



LESSONS FROM HIGH-PERFORMING CAPITAL PROJECTS AMID COVID-19

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AS THE COVID-19 CRISIS continues around the globe, capital projects in asset-intensive industries are struggling to deflect its impacts. Mining, infrastructure, power, oil and gas, and renewable energy companies have seen their productivity plummet as delays and cancellations skyrocket. The Gulf Cooperation Council countries alone have seen more than 500 projects cancelled, which combined represent \$70 billion in lost value.

Yet a small number of projects have performed well during this difficult period, and a select few have been very successful, with productivity increases of up to 200%. The teams running these projects are unusually adaptive and display several distinct capabilities.

Other teams that develop these capabilities will not only be better equipped to navigate the current crisis—they'll also be ready when the next one arrives.

The Impact of COVID-19

In June and July, BCG and Oxford Global

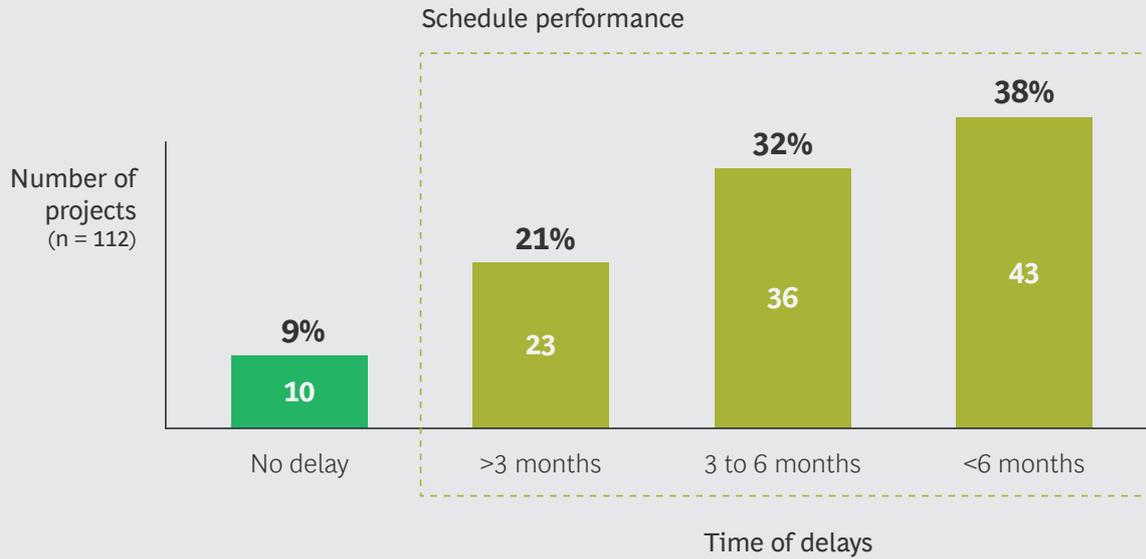
Projects conducted a global survey and held interviews with capital project executives from the energy industry to find out how the crisis has affected their projects. (See “About Our Research.”)

The toll has been huge. At the time of our survey, approximately 16% of projects had been halted across industries; 90% had suffered schedule delays. (See Exhibit 1.) The oil and gas sector experienced the greatest share of cancellations, 21%, because of the immediate effects of the pandemic and the oil surplus.

With the exception of oil and gas, industry didn't play a major factor in project performance, though infrastructure and large-scale renewable energy companies experienced a greater share of top-performing projects, 21% and 18%, respectively. All sectors had players that did well and those that did poorly. (See Exhibit 2.)

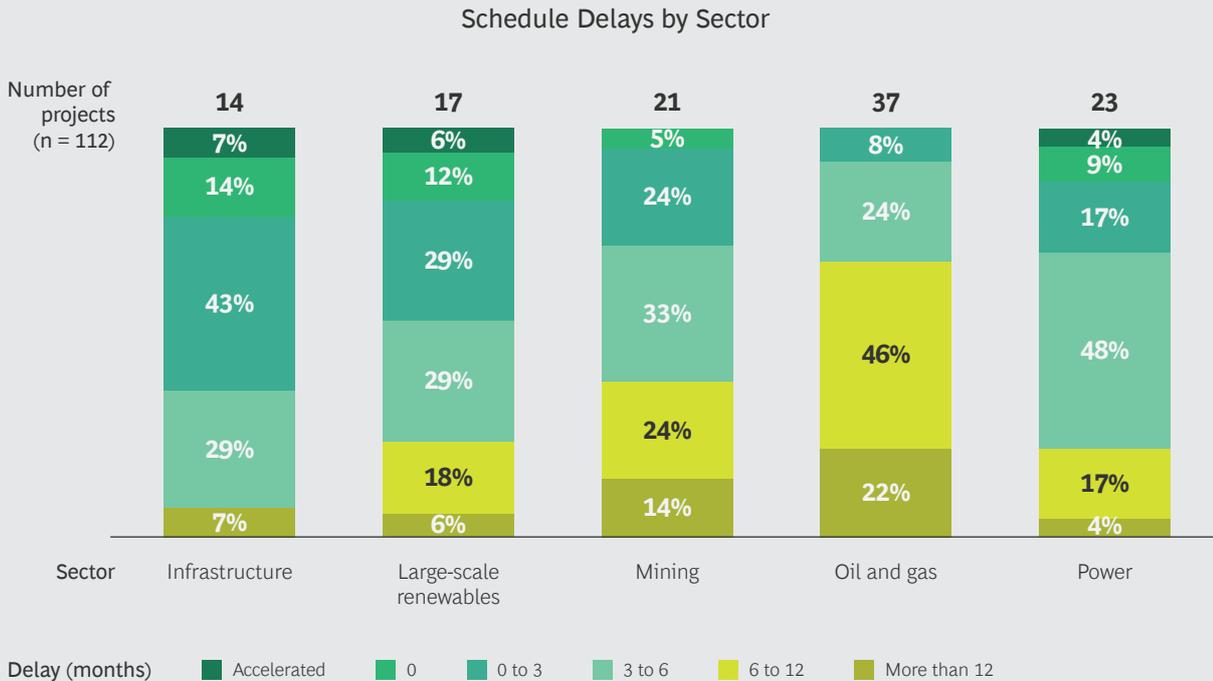
Nearly two-thirds of respondents said that manpower issues were the key reason for delays, while more than half said disruptions in the supply chain were responsible.

