Foresight

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Rising above: Increasing due diligence to reduce cost variances in infrastructure megaprojects

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Every year billions of dollars of infrastructure investment are being siphoned out of public and private budgets to cover unexplained cost overruns. As an industry, we have become too comfortable with this reality. Far too often, projects are approved for execution without enough due diligence to ensure that cost and schedule estimates are realistic, and that commercial risks are being identified and managed through the project.

Not a surprise at all

Infrastructure newsfeeds are filled with stories of projects that have gone over budget; it's rarely a question of 'if' costs will overrun, but rather a question of 'by how much'.

According to Bent Flyvbjerg (the Danish megaproject guru), the problem is widespread and universal. He studied 258 major transportation projects in 2002 and found that 9 out of every 10 went over their estimated budget. For rail projects, actual costs exploded by an average of 45 percent. Across the sample, he found that project owners were paying an average of 28 percent more than their original estimate, just to get their project operational.[1] What's more, Mr. Flyvbjerg's analysis showed that overruns had remained high and constant throughout the 70 years of transportation project history that he analyzed.

However, infrastructure projects have grown exponentially in size and complexity over the past decade. Today, so-called megaprojects (project portfolios or programs) are the norm. In fact, an upcoming report by KPMG in Canada indicates that the country's annual capex is forecasted to increase from US$149 billion in 2015 to US$316 billion in 2026 with 1,446 infrastructure projects commencing or reaching completion during that period.

Given the financial and social scope of these projects, it is not surprising that scrutiny is mounting. Where public funds are involved, project owners (municipal, regional or national) are under intense public pressure to stem any loss of taxpayer money. And few private sector investors are willing to see their capital wasted (and ROI diluted) by issues that could have been avoided.

The root causes

What we've learned from our experience is that most cost overruns are a direct result of overly-optimistic budget estimates at the front-end, combined with billing errors and low construction productivity and performance at the back-end.

In some cases, the optimism at the front-end is simply the result of a series of bad assumptions and aggressive 'paper' value engineering programs that beguile developers into believing that budgets can actually be met and margins achieved. These types of top-down executive mandates to reduce costs on paper are a common way to push projects through the approval funnel. But this often means that owners are not questioning the process and governance that is being applied in preparing cost estimates.

In other cases, contractors and developers are purposefully 'lowballing' their estimates in order to win the work, knowing that — to a point — owners will always prefer to invest more capital than to stop work on a project.

Of course, it's not just about the estimate; it's also about the leadership. And with a surge of megaprojects in the

[1] Flyvbjerg, Holm and Buhl, *Underestimating Costs in Public Works Projects: Error or Lie?* 2002

market, many contractors and engineering firms are now finding themselves resource constrained. In some cases, leaders with little practical experience with megaprojects are being assigned and this can have a significant impact on project performance and productivity.

Often, the challenge comes down to skills. Engineers with an operations background are often placed in a design/build environment and tasked with managing construction contracts. But operations and construction are different and often require vastly different and unique business and management skills which are not easily transferable.

A host of other factors can also contribute to cost overruns: poor project controls, poor workface management, ineffective supply chain management and delayed decisions all eventually lead to cost overruns through the construction stage.

Increase due diligence and prepare for the worst

Our experience reviewing and auditing infrastructure megaprojects suggests the vast majority of cost overruns can be prevented and avoided. And those that could not have avoided overruns probably should have been postponed until their estimates were more realistic.

We believe that project owners need to start by increasing their scrutiny of the project business plans in order to increase the level of confidence within their corporate boards and management teams. This will likely involve adopting robust stage-gate processes to define the project scope, cost and schedule estimates.

At each gate, project owners should engage an independent third party (someone with no interest in designing, building or financing that particular project) to conduct a review of the governance and processes that support the project estimates.

The reports coming out of independent reviews should help owners to not only identify any emerging issues, but also to promote more open and transparent communication between project stakeholders. In most cases these reviews are also a tool to identify opportunities for improvements in the schedule, estimate, contracts and procurement policies which, in turn, allow for more robust ongoing cost audits and scrutiny of contractors through project execution.

While everyone hopes to achieve their goals and performance expectations, owners should also be preparing for potential challenges. Our experience suggests that many cost overruns that occur on construction projects can be recovered if the costs were due to mistakes made by the project management firms and vendors (such as contractor overbilling, mismanagement of project controls or product defects and quality issues).

If these errors and recoveries can be identified early, they can also be negotiated and settled early, thereby avoiding costly claims and disputes. That is why some owners are now starting to embed independent cost audits and contract performance reviews into their assurance models. Our recent work indicates that recoveries can average between 10 to 15 percent of overall project costs.

Thinking critically and proactively

If cost overruns are rising and we know most are avoidable or recoverable, why are owners not doing more to stop them? The fact is that the vast majority of owners only start to think critically about mitigating and recovering cost overruns after their projects have been approved, their budgets have spiraled out of control and shareholders have revolted. In such cases, overpayments may have been made, and contracts may have been signed, leaving little room for maneuvering and getting money back from vendors.

Only a handful of owners actually spend the time and effort to take a more proactive approach in the planning stage to conduct sufficient due diligence. Few are willing to actually delay project commencement until adequate resources are in place and until the level of confidence in cost and schedule estimates is at least a Class 2 (AACE Guidelines).

Our experience suggests that investments into a proactive independent review approach can deliver massive results. Most projects that take this approach go on to meet their budgeted targets. And those that do not meet the necessary ROI thresholds in the planning stages are often prudently deferred or delayed.

Those that take a more proactive approach are also better prepared to address cost overruns that are a result of mismanagement of the invoicing process, or low contractor productivity. Through independent project reviews, they are often able to re-negotiate contractor invoices and discuss overruns that are associated to low contract performance. Many of our clients recoup or avoid costs that average 20 times their upfront investment and a growing number of owners see this proactive approach as a high-return insurance policy.

Corporate boards and executives must act as better stewards of their stakeholders' investments. And to do that, they must start taking a more proactive approach to avoiding and mitigating cost overruns in the first place. And that means increased scrutiny through the planning and construction stages of a capital project.

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