Farming Equipment Market Outlook, By Aquaculture (2024-2032) (\$MN)

Table 32 Global Solar Powered Farming Equipment Market Outlook, By Horticulture (2024-2032) (\$MN)

Table 33 Global Solar Powered Farming Equipment Market Outlook, By Cold Chain & Storage (2024-2032) (\$MN)

Table 34 Global Solar Powered Farming Equipment Market Outlook, By Post-Harvest Processing & Drying (2024-2032) (\$MN)

Table 35 Global Solar Powered Farming Equipment Market Outlook, By Other Applications (2024-2032) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

I would like to order

Product name: Solar Powered Farming Equipment Market Forecasts to 2032 – Global Analysis By Product Type (Solar Panels / PV Modules, Mounting, Racking, & Tracking Systems, Inverters, Batteries and Storage Systems, Pumps and Irrigation Systems, Fencing, Tractors and Carts and Other Product Types), Component (PV Modules, Batteries & Energy Storage, Controllers, MPPTs, Inverters, Pumps, Motors, Actuators & Nozzles, Sensors, Telemetry & Farm Management Software and Other Components), Deployment, Power Source, Application and By Geography

Product link: <https://marketpublishers.com/r/SB2F78FBE93FEN.html>

Price: US\$ 4,150.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/SB2F78FBE93FEN.html>