Contruent

Guide

2025 Top Megaprojects in Global Context: Insights, Trends and Technologies

There's been considerable megaproject activity around the world in the last 12 months. We recently highlighted the top five projects breaking ground in 2025 in each of three regions—the United States and Canada, Europe and Australia—and covered their sectors, costs and purpose.

But we didn't want to stop there.

Even though these builds are just getting underway, there's more to glean from these 15 projects than their basic details. Where are the heavy investments? What do these choices reveal about regional priorities? What risks may already be playing a role in how the projects are managed?

Those kinds of questions led us to create this Guide. It's intended to give construction leaders a strategic lens to frame three core themes in a useful way:

- Trends that consistently show up across the three 2025 megaproject lists
- Technology and innovation essential for delivery at this scale
- Actionable insights you can use to strengthen planning, controls and stakeholder alignment on your own major capital projects

Quick 2025 Megaprojects Snapshot

Before we dive in, here are snapshots of each of the megaprojects, listed alphabetically by region, so they can serve as context for what follows in the Guide. We encourage you to read about them in their respective blogs (linked via the region name below). (Note: The details provided reflect information available at the time the blogs were published. Given the dynamic nature of construction, project timelines and costs may evolve.)

US and Canada	Europe	Australia
1) Amtrak Susquehanna River Rail Bridge Replacement Location: Maryland, US Sector: Transportation Total Cost: $2.7B Anticipated Completion: 2036 **(2) Brightline West High-Speed Rail** Location: California – Nevada, US Sector: Transportation Total Cost: $12B Anticipated Completion: 2028 **(3) Peter Gilgan Mississauga Hospital and Shah Family Hospital for Women and Children** Location: Ontario, Canada Sector: Healthcare Total Cost: CAD $14B (~USD $10.1B) Anticipated Completion: Substantial completion 2033; fully operational 2034 **(4) TerraPower Natrium Demonstration Plant** Location: Kemmerer, Wyoming, US Sector: Energy Total Cost: $4B Anticipated Completion: 2030 **(5) Woodside Louisiana LNG** Location: Calcasieu Parish, Louisiana, US Sector: Energy Total Cost: $17.5B Anticipated Completion: 2029 for first trains	**(1) Eastern Green Link 1** Location: Scotland/North East England Sector: Energy Total Cost: £2.5 billion Anticipated Completion: 2029 **(2) Gate Burton Energy Park** Location: East Midlands, England Sector: Energy Total Cost: £269 million Anticipated Completion: 2028 **(3) Green Volt Offshore Wind Farm** Location: Scotland Sector: Energy Total Cost: £2.5 billion Anticipated Completion: 2029 **(4) Nuclear Waste Repository** Location: Forsmark, Sweden Sector: Energy & Sustainability Total Cost: 120 billion SEK Anticipated Completion: 2080 **(5) Peștera II Onshore Wind Farm** Location: Constanta, Romania Sector: Energy Total Cost: €500 million Anticipated Completion: TBD	**(1) Bruce Highway Upgrade** Location: Queensland, South Australia Sector: Transportation Total Cost: $9 billion AUD Anticipated Completion: 2032 **(2) Goschen Rare Earths and Mineral Sands Project** Location: Victoria, Southeastern Australia Sector: Mining Total Cost: $337 million AUD Anticipated Completion: 2026 (first production) **(3) Suburban Rail Loop (SRL)** Location: Melbourne, Victoria, Southeastern Australia Sector: Transportation Total Cost: $30–34 billion AUD Anticipated Completion: 2035 (SRL East) **(4) Summerfield Battery Energy Storage System** Location: Summerfield, South Australia Sector: Energy Total Cost: Undisclosed Anticipated Completion: 2027 **(5) The Torrens to Darlington (T2D) Project** Location: Adelaide, South Australia Sector: Transportation Total Cost: $15.4 billion AUD Anticipated Completion: 2031

Key Trends Emerging Across 2025 Megaprojects

What emerges when these new megaprojects are viewed collectively rather than in isolation. We found several notable trends, ranging from sector concentration and sustainability priorities to evolving funding models and the economic and societal outcomes they're designed to support.

Sector Concentration. When you step back from the individual projects and look across regions, a clear pattern emerges: energy and transportation dominate new megaproject starts. Together, they accounted for the majority of large-scale capital now moving from planning into delivery.

