

# *Successful capital projects*

## The integrated risk framework

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*Capital investment projects are more closely scrutinized today than ever before. To rein in costs and chart a path to success, companies must employ sound methodologies that guide decision making from project start to finish.*

From building a viable business case, to securing financing in the tightest credit market in generations, to meeting aggressive development schedules that adhere to rigid budget limitations, organizations embarking on complex capital programs face daunting challenges. To overcome those challenges, it is more important than ever for project owners to establish a rigorous governance framework that guides effective decision making and lays the groundwork for achieving project success.

While organizations are often skilled in enterprise risk management and other processes that focus on their core business, the tools used to guide a bottom-line-focused enterprise do not easily transfer to managing deadline-driven, technically complex capital programs. In our experience advising on the planning and execution of capital projects across multiple industries, project owners who implement robust governance practices that are specifically designed to meet the demands of the capital project delivery process are the ones most likely to achieve their cost, schedule, and performance quality goals.

So what is governance in the context of a capital project? At its most fundamental, capital project governance is the collective business framework used to plan and deliver all commercial and technical aspects of the capital project. It involves creating an efficient project organization with clear lines of responsibility and defined roles; developing policies and procedures to guide consistent performance across the organization; implementing systems for collecting project execution data and reporting key performance indicators; and deploying mechanisms that identify and mitigate performance risk.

## ***Adopting a governance approach that drives high-performance capital projects***

Whatever the size of your company, if the success of capital projects matters, project governance matters. And even if the primary responsibility for project delivery is delegated to a third party, management should maintain visibility into and control over all elements of performance. Project sponsors and managers should periodically and independently confirm the real progress and health of the project.

Although some capital project owners are beginning to place greater focus on improving governance structures, there are still many projects that fail to deliver on cost, schedule, or quality commitments due to inadequate controls.

Some of the primary contributors to capital project challenges include:

- Unclear project definition.
- Absence of transparency into all phases of project delivery resulting from an inefficient or poorly-conceived governance and control structure.
- Lack of internal accountability resulting from a poorly-defined organizational structure, including professionals with inappropriate skill sets.
- Inappropriate or poorly-defined contracting and project delivery strategies.
- Absence of a robust approach to communication and reporting.

In a tight credit environment, the stakes are higher than ever, and project owners are under increasing pressure to manage their projects to a successful completion. For internal and external stakeholders, it boils down to putting the framework in place to support predictable and consistent project execution.

So how can companies improve governance? Paying closer attention to the five key characteristics of successful capital projects is a good first step.

### ***Project definition***

When a project owner has a good execution track record or is under external pressure to bring a new facility online, it's tempting to start work before the project is fully defined. Poorly defined projects almost always result in a suboptimal end product, regardless of how well the project is executed.

Upfront investment in defining the technical components and commercial objectives of the project is an important factor in its successful delivery.

## ***Hidden risks: Corruption pressure points***

Transparency International, the global anticorruption nongovernmental organization, consistently reports that the \$3 trillion global construction industry is among the most corrupt in the world economy. Big capital and infrastructure projects are rife with opportunities for bribes, kickbacks, substitution of inferior materials, poor workmanship and outright theft. Though most large-scale capital projects are unique in nature, there are common stages where corruption pressure points emerge. Corruption risk assessments combined with a tailored set of preventive and detective controls are crucial for any large project.

## ***Implementing and supporting a statewide advanced gas and electrical meter system***

### ***Client issue***

A large public utility faced a multibillion dollar capital program involving the procurement, installation, and ongoing maintenance of new, advanced gas and electric meters across their large, diverse service territory. The project encompassed the acquisition and deployment of several million meters and the design, development, and implementation of the IT systems and communication networks needed to support the advanced metering infrastructure.

### ***Action***

In its role as independent project advisor, PwC provided the client with three primary functions: advising the project management office and senior company management; conducting macrolevel reviews of the project plan, control environment, and associated risks; and preparing the utility to embrace the changes in technology, functionality, and operations. PwC's success in providing these services was the team's ability to facilitate communication within the client company. Building strong relationships with the different business units also enabled PwC to identify potential risk and process improvement areas.

### ***Impact***

With the support of the PwC team, the client has effectively navigated the significant challenges created by the new, advanced IT, mass meter deployment and customer outreach and education efforts. Additionally, this transformational project has led to new roles for company employees and has required broad changes in the business processes for numerous departments.

For example, a governance process that specifies the level of design and performance detail that is required before a project can progress to the next stage, will keep in check an external project manager who may prematurely seek approval to move ahead with project execution because of time pressures.

