

Modular Construction: A Strategic Advantage for PE Investors



1.1 | Executive Summary

Modular construction has moved from a niche solution to a mainstream growth engine in just a few years.

Driven by acute labor shortages, volatile material costs and escalating ESG expectations, developers and investors are embracing **a factory based approach that can deliver projects 20–50 % faster while reducing costs by up to 20%.**

Success in modular construction depends on tightly integrated, end-to-end supply chains. Modular buildings are not just assembled structures; they represent repeatable, productized platforms that require seamless coordination across sourcing, manufacturing, and logistics.

“Modular construction is rapidly transforming housing as advanced manufacturing systems are applied to the sector. The housing ecosystem is increasingly embracing modular’s benefits — speed, predictability, quality, and labor efficiency. At the same time, few industries enjoy the sustained public policy support and economic urgency that multifamily housing does. This convergence makes modular a compelling investment today, with strong growth potential from proven technologies and even greater enterprise value as innovation accelerates”

Modular CEO

To capitalize on this modular wave, whether as a supplier, investor, or end user, organizations need strategic supply chain partnerships that enable scale, reduce complexity, and ensure delivery certainty.

With embedded expertise and data-driven procurement and logistics capabilities, Jabil Procurement and Supply Chain Services can help private equity firms and their portfolio companies unlock operational efficiency and long-term value across the modular construction ecosystem.

KEY INSIGHTS

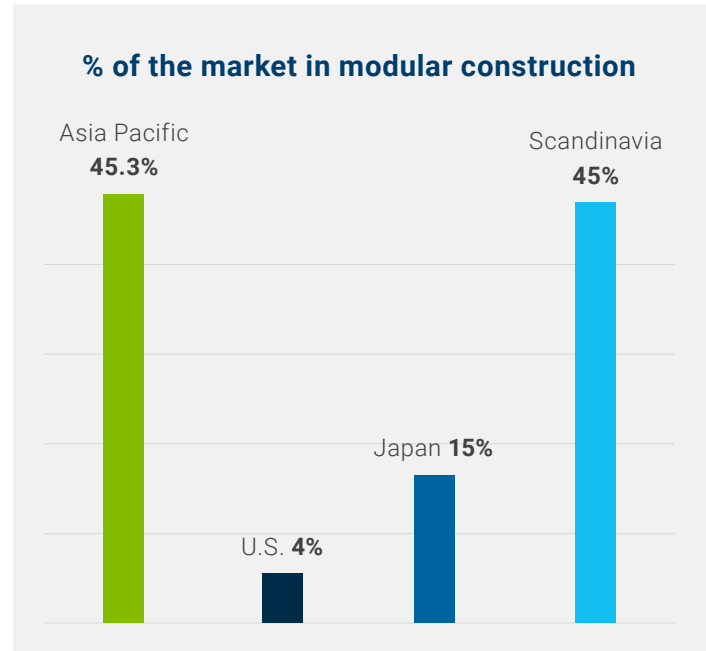
- **Rapid Growth and Investment Opportunity:** Modular construction, a \$103.55 billion global market in 2024, is projected to grow at a 7.79% CAGR to reach \$162.42 billion by 2030, driven by labor shortages, cost volatility, and ESG imperatives.
- **Strategic Adoption Drivers:** Accelerated timelines (20–50% faster), reduced costs (up to 20%), and significant sustainability benefits are making modular methods attractive across sectors including residential housing, healthcare, data centers, hospitality, and emergency infrastructure.
- **Critical Role of Supply Chain Excellence:** Success in modular construction depends on seamless end-to-end supply chain integration, covering raw material procurement, precision factory manufacturing, coordinated logistics, and digital infrastructure.
- **Private Equity Strategic Advantage:** Modular construction aligns with PE investment strategies, enabling faster IRR realization, scalable product platforms, higher valuation multiples, and opportunities for vertical integration across supplier networks.
- **ESG and Sustainability Value:** Modular construction significantly contributes to carbon reduction, circular economy practices, and overall environmental resilience, supporting PE firms in meeting rigorous sustainability mandates and enhancing asset valuations.
- **Risk Mitigation through Expertise:** Strategic partnerships with experienced supply chain operators, such as Jabil Procurement and Supply Chain Services, mitigate design, logistics, and regulatory risks, ensuring successful modular deployments and optimized operational performance.