Energy leads the way, driven by a mix of long-term demand growth, decarbonization commitments and energy-security priorities. What stands out about the current set of energy megaprojects is its range. Investment isn't flowing into a single solution; it spans renewables, nuclear, transmission upgrades and large-scale storage, sometimes within the same regional projects. In many cases, these initiatives are designed not only to add capacity, but to stabilize and modernize energy systems while reducing exposure to supply volatility, geopolitical uncertainty and reliance on imported fuels.

Transportation follows closely behind. Major rail corridors, commuter expansions and large bridge and highway replacements are being positioned as long-term answers to the challenges posed by congestion, capacity limits and regional growth. These projects do more than move people and goods more efficiently. They represent a conscious effort to improve access to transit options that strengthen connections between population centers and economic hubs.

Taken together, these two sectors are absorbing the largest share of megaproject investment. But it goes far beyond scale. The decisions made here have broad implications for local and regional economic performance and climate outcomes far into the future.

Sustainability and Green Initiatives. Sustainability is showing up everywhere in the 2025 megaproject slate as an expectation, not as a differentiator. It's become part of planning, permitting and financing. And it's influencing everything from public support to the level of private capital a project can attract.

Many energy and transportation projects are tied to CO_2 reduction targets or energy-security goals, whether that's high-speed rail aimed at shifting travelers out of cars or new wind, solar and nuclear assets replacing fossil fuel-burning methods. While these priorities are most visible in those two sectors, similar sustainability pressures are influencing healthcare and mining projects through stricter permitting requirements, emissions reporting expectations and long-term operational efficiency considerations.

How sustainability shows up in practice depends heavily on where and how a project is being built. On greenfield projects with little to no existing infrastructure to work around, teams can combine low-carbon materials with more energy-efficient construction methods. In dense urban environments, projects like subway extensions, commuter rail upgrades and major highway reconstructions are incorporating electrification, renewable integration and mode-shift strategies to reduce long-term emissions.

Economic and Societal Drivers. Across all three regions reflected in this Guide, megaproject activity is responding to a consistent set of demographic and economic drivers.

Population and urban growth are obvious drivers in Australia and parts of the U.S. Rapidly expanding metropolitan regions are putting pressure on transportation networks, utilities and public services, accelerating investment in mass transit, major highway upgrades and energy infrastructure to support larger, more mobile populations. This mirrors broader global infrastructure patterns, where fast-growing urban centers require sustained capacity expansion and modernization to maintain economic productivity and quality of life.

Outdated infrastructure is another force shaping the megaproject landscape, particularly in North America and Europe. Decades-old bridges, rail systems and power grids are nearing or exceeding their lifespans. Deferring modernization is no longer economically viable, with risks that range from safety liability to constrained industrial productivity and long-term regional competitiveness.

Global infrastructure needs are accelerating. More than $100 trillion in investment will be required by 2040, with transportation and energy leading the way as regions modernize aging assets and support future growth.

Among these drivers, energy demand stands out as one of the strongest forces behind the current project pipeline. The electrification of transport, expansion of digital infrastructure and emphasis on long-term cost stability and reliability are placing strain on aging power systems and transmission networks. At the same time, geopolitical uncertainty and recurring supply disruptions have elevated energy security from a policy objective to an economic imperative. This is spurring investment in domestic generation, transmission and storage capacity to support future demand.

Similar pressures are shaping transportation megaprojects. Rapid urban development, freight volume and worsening congestion are uncovering the limits of existing networks. Meanwhile, concerns around durability and public safety add urgency to replacement and expansion projects. These projects are designed not only to improve efficiency but to accommodate shifting travel patterns and connectivity needs in already-dense and growing regions.

Global research backs all this up. A 2025 McKinsey report estimates that more than $100 trillion in infrastructure investment worldwide will be needed through 2040 to replace aging assets, support urban growth and enable the energy transition. Transportation and energy represent the largest shares at 34% and 22%, respectively.

Funding and Investment Patterns. While hybrid funding models appear across all three regions, the way megaprojects are financed—and where financial risk ultimately resides—varies significantly by geography. What's consistent is the combination of public capital,

private investment and long-term policy or revenue support, rather than a reliance on single-source funding.