EXHIBIT 1 | Approximately 90% of Capital Projects Across Multiple Sectors Have Been Delayed During the Crisis



Source: BCG and Oxford Global Projects survey, June to July 2020.
Note: Delays are actual or forecasted. Projects with no delays may have been finished ahead of schedule. Sectors surveyed include oil and gas, power, infrastructure, large-scale renewables, and mining. n = number of survey respondents.

EXHIBIT 2 | Capital-Intensive Sectors Have Experienced Project Delays Across the Board



Source: BCG and Oxford Global Projects survey, June to July 2020.
Note: Delays are actual or forecasted. Because of rounding, not all totals sum to 100. n = number of survey respondents.

ABOUT OUR RESEARCH

From June to July 2020, BCG and Oxford Global Projects conducted a global survey of organizations with large capital project portfolios. We surveyed 112 capital project managers from multiple sectors. One-third of the participants came from the oil and gas sector, one-fifth from power, and the rest from renewables, mining, and infrastructure. We also conducted in-depth interviews with 40 project executives from these industries.

Approximately three-fourths of participants hailed from the Americas, Asia-Pacific, and Europe; nearly one-fifth were based in Africa and the rest in the Middle East. Half of the respondents were capital project owners, and the other half consisted of service providers (38%) and engineering and consulting companies (12%).

By and large, only oil and gas respondents cited the market as a culprit.

LOSING SIX MONTHS IN THREE

Since delays can serve as a proxy for lost productivity, we used them to measure the performance of project teams. Delays have lasted from a couple of weeks to several months. Notably, our interviews with project management executives indicated that 70% of projects suffered delays of more than three months; more than half of these delays were forecasted to last over six months.

Clearly, COVID-19 has proven especially challenging for most capital projects, but the timeline is curious. At least 38% of projects were expected to be delayed by six months or more (in oil and gas, that number rose to 68%), and at the time of this discovery, the pandemic had been around for only three or four months.

What happened?

When the crisis hit, companies demobilized projects, and remobilization isn't a simple matter of resuming activities. In the wake of the pandemic, remobilization has led to further delays because of the difficulty involved in amassing enough workers and the need for rework. Consequently, projects that normally would have taken three months are expected to take as long as six months—and in some cases, even more time.

Learning from High Performers

Despite delays, 9% of projects overcame the odds and were able to meet deadlines. A few finished ahead of schedule. Why were these projects successful?

The crisis changed the way people typically approached problems. Since it seemed like things couldn't get any worse, everything became worth trying. Barriers were dismantled internally and externally as people united behind the imperative to keep people safe. Freed from old constraints, and facing a baseline of zero, teams felt like they were able to test new ideas without fear of failure. And players collaborated within their ecosystems—instead of focusing on their own interests—to ensure that projects survived.

Amid this context, our analysis found a strong correlation between project success and the presence of five dynamic capabilities. Companies should develop these five capabilities in phases, focusing initially on the first three, and once these have been established, on building the last two.

Use adaptive problem solving for better decision making. Teams that solve problems collectively and share accountability for the outcomes are better at meeting deadlines than those teams that rely on individuals to make decisions. An approach that leverages the skills and resources of many people is likely to generate a greater number of good solutions. When deployed

in larger ecosystem collaborations, adaptive problem solving—carried out by multiple parties working toward the same goal—helps prevent adversarial relationships from getting in the way.

When an oil project in Southeast Asia faced significant delays, stakeholders from the entire ecosystem—including government actors, major oil companies, and contractors—worked together to address the problem. They adopted a policy that provided more-favorable payment terms to boost liquidity and special permits to ensure that critical workers could access production sites. The shift from individual to shared accountability allowed crews to keep working effectively.