1.2 Market & Investment Landscape

The modular construction sector is scaling rapidly worldwide, creating strong tailwinds for private equity firms looking to unlock value through repeatable, capital-efficient build strategies.

Valued at approximately \$103.55 billion globally in 2024, the market is projected to reach **\$162.42 billion by 2030** (7.79% CAGR). Asia Pacific leads, accounting for roughly **45.3% of the market due** to substantial infrastructure spending in China, India, and Southeast Asia. Governments worldwide are actively promoting modular construction through incentives and sustainability mandates.

U.S. adoption lags behind global peers, with **less than 4% of housing modularly constructed**, compared to about 15% in Japan and up to 45% in Scandinavia. However, the U.S. market is expected to double by 2030 as multifamily housing, healthcare facilities, data centers, hospitality, and emergency shelters increasingly adopt modular methods.



SECTOR-SPECIFIC EXPANSION IN THE U.S.

Despite lagging behind global peers, the U.S. market is beginning to diversify modular use cases across several **high-growth verticals**:

- **Residential:** Modular homes represent 5-6% of new U.S. housing starts today and are forecast to double by 2030, driven by labor constraints and affordability challenges.
- **Multifamily Housing:** Workforce and market-rate developments are turning to modular for scalable, repeatable design and faster time-to-revenue.
- **Healthcare & Data Centers:** Medical facilities and data infrastructure benefit from controlled production environments and speed-to-deployment.
- **Emergency Shelters & Logistics Hubs:** Modular supports fast deployment for disaster relief and last-mile distribution needs.
- **Hospitality:** Lodging applications, especially branded hotels and extended-stay formats, are forecast to **grow at 9.2% CAGR through 2030**.

PRIVATE EQUITY CAPITAL DEPLOYMENT

The investment narrative is following the growth curve. Private equity firms are increasing exposure across the modular value chain, from manufacturers and material suppliers to vertically integrated builders:

- **Active Deal Flow:** Recent acquisitions and platform investments signal rising interest in firms with prefabrication, off-site manufacturing, and advanced logistics capabilities.
- **Key Investment Themes:**
 - Diversification into capital-light construction models
 - Mitigation of labor and material volatility
 - Value creation through faster IRRs and repeatable asset deployment
- **What Investors Are Prioritizing:**
 - Scalable production models
 - Resilient, integrated supply chains
 - ESG-aligned construction solutions

1.3 Drivers of Modular Adoption

The rise of modular construction is being fueled by a powerful mix of labor shortages, economic pressures, performance benefits, and sustainability mandates. These drivers are reshaping how buildings are designed, constructed, and financed, making modular a compelling alternative to traditional methods.



Labor Shortages & Cost Volatility: U.S. construction faces a shortage of over **454,000 workers by 2025**.

Modular methods address these shortages by moving labor off-site, reducing on-site workforces. Centralized procurement and bulk purchasing also mitigate risks from volatile material costs.



Performance Efficiency: Modular projects achieve **20–50% faster timelines** by conducting site prep and module production concurrently.

This parallel workflow can deliver **cost reductions of up to 20%** compared to traditional methods.



Sustainability & ESG Alignment: Factory production significantly reduces construction waste (**up to 90%**), energy use during construction (**67%**), and delivers buildings about **15% more energy-efficient** operationally. These benefits support investors' ESG mandates and regulatory compliance.

Together, these drivers, labor scarcity, material volatility, speed-to-market, and sustainability, are propelling modular from a niche innovation to a mainstream construction strategy.