In the U.S., legislation such as the Infrastructure Investment and Jobs Act (IIJA) has become a key funding backbone for major rail, transit and bridge programs, while the CHIPS and Science Act and federal energy incentives are influencing investment in advanced manufacturing and low-carbon energy. Public dollars often get projects started, but private capital increasingly follows, especially in energy, transmission and privately led rail systems. The benefit is scale and speed. The cost is complexity: overlapping funding sources introduce tighter oversight, heavier reporting and more rigid compliance requirements, which directly affect how projects are planned and governed.

Across Europe, funding is increasingly focused on long-term policy alignment. Energy megaprojects are typically developed within national and EU-aligned frameworks tied to decarbonization, grid resilience and energy security. Most of the money comes from private developers and institutional investors. Governments influence how that money flows by creating the regulatory and policy conditions that reduce risk and support long-term returns. The result is a highly structured funding environment that improves predictability while placing greater pressure on early approvals, coordination across jurisdictions and disciplined execution from the start.

Australia presents a different split. Transportation megaprojects are primarily funded by state governments, reflecting strong public expectations around mobility, safety and growth. The financial risk sits with the public sector, while contractors manage delivery risk. Energy storage, renewables and mining developments, by contrast, lean more heavily on private capital, often supported by national energy-transition initiatives and targeted state incentives. The funding model varies by sector, creating very different governance and control requirements across the portfolio.

With hybrid funding being the norm across all three regions, how that blend is structured affects approvals, stakeholder confidence and how projects control cost, schedule and risk from day one.

Construction Technology & Innovation That Enable Megaprojects

There's more capital available, but it comes with many more strings attached. There's closer scrutiny over projects. And there's less tolerance for surprises. To maintain control and ensure a successful megaproject, it can help to prioritize practical technologies that map to specific outcomes:

Outcome: Credible, auditable progress tied to budget impact; supports change management and funder reporting

Technologies: Integrated cost & schedule platform + EVM

Large transportation, energy and other civic projects live under constant scrutiny from public funders, private investors and oversight bodies that need proof of

progress. On projects with phased delivery, enabling works and long construction horizons, any schedule movement without cost context (or cost movement without schedule context) creates risk fast.

An integrated cost and schedule platform closes that gap. Earned value management (EVM) ties physical progress directly to budget impact. EVM shows what's been achieved, what it costs and what it means for the forecast. That connection is critical when scope changes, staged funding is released or approvals hinge on sound performance data.

Outcome: Aligned decision-making across owners, funders, regulators and community stakeholders

Technologies: Real-time dashboards + stakeholder-specific reporting

Each stakeholder group needs something different from the data. Owners focus on outcomes. Funders monitor risk exposure. Regulators watch compliance. Community stakeholders want transparency.

Real-time dashboards present the same fundamental information, but through different lenses. Executives see trend lines and exposure. Delivery teams see production and constraints. External stakeholders receive clear, consistent reporting tied to metrics. Think of how essential this is for publicly visible projects—such as urban transit, grid infrastructure and healthcare facilities—where trust depends on clarity and consistency.

Outcome: Earlier warnings on cost escalation, supply chain bottlenecks and schedule slippage

Technologies: Predictive analytics + what-if scenario modeling

Long-lead equipment, specialized materials and tightly sequenced construction packages mean a slight delay today can become a major overrun further down the road.

Predictive analytics surfaces those risks earlier by analyzing patterns across cost, schedule, procurement and production data. Scenario modeling then lets teams test responses before committing to them. So they can explore questions like: What if enabling works take longer than expected? What if a funding milestone is delayed? What if inflation assumptions shift mid-project? On complex energy, transit and industrial projects, the ability to model consequences early supports proactive decisions instead of reactive course corrections.

Outcome: Better progress tracking, timely cost capture, reduced rework

Technologies: Mobile data capture / cloud collaboration

On megaprojects with distributed sites, early works packages and multiple contractors operating in parallel, delays often start in the field and then show up weeks later in reports.

Mobile data capture closes that lag. Site teams can report quantities installed, log issues and capture costs directly from the field, feeding project controls in near real time.

Contruent

Cloud collaboration platforms extend this visibility across regions and phases. They keep permits, contracts, drawings and change documentation aligned as the project evolves. On large builds where enabling works transition into main construction, and where design updates continue well into execution, shared systems prevent version confusion that can lead to rework and claims.

Outcome: Measurable sustainability performance, regulatory compliance and lifecycle decision support

Technologies: Carbon tracking + emissions monitoring

Carbon tracking tools measure environmental performance against federal, state and international sustainability requirements, giving teams a clear line of sight into how a project is performing against near-term emissions targets.