To encourage teams to take a collaborative approach to problem solving, it's critical to distribute decision making among middle managers and eliminate extraneous roles and reporting layers. It's also important to streamline the performance management system. Instead of focusing on many KPIs that measure the performance of individuals, companies should rely on a few indicators that measure the progress of initiatives—and reward people who work collaboratively.

Test and trial to find a solution faster.

Project teams with a strong test-and-trial capability are able to quickly test a new process or technology in a low-risk environment. Teams that try new solutions in addition to proven ones outperform less innovative teams.

Take, for example, an engineering, procurement, and construction (EPC) company that had to continually send workers to offshore locations. What was a logistical challenge in the best of times became nearly impossible during the pandemic. To address the problem, the company fast-tracked an app already in the pipeline, which was developed to notify people in real time of schedule changes, hotel room availability, and other relevant travel conditions. The development team tested, trialed, and rolled out a version of the app in just two months instead of a year (the

initially expected timeframe). The app dramatically increased the productivity of the support staff and ensured that sites continued to run smoothly, despite the increased complexity and volume of work.

To build a strong test-and-trial capability, companies should develop and prioritize a few essential processes or technologies. They should also identify lower-risk environments for piloting—such as smaller sites, simpler regulatory environments, and digital twins—and commit the required resources.

Balance tradeoffs to manage volatility.

Balancing tradeoffs is the ability to determine the blend of standard and innovative processes that will produce the fastest schedule at the lowest cost. Companies that have this capability are better able to manage the volatility that occurs in project flows when there are delays and excess wait times between handoffs. This variability is a key cause of capital project overruns.

An oilfield services company in the North Sea rolled out a digital app to plan and track onsite work. Workers received instructions directly through this app, which can also log the duration of tasks effortlessly. At the end of each shift, the company was able to compare the performance of teams in the field to identify variability in the time it took to complete these standard tasks. During debriefing sessions, teams discovered the reasons for the variability and were able to establish best practices. The approach helped improve the productivity of some projects by as much as 200%.

The right digital project-management systems and tools will help ensure that accurate information is obtained in real time, completion is tracked rather than estimated, and variability is understood across projects. Once things are stable, firms should start building the foundation needed to test and trial, balance tradeoffs, and solve problems adaptively. These capabilities will help improve the performance of existing projects. Firms should adopt agile ways of working and reward teams for new

ideas. Furthermore, they should shift to alliance contracting, which will help incentivize the cooperation needed for adaptive problem solving.

Search beyond the project to identify better solutions. Many large capital projects are inherently biased because they rely on internal risk assessments and benchmarks. This is especially true for capital-intensive industries, where poor performance has been the baseline. Searching beyond the walls of the project will help create an outside view needed for better risk mitigation.

In the early months of the pandemic, an oil and gas contractor adopted a remote-tracking solution used by mining companies to better manage its mobile fleet. The company modified the software so it could alert employees who weren't social distancing and trace those who were infected.

To acquire an outside view, companies need to expand benchmarking to include the best practices of competitors and other industries. Teams must become proficient in sophisticated risk assessment techniques that will force them to search for the impact of unknowns instead of relying solely on experience. These include reference class forecasting, which entails predicting the future by looking at similar past situations and their outcomes, and conducting project premortems, or imagining that the project has failed so that problems can be identified before they arise.

Set up a strategic innovation function to build a robust pipeline of ideas. According to our research, the top-performing companies have an innovation engine and are always ready to bring new ideas to life. These firms also have a strong test-and-trial capability, and that's no coincidence. When a crisis occurs, there's little time for ideation. Companies with good ideas on hand can deploy them immediately.

Consider a major European real estate developer known for building ultracomfortable workplaces with the newest technolo-

gies, including sensors for regulating room temperature and lighting. When the pandemic hit, the company pivoted quickly, repurposing its sensors to make workspaces safer and healthier. In addition to monitoring air quality and cleanliness, the sensors can evaluate where people are located to promote social distancing.

Firms should start creating a formal system for strategic innovation to develop the technologies that are essential for improving project performance. This effort does not necessarily require a fundamental reorganization, but it does require allocating resources and budget to meet short- and long-term innovation goals. The logical step in an innovation journey is to adopt the same approach that many digital companies take with formal short innovation sprints, or "hacks," to unlock new ideas with design thinking.

First Steps Forward

Before taking any steps to develop these capabilities for their large capital projects, companies must first ensure there is enough cash to survive. This means assessing the current portfolio—with rigor and scrutiny well above the typical annual review process—to identify and cancel those projects for which the business case is no longer viable.

Firms can then set up the tools and technologies that will allow them to test different scenarios and update assumptions in real time. They must also implement the right templates and governance systems to ensure that the data in the underlying business cases is accurate, consistent, and up to date. No less important, teams need to go through training to mitigate any biases that drove initial underperforming solutions.

While the COVID-19 crisis continues to raise new questions, one thing seems clear. Large capital project teams that start building dynamic capabilities now will be better prepared to deal with the current crisis.

They'll also be ready for the future.

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