TRADITIONAL CONSTRUCTION	VS	MODULAR CONSTRUCTION
Speed & Timeline Linear sequencing > site prep and construction happen one after another.		20–50% faster with parallel site prep + factory assembly.
Cost Effectiveness Exposed to volatile spot-market prices and labor overruns.		Up to 20% cost savings through centralized procurement and efficiency.
Material Waste & Sustainability On-site waste from cutoffs, rework, weather delays.		Up to 90% less waste and 67% lower construction energy use.
Quality & Compliance Highly dependent on local labor conditions and weather.		Built in controlled factories with robotics, digital twins, and millimeter precision.
Labor & Safety On-site crews required; skilled labor shortages drive up costs.		30% fewer on-site labor needs, reducing risk and improving safety.
ESG Value High carbon footprint; difficult to integrate circular economy.		15% more energy-efficient buildings and easier integration of circular practices.

1.4 Applications & Use Cases

Modular construction's versatility is reshaping a broad range of asset classes. Key use cases include:



Workforce, Low Income & Affordable Housing:

Standardized volumetric modules can be produced at scale to address acute housing shortages. Off site fabrication reduces labor costs and accelerates project delivery, making modular particularly attractive in regions with high demand for workforce or low income units.



Emergency & Disaster Relief Housing:

Modular units can be rapidly deployed after wildfires, floods or other disasters. Their speed of assembly offers communities a quick return to habitable conditions, while off site production maintains quality control despite urgent timelines.



Student Housing & Dormitories:

Universities and colleges leverage modular to build student residences faster and with fewer on site disruptions. Repeatable room designs support efficient manufacturing and minimizes budget overruns.



Market Rate Condos & Hotels:

The hospitality sector has embraced modular to meet strict brand standards and demanding schedules. Hotel chains have adopted modular methods for entire suites, and developers like Greystar have launched modular apartment complexes. Advocates note that prefabrication ensures “**greater predictability in cost, schedule, and quality**” and speeds up project timelines, offering a quicker path to market.



Healthcare Facilities & Medical Suites:

Operating rooms, urgent care centers and laboratories can be built off site under controlled conditions, then transported to hospital campuses. Factory quality control minimizes defects and ensures compliance with stringent medical codes.



Data Centers & Critical Infrastructure:

Modular pods and containerized modules shorten deployment timelines for data centers, integrating power and cooling systems in a single package for rapid commissioning.



Warehouses, Cold Storage & Distribution Hubs:

In logistics, companies are using modular construction to expand warehouse space, set up cold storage facilities and create distribution hubs. Modular solutions enable quick deployment and repurposing of facilities, making them ideal for e commerce and perishable goods. Modular office units also provide temporary or permanent administrative spaces.

2 | End to End Supply Chain: From Inputs to Deployment

The modular approach aligns construction with production systems, requiring end-to-end supply chain coordination from procurement to project delivery. Unlike traditional projects, where sequencing can be linear and fragmented, modular requires tight orchestration across upstream sourcing, factory fabrication, logistics, on site assembly and digital coordination.

For investors, mastering this continuum is critical to realizing the speed, cost and quality advantages modular promises.

2.1 Upstream: Materials & Inputs

Modular projects begin with the basics: raw materials. Securing those inputs can be challenging, especially when price volatility and geopolitical risk create uncertainty.

Many building products are sourced internationally; nearly a third of U.S. construction inputs are imported, and about **46% of that supply comes from Canada, China, and Mexico**. Tariffs, trade disputes and pandemic driven disruptions have shown how quickly costs can spike and schedules can slip.

KEY CHALLENGES

- **Commodity volatility:** Price swings in steel, lumber, concrete and insulation can erode project margins if purchases aren't timed or hedged.
- **Supplier concentration:** PE firms that own suppliers face risk if production is disrupted or if alternative sources aren't in place.
- **Trade & tariff exposure:** Shifts in trade policy can suddenly add 10–25 % to material costs, altering financial projections.
- **Supply chain disruptions:** Natural disasters, logistical bottlenecks or geopolitical events can delay deliveries and halt factory production.

