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Global Panelized Modular Building Systems Market - 2025 -2032

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Abstracts

Panelized Modular Building Systems Market Size

Panelized Modular Building Systems Market reached US$ 121.75 billion in 2024 and is expected to reach US$ 194.35 billion by 2032, growing with a CAGR of 6.02% during the forecast period 2025-2032.

The global panelized modular building systems market is experiencing substantial growth, driven by a surge in demand for sustainable construction solutions, rising urbanization and an increased focus on efficient, cost-effective building methods. Panelized modular construction, where wall, floor and roof panels are prefabricated in factory settings before being assembled on-site, provides benefits like decreased construction time, reduced labor expenses and decreased on-site waste.

According to the Modular Building Institute (MBI), panelized construction can reduce build times by up to 50% compared to traditional construction methods. This efficiency has made it an attractive choice for residential, commercial and industrial buildings, especially in regions facing labor shortages and high housing demand. Furthermore, the approach is in line with worldwide sustainability objectives, endorsing a rising demand for environmentally-friendly resources and energy-saving constructions, which is progressively encouraged by government incentives and requirements.

Asia-Pacific is anticipated to lead the panelized modular building systems market during the forecast period, driven by strong demand for products like roof panels, floor panels, wall modules and a variety of modular components across residential, commercial, industrial and infrastructure sectors. the Asian Development Bank (ADB) has projected that Asia will require US$ 1.7 trillion annually in infrastructure investments through 2030

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to maintain economic growth and adapt to urban demand.

Personalized Modular Building Systems Market Trend

Building Information Modeling (BIM) is transforming the modular construction industry by enabling precise design planning, enhanced collaboration and real-time data integration. Dorce Prefabricated leverages BIM to streamline project workflows, detect design clashes early and reduce costly rework. This digital platform allows architects, engineers and contractors to work cohesively throughout the project lifecycle. BIM supports better risk management and ensures higher accuracy in material estimation and construction timelines. The result is greater efficiency and reduced project delays.

Dorce Prefabricated utilizes BIM to optimize off-site manufacturing and on-site assembly of modular structures. The technology ensures seamless coordination across teams, improving quality control and sustainability standards. With accurate 3D modeling and data-rich planning, Dorce enhances client satisfaction and project outcomes. BIM also enables long-term asset management by supporting maintenance and upgrades. This strategic use of BIM positions Dorce as a leader in delivering innovative, scalable modular solutions.

Key Highlights of This Report

Panelized modular building systems are technologies that pre-manufacture wall, floor and roof panels or complete 3-dimensional parts of the building as a panel/piece at a factory and assembled at the site. Panelized modular building systems are affordable methods that enhance construction speed and output. The primary factors driving the market's growth are the expanding need for off-site building, rising demand for structural insulated panels in energy-efficient pre-fabricated homes and supportive government incentives and policies. Furthermore, the market is driven by the advantages of panelized modular buildings, such as minimal labor requirements, time and cost savings.

Based on material, metal-based panelized modular building systems are expected to show significant growth in the market, growing at a CAGR of 7.3 % during the 2021-2028 period. Ferrous metals are generally employed in structural applications due to their high iron content. They are robust, ductile and durable. The metal based structures can be coated with galvanizing to prevent corrosion when exposed to the elements and they can be easily manipulated to form a variety of shapes and sizes. Non-ferrous metals, which are naturally

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corrosion-resistant, are employed in roofing and cladding applications.

North American dominates the market share of the global panelized modular building systems market with a market share of US$ 43,818.01 million in 2020 and is expected to grow up to US$ 70,288.13 million in 2028. The modular building industry is booming in the region and its expanding construction industry is fueling it. Furthermore, due to reduced transportation costs and the emergence of larger projects in the region, interest in modular construction has historically grown in the northeastern U.S., which is expected to create market opportunities for the product during the forecast period.

Market Dynamics

Technological Advancements and Demand for Sustainable Construction

The adoption of advanced manufacturing technologies, including automation, robotics and digital design tools like Building Information Modeling (BIM), is enhancing the efficiency and precision of panelized modular construction. These advancements enable improved quality assurance, increased manufacturing speed and personalized designs that meet individual building standards and client requirements. According to Global Infrastructure Hub, USe of digital tools in modular construction could reduce project costs by 20%, making it an economically viable option for large-scale projects.

The rising emphasis on sustainable construction, bolstered by the United Nations Environment Programme (UNEP), is driving demand for modular solutions that support reduced energy consumption, minimized material waste and improved building performance. In the European Union, directives like the Energy Performance of Buildings Directive (EPBD) encourage the adoption of energy-efficient materials and modular construction techniques, further fueling market growth.

Rising Urbanization and Housing Demand

Global urbanization and population growth are significantly contributing to the demand for affordable, efficient housing. The World Health Organization (WHO) predicts that 68% of the global population will live in cities by 2050, leading to a greater demand for housing options that can be easily expanded. Panelized modular systems are a practical solution for this need, especially in densely populated urban locations and can support intricate, multi-level structures.

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Emerging economies in Asia-Pacific, particularly China and India, are experiencing rapid urbanization and housing shortages, prompting government support for modular construction. For example, China has implemented rewards for prefabricated buildings as part of its 13th Five-Year Plan, with the goal of raising the percentage of prefabricated buildings in new constructions to 30% by 2025. Similarly, the Indian government's Pradhan Mantri Awas Yojana (PMAY) scheme, focused on affordable urban housing, has seen significant interest in modular construction to meet its ambitious goals.