In our experience, the success or failure of a project is as closely tied to thorough project definition and planning as it is to execution quality. A well-defined set of project requirements provides a sound basis for successful execution. In the absence of sufficient project definition and planning, post- contract changes are likely to increase and further challenge the Owner's ability to successfully deliver the project.

### ***Transparent control environment***

The processes required to deliver a capital project typically cut across business functions, different organizations, business units and sometimes geographies. To be effective, the components of the governance framework should be designed to address these challenges, and should be in place early in the project life cycle.

The activities undertaken at the front end of capital project development (e.g., business planning, project definition, budgeting and financing, regulatory approvals, and development of project delivery strategy) can benefit from the structure, accountability,

and control that comes from the deployment of a governance framework. Such a framework is equally important as project execution progresses (e.g., design, procurement and contracting, construction, cost/schedule tracking and forecasting, change management, commissioning/startup, project turnover, and contract closeout.). By applying sound governance principles from the start, organizations can avoid costly course corrections during performance and provide a high degree of confidence in a project's successful outcome.

#### ***Internal accountability***

An organizational and functional framework enables a project owner to identify the necessary control tools and procedures to effectively manage project risks and define who is responsible for implementing them. Because large capital projects often have multiple stakeholders, it is crucial to assign and define the roles and responsibilities of all players as a way to mitigate the risk of overlapping control functions or gaps in important management tasks among various groups within the organization.

Recognizing the importance of clearly defined roles and responsibilities, and communicating them throughout the organization, is vital to the on-time delivery of projects within established cost and quality guidelines. Also, a skilled project team that is staffed with personnel with the expertise required to plan, organize, manage and execute the project is crucial.

## ***Keeping systems, controls, and risks in check***

### ***Client issue***

A major US utility was finalizing plans to construct new multibillion-dollar power plants. Working in a highly regulated environment, the client recognized the importance of strong control processes to manage these projects. The client requested a governance readiness review to determine whether its systems and controls could support projects of this magnitude and complexity.

### ***Action***

The client engaged PwC to conduct a preliminary readiness review of the organization. Based on the results of the review, the firm's role was expanded to support overall governance of plant construction and ongoing cost-recovery efforts.

### ***Impact***

PwC's solution included a framework to help the client assess whether existing processes and structures provide a prudent, transparent, and auditable record of management's actions and decisions throughout the course of a massive construction project.

The PwC team worked with the utility to set up the control environment, and helped its leaders build a risk- and issue-management system, develop a master schedule of project work, and establish a reporting framework for communicating project metrics to management and regulators.

## Contracting and Project Delivery Strategies

Capital project owners typically appoint contractors to design and deliver their projects and frequently contract out the project's day-to-day construction management. Owners too often assume that once the contracts are in place the project will run itself, and elect to abdicate responsibility for

project execution to their contractors. This is a dangerous approach to project delivery that rarely is successful in achieving project objectives.

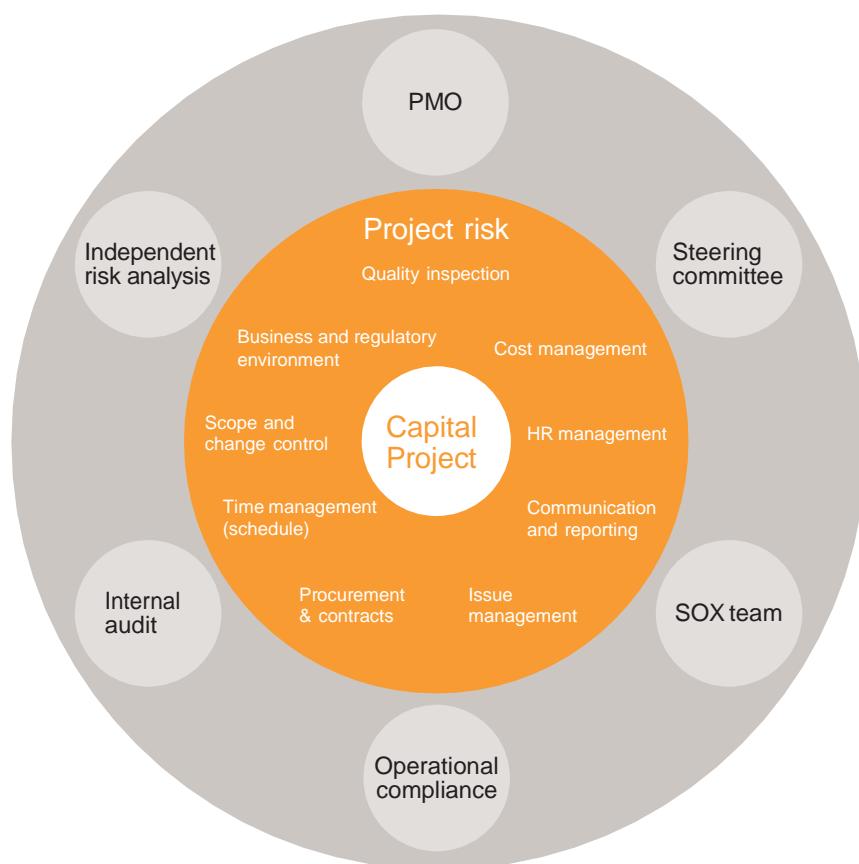
From the very outset of project planning, careful consideration needs to be given to the contracting and project delivery strategies adopted by the Owner. The project delivery strategy should take into account