PROCUREMENT & CATEGORY STRATEGY

Demand aggregation: Combine material orders across portfolio companies to secure volume discounts and reduce spot market exposure.

Long term contracts & hedging: Establish multi year offtake agreements or use futures contracts to stabilize costs.

Supplier diversification: Build a roster of primary and secondary suppliers in varied regions to spread risk.

Market intelligence & forecasting: Track commodity indices, policy changes and regional capacity constraints to time purchases strategically.

JABIL PSCS UPSTREAM SUPPORT

Purchase consolidation: Jabil coordinates bulk buying and negotiates favorable terms on concrete, steel, lumber and other commodities.

Contract expertise: Jabil's team structures and negotiates contracts, drawing on market intelligence to set optimal terms.

Supplier segmentation: Jabil identifies and qualifies alternate suppliers, including those in non tariff regions, to ensure continuity.

Real time insights: Jabil provides data on pricing trends, capacity and geopolitical risk, enabling proactive procurement decisions.

2.2 Midstream: Factory Manufacturing & Assembly

Once raw materials are secured, modular construction shifts into an industrial production mode. Factory based manufacturing leverages automation and standardized assembly processes to drive quality and efficiency at scale.



KEY BENEFITS & ADVANCEMENTS

- **Robotics & Digital Fabrication:** Modern factories employ robotics, automated cutting systems, and even 3D printing to assemble modules with millimeter precision. These tools improve accuracy and reduce manual labor.
- **Reduced On Site Labor:** By transferring work to factories, modular projects can **cut on site labor by up to 30%**, helping to address skilled worker shortages and improving safety.
- **Parallel Workflow:** Site preparation (foundations, utilities) happens concurrently with off site module construction. This parallel processing compresses timelines and mitigates weather delays.
- **Capital Efficient Inventory:** Centralized fabrication allows for predictable inventory and production planning. Modules are manufactured in controlled batches, reducing waste and optimizing working capital.

MANUFACTURING & ASSEMBLY STRATEGY

Industrialized processes: Adopting robotics, CNC machining and digital twins to improve consistency and throughput.

Quality control & compliance: Ensuring each module meets design specs and regulatory requirements before shipping.

Just in time production: Synchronizing module fabrication with site readiness to avoid bottlenecks or storage costs.

Inventory management & cost control: Balancing material inputs with factory throughput to avoid overstock or shortages.

JABIL PSCS MIDSTREAM SUPPORT

Technology integration: Jabil assists manufacturers with digital tooling adoption, linking production data to supply chain systems for real time visibility.

Embedded quality management: Jabil's on site teams oversee inventory and quality checks, leveraging data to address issues before they reach the field.

Procurement alignment: Jabil coordinates procurement schedules with production to ensure materials arrive exactly when needed.

Supply chain analytics: Jabil's experts use demand forecasting and inventory planning tools to optimize stock levels and reduce carrying costs.

2.3 Downstream: Logistics, Installation & Deployment

The final stage of modular construction involves moving factory built modules to their destinations and assembling them on site. This phase demands precise logistics planning and seamless coordination with local contractors and authorities.

KEY CHALLENGES & SOLUTIONS

- **Oversize Module Shipping:** Modules often exceed standard transport dimensions. Special permits, escort vehicles, and route surveys are needed to navigate roads and bridges safely.
- **Permitting & Code Variability:** Building codes vary by state and municipality, affecting how modules can be transported, craned and installed. Delays in approvals can disrupt tight schedules.
- **Final Assembly Coordination:** Modules must arrive on site in the correct order and sequence to minimize crane time and labor costs.



DEPLOYMENT STRATEGY

Freight & route planning: Identifying compliant routes, securing permits and coordinating carriers for oversize shipments.

Code & regulatory compliance: Navigating state-by-state differences in zoning, safety and building codes.

Distribution hub & staging design: Establishing staging sites to store modules close to their final destinations.

Assembly coordination: Ensuring the right modules are delivered in the right order for efficient crane lifts and connections.