Safety Concerns and Workforce Shortages

Safety and quality assurance are critical factors driving the adoption of panelized modular systems. The International Code Council (ICC) and national bodies such as the National Institute of Standards and Technology (NIST) in US have developed comprehensive guidelines to ensure the safety, durability and performance of modular buildings. These guidelines cover aspects such as fire safety, structural integrity and thermal insulation, helping to standardize practices in the industry and build trust among consumers and contractors.

Furthermore, a shortage of skilled labor, particularly in the construction industry, hampers the market growth of panelized modular building systems. According to the International Labour Organization (ILO), the construction sector faces a global workforce deficit, impacting the timely completion of projects. Modular construction, which requires fewer on-site laborers, is a practical solution for regions facing this shortage, as panels can be manufactured off-site and assembled quickly on location.

Market Segment Analysis

The global panelized modular building systems market is segmented based on technology, material, panel, product, application and region.

Wood Based Structure Provides High-performance and Energy-Efficient Passive Designs

In US approximately 35 million homes representing nearly one-third of the national housing stock are classified as being at 'high risk' for natural disasters. To efficiently and cost-effectively rebuild a city after such events, it is essential to prioritize resilience against future disasters. Manufactured offsite, engineered wood construction solutions

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such as glulam and CLT are suitable for addressing these goals as they can be quickly installed.

Pre-made wooden parts, utilized in wooden frames and mass timber structures, have helped solve many design and engineering problems. Pre-made wooden components provide effective passive designs, energy efficiency, material and time savings, waste reduction and cost control. Pre-built projects offer consumers alternative choices for conventional residential buildings due to the fact that the construction takes place away from the actual site. Every customer has the option to choose a particular design and add in any desired services.

Due to its versatility and numerous design choices, wood provides users with a variety of design options and finishes. The project's sustainability depends on reduced waste, efficient environmental performance and material flexibility. The biophilic characteristics of wood enhance human well-being and promote environmental consciousness. Pre-built wooden parts could include light-frame walls and roof trusses or mass timber elements like cross-laminated timber panels, dowel-laminated timber panels, nail-laminated timber panels and glue-laminated timber columns and beams.

Market Geographical Share

Strong Demand for Infrastructural & Residential Construction in North America

North America dominated the global market share. Panelized modular construction is experiencing strong growth in the area, driven by the region's growing construction. The market for panelized modular building systems in North America is primarily driven by rising demand for pre-fabricated building structures and a growing emphasis on reducing overall construction costs and time. Panelized modular building systems employ construction techniques that use advanced technology, high-quality materials and a controlled work environment to construct energy-efficient homes in less time.

Interest in panelized modular building systems has traditionally been high in US and Canada, owing to lower shipping costs and the expansion of larger projects in the region. According to the Canada Mortgage and Housing Corporation (CMHC), to improve affordability, Canada needs to build 3.5 million more homes by the year 2030. The country's rising residential construction and renovation projects are expected to demand panelized modular building systems.

Sustainability Analysis

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The panelized modular building systems market is increasingly aligning itself with global sustainability targets, focusing on eco-friendly building practices, waste reduction and energy efficiency. Panelized modular building systems significantly reduce on-site waste due to their prefabricated nature. Materials are cut and assembled in controlled factory settings, enabling precise measurements that minimize off-cuts and leftover materials. According to the Modular Building Institute (MBI), modular construction can reduce waste materials like timber, cardboard, plastics and concrete by up to 90% compared to traditional construction methods, where on-site miscalculations and excessive off-cuts are common.

Modular systems can integrate advanced insulation materials, high-efficiency windows and HVAC systems, which result in buildings with lower operational energy requirements. According to the International Energy Agency (IEA), modular construction reduces energy use in both the production and operation phases, supporting countries in their journey toward net-zero emissions. In US, LEED-certified modular buildings demonstrate a 20-30% reduction in operational energy consumption, translating to lower greenhouse gas emissions over the building's lifecycle.

Major Players

The major global players in the market include DS Smith PLC, International Paper, Amcor plc, WestRock Company, Mondi Group, Rengo Co. Ltd., Stora Enso, Billerud, Smurfit Kappa Group and Nippon Paper Industries Ltd.

Key Developments

In May 2025, Panel Built, Inc. launched tailored modular solutions for the art industry, offering secure, climate-controlled and space-optimized structures for storage facilities, museums, galleries and art fairs. These prefabricated units provide quick installation, flexibility and enhanced protection through fire-rated, ballistic-rated and cleanroom-grade features, ensuring safe, efficient and adaptable environments for preserving and showcasing valuable art collections.

In April 2024, The National Association of Home Builders (NAHB) has launched a new video series focused on off-site construction, aimed at educating builders, developers and consumers about the benefits and processes involved in this innovative building method. The series will cover key topics such as the advantages of modular and panelized construction, integration of technology

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and efficiency improvements.

In February 2024, Timber Age Systems, a cross-laminated timber (CLT) panel manufacturer, has secured $3.9 million from Colorado's Proposition 123 funding to establish a factory in Mancos, Colorado. This initiative is part of a statewide push to increase affordable housing production, with Timber Age's factory projected to produce 122 homes annually. Using sustainable, locally harvested timber, Timber Age focuses on eco-friendly, high-performance housing. Other companies also received funding to boost Colorado's modular housing production capacity, collectively aiming for 4,755 units annually.

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