the level of in-house resources that the Owner has available to monitor and direct performance, and should account for the unique risks that each project presents, including the maturity of the project design and the technical challenges that the project presents.

Once a delivery strategy is selected, focus needs to be placed on the clarity and structure of the contractual framework as a whole, and the assessment of related risk. Many Owners include a variety of performance incentives and disincentives in their agreements to motivate contractors to perform more efficiently. These incentives and disincentives need to be carefully considered and designed if they are to achieve their intended objectives. Incentive-based contracting can provide benefits if the organization runs scenario analyses to understand the potential financial impact and confirms that application of the incentive is consistent with performance achieved. Good governance helps ensure incentives connect directly to valid corporate objectives and drives out any elements that do not.

In addition, contract terms should carefully articulate the contractor's responsibilities to establish, maintain, and report defined performance metrics and specify the rights of the owner to access and audit the underlying project information.

**Figure 1: Capital project organization framework**



PwC's integrated risk management framework defines the key project stakeholders across the enterprise and defines their roles and responsibilities in relation to various project risk considerations over the project life cycle.

## *Communication and reporting*

The lack of defined performance metrics, and untimely or infrequent communication between the owner and contractor can lead to significant project cost and schedule impacts. Expectations regarding the nature, frequency and level of detail to be included in progress reports to the Owner should be carefully defined in the contract documents. The goal of establishing governance around communication and reporting is to ensure that management has access to real-time and complete information regarding the status of performance so that it can make meaningful project decisions from beginning to end.

For example, management needs to be aware of evolving risks on the project so that it can take actions necessary to mitigate such risks before they impact the project. Similarly, management needs current and complete information on potential and pending changes to the work so that appropriate decisions can be made regarding the scope of work and related commercial issues.

## *Injecting new life into a company's processes*

### *Client issue*

A global energy company needed to apply more rigor to managing “turnaround” projects such as the maintenance of its production facilities to prevent missed deadlines and ballooning budgets. Though the company often worked on several turnarounds at once and had documented its processes meticulously, it rarely followed those processes. As a result, the company missed critical maintenance milestones, which caused cost overruns and delays across the project lifecycle.

### *Action*

The PwC team helped establish a more systematic and cost-focused approach to ordering parts and other components and designed a methodology to establish and structure supplier contracts. The team also implemented a bottom-up approach to budget planning for turnaround projects. In the area of performance management, the work completed by the PwC engagement team gave the client greater visibility into how specific processes, contractors, and systems are working and where improvements are needed.

### *Impact*

The energy company reduced turnaround costs by 10 percent and realized a marked improvement in its turnaround projects. Additionally, the company realized a 17 percent gain in its scheduled compliance during the next turnaround cycle. Extra work order fulfillment times were slashed from five days to one, and simplifying paper-based job packages eliminated unnecessary paperwork and resulted in several million dollars of associated cost reduction.

***Companies should focus more on the significant project review points to align governance with the reality of projects and facilitate timely, well-informed decisions.***

### ***Taking the first steps***

As companies move forward in adopting a capital project governance model, we recommend creating an internal road map for achieving project success. Specifically, we suggest taking the following steps.

#### ***Evaluate the current governance framework***

Businesses that successfully execute capital projects are supported by an experienced risk-management team that understands the stages of a capital project—business case, design, procure, build, and operate—as well as significant risks that exist in all phases of project delivery, such as scope growth and corruption in the procurement process.

PwC has developed a Procedural Framework, as illustrated in Figure 2 that defines typical project risks by project element across the project life-cycle. The focal points for a review of the governance and controls framework should be organization, procurement and contract management, scope and change management, cost management, schedule management, business

systems and technology, risk and issue management, and communication and reporting. Through our experience working on complex capital projects across industries, we have compiled a catalog of typical risks in each of these categories, and have developed related mitigation strategies that should be considered as part of a comprehensive governance and control framework.

#### ***Review information systems***

Determine whether your information systems—from enterprise resource planning (ERP) and enterprise risk management (ERM) programs, to document-management and financial reporting platforms—can deliver the data you need with the right amount of detail and level of integration to manage a major capital project.