JABIL PSCS DOWNSTREAM SUPPORT

Logistics management: Jabil handles Incoterms, arranges intermodal options (road, rail, sea) and manages paperwork to keep modules moving on schedule.

Regulatory expertise: Jabil maintains a database of regional requirements and works with local authorities to expedite approvals.

Network design: Jabil advises on distribution center placement and designs modular staging strategies to streamline last-mile deliveries.

On site coordination: Jabil's teams manage deliveries, communicate with general contractors and sequence installations to minimize idle time and rental costs.

For additional information, visit pscs.jabil.com

2.4 Digital Integration & Supply Chain Strategy

In modular construction, efficient movement of materials and finished modules is impossible without synchronized information flows.

Real time digital tools provide the control and visibility needed to keep upstream sourcing, factory production, and downstream logistics aligned:

- **Digital Control Towers:** These centralized platforms integrate data from suppliers, factories, and carriers to provide a single view of orders, inventory, and delivery status.
- **AI Driven Analytics:** Machine learning algorithms analyze patterns, flag potential delays, recommend alternate routes, and adjust production schedules as conditions change.
- **Digital Twins:** Virtual models of assembly sequences and site layouts allow teams to test different scenarios, optimize workflows, and identify bottlenecks before physical work begins.

Organizations that invest in digital platforms and predictive analytics are better positioned to anticipate disruptions, whether from upstream material shortages or downstream permitting delays, and to respond quickly.



3 | Challenges, Opportunities & Action

Modular construction offers a compelling value proposition but capturing that value requires a clear understanding of where the greatest opportunities and risks lie.

As adoption grows, investors and operators are being held to higher standards around sustainability, supply chain execution, and capital efficiency. For private equity sponsors, these pressures translate into both challenges and strategic levers.

3.1 ESG & Sustainability Impact

The built environment consumes vast amounts of resources and is a major contributor to global emissions. In 2022, energy-related CO₂ emissions from building operations and construction reached **10 gigatons**, representing around 37% of all global carbon dioxide emissions. Buildings accounted for 34% of world power consumption that year, much of it tied to carbon-intensive materials like steel, cement and glass.

Modular construction offers a pathway to transform this energy- and carbon-intensive sector:

- **Embodied Carbon Reduction:** Factory production can integrate low-carbon materials and renewable energy sources more easily than site-built projects, helping mitigate the upfront carbon footprint. Additionally, design for disassembly allows structural components to be reused across multiple cycles, reducing embodied emissions over time.
- **Circular Economy & Lifecycle Management:** Standardized modules lend themselves to circular practices such as material passports, which track inputs for recycling and reuse. By concentrating fabrication and waste management at the factory level, modular builders can implement closed-loop recycling more effectively, reducing reliance on new raw materials.

- **Resilience & Environmental Footprint:** Off-site construction minimizes site disturbance, limiting noise, dust, and traffic, and reduces environmental degradation in dense urban areas. Because modules are built in controlled settings, weather-related delays diminish, lowering overall project energy use and allowing faster transition to occupancy.

INVESTMENT IMPLICATIONS:

Investors and regulators are increasingly tying capital flows to environmental performance. Modular construction can help private-equity portfolios meet carbon-reduction targets and align with sustainability-linked financing.

By partnering with experienced supply chain operators, such as Jabil PSCS, investors can ensure that sustainable material sourcing, efficient waste management, and circular practices are embedded throughout the modular value chain, ultimately enhancing asset valuations and meeting ESG goals.

3.2 Strategic Opportunities for PE Investors

The modular construction ecosystem offers multiple avenues for private equity value creation. Beyond cost savings and speed, the ability to standardize product platforms and leverage supply chain scale can drive superior returns.