That visibility supports real project decisions. Emissions data can influence design options, material selection, procurement timing and construction sequencing—not just end-of-project reporting. Because much of a project's carbon impact is set early, these tools help teams make informed choices on materials and construction methods. Those changes still have a meaningful effect on construction emissions and long-term operational performance.

Outcome: Clash detection, sequencing, O&M planning and transfer to operations

Technologies: BIM/digital twin for complex assets

For complex megaprojects—such as tunnels, hospital campuses and energy facilities—traditional drawings and disconnected models aren't enough. These assets involve critical systems packed into defined spaces with very little room for deviation and dozens of interdependent trades working in parallel, often in constrained sites or live environments. BIM enables teams to visualize those systems together, identify clashes early and test construction sequencing before work reaches the field, reducing rework and schedule risk.

Digital twins extend that value. They carry design, asset and performance data forward, supporting commissioning, maintenance forecasting and long-term operations. For owners of long-life infrastructure, that continuity matters. It shortens handover and helps ensure the asset performs as intended far into the future.

Outcome: Faster procurement cycles, clearer claims management and better supplier performance tracking

Technologies: Procurement and contract management automation

Megaprojects in energy, transportation, healthcare and mining depend on large supplier networks and equipment that take time to source. Contracting structures change as projects move from planning into delivery. Procurement activity ramps up early and continues for years. When that volume is managed across disconnected tools, tracking commitments as they evolve becomes difficult. Those gaps tend to surface later as schedule pressure or unplanned cost exposure. Megaprojects can't risk that.

Procurement and contract management automation

Digital platforms give megaproject teams real-time visibility, reducing rework, improving sustainability decisions and surfacing risk early—when it can still be managed.

Contruent

centralizes procurement activity. Teams can see what has been procured, what is pending and where approvals or changes are sitting. Contract values and changes are recorded as they occur, not reconstructed later. When sequences shift or market conditions change, project leaders can see the impact quickly. On megaprojects where procurement timelines affect funding releases and construction progress, that visibility helps prevent avoidable delays.

Mitigating Megaproject Risks. On capital-intensive projects, mitigation depends less on reacting well and more on seeing risk early enough to effectively manage or prevent it.

Funding and policy volatility remain among the hardest risks to mitigate, particularly for megaprojects that span election cycles or rely on blended funding. Changes in policy direction or funding conditions can impact assumptions mid-project. Accounting for this means testing how plans hold up under changing funding conditions and keeping decision-makers aligned as conditions evolve.

Permitting and community exposure affect delivery outcomes. This is especially so for rail, power transmission and highway projects that cross jurisdictions or affect surrounding communities. Alleviating this risk requires sustained visibility into commitments, approvals and mitigation measures over time. Engagement and compliance efforts must be ongoing, so teams are better positioned to maintain trust and avoid compounding delays.

Supply chain risk remains a critical constraint. Procuring specialized equipment produced by a limited number of manufacturers, often sourced overseas, can result in long lead times, production bottlenecks and shipping uncertainty that affect schedules well before construction is in full swing. Controlling this risk depends on early procurement planning, continuous lead time tracking and the ability to adjust sequencing before delays develop into schedule impacts that are difficult to undo.

Physical and technical complexity presents another layer of risk, particularly in dense urban construction, subsurface work and facilities with complex physical systems such as plants, hospitals and transit hubs. These megaprojects operate with very little room for deviation. That means tight coordination across disciplines and clear visibility into dependencies is needed so conflicts can be addressed before they surface in the field.

Finally, sustainability and regulatory exposure now carry direct consequences for project delivery and financing. If a project doesn't meet environmental expectations, it can struggle to get approved, may be forced to change the order of work and may have trouble maintaining funding. Managing this risk requires continuous oversight of emissions and compliance throughout delivery to enable adjustments.

Taken together, these risks explain why mitigation on modern megaprojects requires continuous control. The same systems that support cost, schedule and sustainability outcomes also serve as the primary line of defense against risks: by making those risks visible early on, decisions defensible and course corrections possible before consequences escalate.

Actionable Insights

What can be gleaned from the 2025 megaprojects across the U.S., Canada, Europe and Australia?

They reveal more than sector priorities and investment patterns. They also surface a set of practical lessons that construction leaders can apply immediately when planning or delivering major capital programs. These insights reflect how today's largest projects are being structured to survive volatility, complexity and public scrutiny at scale.

