

# **Global Building-integrated Photovoltaics Market Size Study, By Technology (Crystalline Silicon, Thin Film, Others), By Application (Roof, Wall, Glass, Facade, Others), By End-use (Residential, Commercial, Industrial, Utility), and Regional Forecasts 2022-2032**

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## **Abstracts**

The global building-integrated photovoltaics (BIPV) market represents a transformative approach to sustainable energy generation, merging photovoltaic technology with architectural elements. Estimated at USD 23.67 billion in 2023, the market is projected to achieve a robust CAGR of 21.2% from 2024 to 2032. BIPVs are gaining traction as a dual-purpose solution for renewable energy production and aesthetic building integration, driving demand across residential, commercial, and industrial sectors.

Governments worldwide are implementing supportive policies, including subsidies, feed-in tariffs (FiTs), and tax incentives, to promote solar energy adoption. For instance, European countries such as Germany and France offer high FiTs for BIPV-generated electricity, while the U.S. incentivizes solar installations through federal tax credits. These policies, coupled with increasing awareness of energy security and the need to reduce greenhouse gas emissions, are propelling the BIPV market forward.

The market's growth is further accelerated by advancements in thin-film and organic photovoltaic technologies, which offer flexibility, lightweight properties, and high efficiency. Innovations in anti-reflective coatings and tandem photovoltaic panels are enhancing the performance and durability of BIPVs, making them suitable for diverse applications, including roofs, facades, walls, and glass panels.

**Technology Innovations:** Development of advanced thin-film and organic photovoltaic systems enhances integration capabilities with various building structures, increasing

adoption in modern architecture.

**Energy Efficiency Standards:** The rising implementation of global energy efficiency directives, such as the Kyoto Protocol and Paris Agreement, is fostering the adoption of renewable energy technologies, including BIPVs.

**Aesthetic Integration:** Growing consumer preference for aesthetically appealing energy solutions is driving demand for BIPVs in residential and commercial applications.

**Emerging Markets Expansion:** Rapid urbanization and infrastructure development in Asia-Pacific and Middle East & Africa regions are creating lucrative opportunities for BIPV manufacturers.

### Regional Dynamics

**North America:** The region is witnessing rapid adoption of BIPVs, driven by advancements in production technologies and the presence of major players. The U.S., in particular, is emphasizing the deployment of solar energy systems in both residential and commercial buildings.

**Europe:** Dominating the market with a 37.1% share in 2023, Europe's growth is fueled by strong government initiatives and widespread consumer awareness. Germany, Italy, and France are key contributors, leveraging policies like feed-in tariffs to encourage adoption.

**Asia-Pacific:** Expected to grow at the fastest CAGR, the region benefits from supportive government programs in countries like China and Japan. Increased consumer spending and urbanization trends are further bolstering market expansion.

**Middle East & Africa:** The region is emerging as a significant market due to high solar energy potential and increased investments in renewable energy infrastructure.

### Key Companies:

SolarWindow Technologies, Inc.

AGC Inc.

Hanergy Mobile Energy Holding Group Limited

The Solaria Corporation

Heliatek GmbH

Tesla

BELECTRIC

ertex solartechnik GmbH

Greatcell

Carmanah Technologies Corp.

The detailed segments and sub-segments of the market are explained below:

By Technology:

Crystalline Silicon

Thin Film

Others (Organic Photovoltaics, Dye-Sensitized Cells)

By Application:

Roof

Wall

Glass

Facade

Others (Shading, Membranes)

By End-use:

Residential

Commercial

Industrial

Utility

By Region:

North America

U.S.

Canada

Mexico

Europe

Eastern Europe: Russia, Poland, Hungary

Western & Central Europe: Germany, Netherlands, France, Austria, Switzerland, Belgium

Southern Europe: Spain, Portugal, Italy, Greece, Croatia

Asia-Pacific

China

India

Japan

South Korea

Australia

Malaysia, Singapore, Thailand, Vietnam

Central & South America

Brazil

Argentina

Middle East & Africa

Saudi Arabia

UAE

South Africa

Years considered for the study are as follows:

Historical year – 2022

Base year – 2023

Forecast period – 2024 to 2032

Key Takeaways:

Market Estimates & Forecast for 10 years from 2022 to 2032.

Annualized revenues and regional-level analysis for each market segment.

Detailed analysis of the geographical landscape with country-level analysis of major regions.

Competitive landscape with information on major players in the market.

Analysis of key business strategies and recommendations on future market approaches.

Analysis of the competitive structure of the market.

Demand-side and supply-side analysis of the market.

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