**Figure 2: Capital project procedural framework**

| Project life cycle                                 |                                                                 |                                                           |                                          |                             |                                                   |                                    |
|----------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------|-----------------------------|---------------------------------------------------|------------------------------------|
| Project elements                                   | Planning                                                        | Design                                                    | Implementation                           | Testing                     | Turn-over                                         | M&O                                |
| Organization design & HR management                | Project management plan and staffing                            |                                                           |                                          | Staff reductions/transfers  | Operations staff planning                         | Ongoing requirements/skills review |
| Procurement & contract management                  | External contracting options                                    | Vendor qualification RFP process EPC contract evaluation  | Vendor selection contracting             | Contract compliance review  | Trouble-shoot & punch list                        | Vendor qualification/selection     |
| Scope & change management                          | Definition of project elements and benefits                     | Design project components (phase 1 transition plan)       | Change control process                   |                             | User acceptance process                           | Operations acceptance process      |
| Cost management                                    | Capital budgeting and ratemaking approach                       | Cost & schedule forecast                                  | Cost control                             |                             | Final payment/retention release                   | M&O budget process                 |
| Schedule management                                | Project schedule requirements                                   | Baseline project schedule (WBS & pre-deployment schedule) | Detailed schedule management             |                             | Schedule completion check list                    | Ongoing maintenance schedule       |
| Business systems & technology                      | Project purpose funding & approval                              | Business needs assessment & technology framework          | Integration & executive oversight        |                             | Continuous improvement and reasonableness reviews |                                    |
| Risk & issues management                           | Project risk & issue management planning                        | Risk & issue tracking & resolution                        |                                          |                             | Confirm issue resolution                          | Ongoing issue management process   |
| Communication, reporting & regulatory requirements | Project reporting requirements (project communication strategy) | Project status and regulatory filings                     | Project cost, schedule & budget variance | Project quality performance | Project close-out performance                     | Financial reporting                |

Major capital project teams should review all aspects of the control environment. Using PwC's procedural risk framework illustrated, the project is separated into a number of elements.

## Providing a clear and concise audit trail

### **Client issue**

When a large utility was set to transform a power station from natural gas to clean coal, it already faced stiff challenges including tight emission-reduction regulations. But when plummeting gas prices brought the multibillion dollar “repowering” project to a halt, it faced a much larger hurdle—how to terminate the project midstream.

### **Action**

Using the PwC Risk Management Framework, which touches on cost and time tracking, communication, risk evaluation, and reporting, the PwC team advised management on how to prioritize its decision making. PwC also provided the client with a detailed framework to document the contract suspension and termination period, providing a clear and concise audit trail that could be used in regulatory proceedings.

### **Impact**

With a clear, organized approach, the utility was able to take a strategic view of decisions throughout the suspension and termination project. Also, the PwC team helped the client mitigate termination costs. PwC also helped the client develop an incentive program to reduce the cost exposure of phasing out subcontractors and conducted a detailed analysis and presentation of the incentive program to help both sides come to a mutually beneficial solution.

## Revisit past projects

Look back at the capital projects that met expectations and those that did not. Review contracts and other project documents, and talk to the people who delivered the project to identify best practices that you want to carry forward to future projects, and to determine what areas need to be improved upon the next time around. This type of a lessons-learned review is very useful in building upon project successes and preventing the recurrence of past failures.

One of the significant keys to capital project success is a strong commitment to and early focus on establishing a robust governance and control framework for managing capital expenditures. Ultimately, the intent is to carefully define roles and responsibilities of all stakeholders, to monitor performance from beginning to end, to identify and mitigate project risks as they arise, and to ensure that management has the accurate, complete and timely information that it needs to make informed technical and commercial decisions throughout performance.

The pressures of completing projects within tight parameters will only grow in importance. By dedicating the proper level of resources, planning and collaboration, your company will have a better chance of producing the long-term value from your capital expenditures that you envisioned when the project was conceived.



***To have a deeper conversation about how this subject may affect your business, please contact:***

**Mark Rathbone**  
**Partner, Asia Leader**  
**Capital Projects & Infrastructure**  
Direct: +65 6236-4190  
Email: [mark.rathbone@sg.pwc.com](mailto:mark.rathbone@sg.pwc.com)

**Keith Martin**  
**Managing Director**  
**Capital Projects & Infrastructure**  
Direct: +65 9817-2432  
Email: [keith.martin@sg.pwc.com](mailto:keith.martin@sg.pwc.com)

**Zaheer Minhas**  
**Director**  
**Capital Projects & Infrastructure**  
Direct: +65 6236-4379  
Email: [zaheer.minhas@sg.pwc.com](mailto:zaheer.minhas@sg.pwc.com)