HOW MODULAR FITS THE PE PLAYBOOK

- **Platform & Roll up Strategies:** Modular's repeatable designs enable buy and build plays across regions. Investors can scale a proven modular format into new markets (e.g., replicating a micro unit housing solution across several states) without reinventing the production process.
 - **Capital Efficiency & IRR:** Faster project cycles improve cash conversion. **By compressing construction timelines by 20–50%**, modular projects reduce interest carry and generate earlier revenue, boosting internal rates of return.
 - **Higher Valuation Multiples:** Analysts note that modular companies often achieve higher EBITDA multiples due to scalable, factory driven business models and ESG credentials.
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SECTOR SPECIFIC OPPORTUNITIES

- **Multifamily & Workforce Housing:** Rapidly deployable units address urban shortages and support targeted PE strategies in affordable and market rate segments.
 - **Healthcare & Life Sciences:** Modular suites expedite the delivery of outpatient centers, testing labs and cleanrooms while meeting stringent regulatory standards.
 - **Logistics & Data Centers:** Standardized pods and cold storage modules shorten time to market, critical in e commerce and cloud computing. Modular warehouse expansion also supports supply chain resilience.
 - **Emergency Shelters & Community Infrastructure:** Prefabricated units for disaster relief and transitional housing provide rapid solutions for government contracts or philanthropic mandates.
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SYNERGY & VERTICAL INTEGRATION

Many PE firms already control parts of the modular supply chain, owning lumber mills, concrete producers or HVAC manufacturers. By integrating upstream suppliers with modular manufacturers and downstream installation teams, investors can capture margin across the value chain. Volume procurement and centralized logistics further enhance negotiating power.

3.3 Risks & Challenges with Mitigation Strategies

Despite its benefits, modular construction comes with distinct risks that investors must manage. Addressing these challenges early can protect margins and uphold schedules.

KEY RISKS

- **Design Lock In:** Modular requires design finality earlier in the process. Changes mid production can be costly or even impossible without restarting the manufacturing run.
- **Transport & Permitting:** Oversized modules need specialized transportation routes, permits and escorts. Unexpected detours or regulatory delays can disrupt critical paths.
- **Code & Regulation Variability:** Building codes differ by state and municipality; approval processes may be unfamiliar to local officials. Navigating inconsistent regulations adds complexity.
- **Perception & Market Acceptance:** Stakeholders may have misconceptions about quality or aesthetics, particularly for high end residential or commercial projects.
- **Capital Intensity & Utilization:** Factory construction demands significant up front capital. Underutilized facilities can erode returns if order volumes are inconsistent.

MITIGATION STRATEGIES

- **Early Collaboration & Design for Manufacture:** Engage architects, engineers, suppliers and factory teams at the outset to finalize designs and integrate productization principles. Digital twins and virtual reality can simulate assembly and identify conflicts before production.
- **Integrated Project Delivery (IPD):** Aligning general contractors, manufacturers and logistics providers under a single contract fosters accountability and smooth handoffs.
- **Robust Procurement & Supply Chain Planning:** Secure long term material contracts and diversify suppliers to hedge against volatility. Use market intelligence to anticipate cost changes and ensure schedule alignment.
- **Regulatory Engagement:** Work with code consultants and local authorities early, educating them on modular processes and tailoring designs to meet local requirements.
- **Partner with Experienced Operators:** Deploying seasoned supply chain partners, like Jabil, adds expertise in freight management, inventory planning and on site support, mitigating execution risk and protecting margins.

4 | Building Tomorrow's Portfolio's Today

The modular construction market has reached a pivotal moment, transitioning from niche innovation to a vital component of future-ready real estate and infrastructure investments. With accelerating demand across sectors and increasing pressure to deliver faster, more sustainable, and cost-effective projects, modular construction represents a unique opportunity for private equity investors to drive superior returns and operational efficiency.

Success, however, hinges on sophisticated supply chain integration, from upstream sourcing to downstream logistics and digital management. Partnering with an experienced operator such as Jabil Procurement and Supply Chain Services allows PE investors and their portfolio companies to unlock value through disciplined procurement, technology-driven logistics, and sustainable construction practices.



Ready to Capitalize on the Modular Revolution?

Explore how Jabil's supply chain expertise can help your firm navigate modular construction's complexities, manage risks, and accelerate value creation across your portfolio.