1. **Elevate procurement to a primary risk driver.** Procurement is increasingly regarded as a critical path driver. Major energy and transit projects,

from LNG facilities to high-speed rail, rely on specialized equipment like turbines and tunneling machines with global lead times that can be measured in years, not months, when you factor in customization, manufacturing, shipping and assembly.

The Action: Integrate long-lead procurement into the earliest stages of cost modeling.

Why it matters: By incorporating these timelines into the project from day one, you avoid the cascading delays that occur when a site is ready for a component that is still six months away from shipping.

2. **Treat enabling works as a separate project before the project.** Enabling works often begin years before the main build and carry disproportionate risk. Grouping site preparation, utility relocation and environmental remediation into the overall project budget can lead to perceived overruns.

   The Action: Set up standalone budgets, schedules and processes for enabling works.

   Why it matters: Tracking these independently prevents early slippage from being obscured in the larger budget. It provides a clean baseline for the main construction phase and ensures the main project doesn't inherit a hidden time or cost deficit

3. **Move from stakeholder management to sustained alignment.** Whether it is an offshore wind zone in Europe or a massive transit expansion in Australia, megaprojects live and die by public and regulatory acceptance. Engagement with regulators, funders and affected communities cannot be a one-and-done approval effort.

   The Action: Design role-specific dashboards that provide transparent, real-time reporting to stakeholder groups.

   Why it matters: When stakeholders feel they have a window into the project's progress and challenges, trust is maintained. This can prevent political or

community pushback that would otherwise halt a project that is already billions of dollars into its lifecycle.

4. **Transition to scenario-based forecasting.** Project teams are using what-if modeling as a regular exercise to test the impact of cost escalation, labor shortages and extreme weather events.

   The Action: Use digital twins and analytics to simulate disruptions before they occur.

   Why it matters: Megaprojects are too large to pivot quickly. Scenario-based forecasting allows you to build strategic buffers into your contingency planning, ensuring that if a regulatory change or a supply chain bottleneck occurs, the team already has a pre-vetted response plan ready to deploy.

Contruent

5. **Embed sustainability into project controls.** Sustainability is a core performance metric. From carbon-intensive mining operations to massive grid upgrades, environmental expectations are now shaping design, sequencing and funding.

   The Action: Integrate carbon tracking and environmental compliance directly into your project controls framework.

   Why it matters: By monitoring sustainability as closely as budget and schedule, you ensure that green targets are actually met. Comparing embodied-carbon emissions during value engineering allows you to optimize for both cost and climate.

Looking Ahead: Takeaways for Leaders

The 2025 megaproject landscape offers more than a snapshot of capital intensity and sector focus; it provides insight into how complexity, regional priorities and public scrutiny are shaping modern construction. Even without knowing day-to-day execution, a few key takeaways emerge:

- Complexity is the new normal. Megaprojects require constant coordination across funding sources, regulatory frameworks, multiple stakeholder groups and highly interdependent construction activities. Anticipating these layers early positions projects for smoother delivery.
- Investment reflects priorities. The blend of public and private capital reveals what regions value most—whether it's energy security, sustainable infrastructure or improved transportation networks. Understanding these drivers helps leaders align project goals with broader policy and market expectations.
- Proactive risk management matters. Supply chain volatility, permitting hurdles and policy shifts are here to stay. Projects that identify and plan for these kinds of risks early can reduce delays and protect budgets.

- Sustainability and societal impact are embedded. Environmental and community considerations are core project objectives. Integrating these priorities throughout planning and delivery strengthens credibility, improves funding prospects and supports long-term performance.

Successful megaproject leadership depends on embracing these principles to better position their projects to meet cost, schedule and stakeholder expectations while delivering meaningful long-term value.

ARES PRISM Becomes Contruent

In 2023, ARES PRISM was reborn as Contruent, launching a new name with an industry-leading new product, Contruent Enterprise. Contruent Enterprise is a culmination of our award-winning project controls software, full of industry best practices built in, with the innovation and world-class capabilities of a capital project management software.

Building on its 25-year history, Contruent is the premier capital project management software that is faster to deliver across the entire project lifecycle for complex, mega-construction projects.

Contruent
55 Shuman Blvd. Suite 200
Naperville, IL 60563
+1 630-318-0444

www.contruent.com

Contruent