Independent Project Analysis, Inc. | Volume 16, Issue 2 | June 2024

IPA Newsletter

ALSO IN THIS ISSUE:

Keeping Up With the Changing Times in Capital Projects

By Andras Marton, IPA Director, Integrated Energy

Although capital investment has rebounded to pre-COVID-19 levels, project results and delivery practices are still facing major challenges. The current capital projects climate is under stress from the complexities of the sustainability transition, including unclear direction from governments, uncertain long-term business prospects, unfamiliar technology, and new business cases and venture formation. In addition, spillover effects from the sustainability transition are affecting most major industrial sectors and project supply chain players—even those planning to opt out of the changes.

Below I discuss the changing times in capital projects and some of the major hurdles today's capital projects market is facing.

Commercial

Commercial agreements are difficult to secure for many projects because the economics are often marginal, particularly without clear sustainability pricing, and the markets are undeveloped and often uncertain. When projects involve a bidding process or government subsidies, the business case and commercial agreements often must be committed early in the project development cycle when very little is known about the market and potential pricing of products.

Partnerships and Relationships

New relationships and partnerships between owners, contractors, licensors, suppliers, governments, and regulators need to be developed—something many companies have not had to do in the past. Sometimes these new partnerships are even within our own companies. Projects done using

IPANewsletter

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IPA improves the competitiveness of our customers through enabling more effective use of capital in their businesses. It is our mission and unique competence to conduct research into the functioning of capital projects and project systems and to apply the results of that research to help our customers create and use capital assets more efficiently.

Independent Project Analysis, Inc. is the preeminent organization for quantitative analysis of capital project effectiveness worldwide. At IPA, we identify Best Practices to drive successful project outcomes.
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joint ventures (JVs) must align the partners on objectives, which is difficult because of different risk tolerances, corporate visions, and ways of working. For example, if one JV partner does not have a net zero goal and the other does, the two organizations are likely to have very different priorities for the shared venture.

Another main challenge is developing partnerships and relationships with inexperienced newcomers. This includes new technology licensors who don't understand how capital projects are developed; new contractor divisions to provide services in emerging sectors that are unprepared; and new owners with unstable finances that create uncertainty for their partners in engineering, procurement, and construction (EPC).

All of these issues around partnerships make for uncertainty and churn in the capital projects environment.

Stakeholders

The industry has done quite well when the stakeholders were known quantities with stable regulatory regimes and in well-known regions. However, the industry has not done consistently well when we aren't as familiar with these stakeholders—and sometimes fails to even identify the stakeholders at all. With new energy projects, stakeholders will be less familiar or unknown, and those that are known or are discovered will have minimal experience with capital projects. In some cases, the regulatory framework will not exist and will need to be developed. Even if the technology is straightforward, stakeholder management mistakes can lead to project failure.

Faster Pace

Companies tend to always want to do capital projects faster. We have seen things go terribly wrong when owners try to go faster than they know how to or faster than is feasible while sufficiently mitigating risk. Where the industry has often been able to go incredibly fast is with projects with very high returns. High returns have a way of wiping out our institutional memory of projects that have gone sideways. We need to carefully consider how we can become faster without sacrificing value in a low returns environment. Considering the multitude of challenges facing the industry, moving fast while delivering successful low returns projects is a near impossible task.

Technology

Industry is out of practice with new technology: about 30 years ago, we saw the industry regularly innovating with a significant percentage of projects developing new technology. That declined in the late 1990s and early 2000s, but is now once again on the rise and becoming increasingly important. (See **Figure 1**.)

For example, if we look at the number of green hydrogen production projects in the pipeline, we can see a spike in the years following the pandemic. (See **Figure 2**.) How these projects will fare is unknown, given the industry's general inexperience with commercialization.

Supply Chain

The capital project supply chain is stressed at every step, starting with the owner's ability to staff teams to put together a good scope for the project requirements. Engineering contractors too are struggling with finding experienced and skilled personnel. Once the design is complete, that triggers firms from around the world to provide and often to custom fabricate those materials and deliver them to the place of assembly. Although equipment and material supply chains are stabilizing post-COVID-19, geopolitical and new shipping problems continue to arise. Finally, construction firms that either assemble projects on-site or deliver assembled modules to site markets are still highly stressed, especially in places like the Middle East and United States.

There are also challenges with developing new and rapidly expanding technologies that can meet large-scale deployments typical of energy projects. These challenges often mean limited markets, which exasperate escalation, and the need to develop new, large-scale supplier relationships. On the bright side, for some of the technologies, there is also an opportunity to lower costs through standardization.

Governance

Many of the new challenges also create problems in the project governance process. Work processes may not have the needed elements to address some of the new challenges and, in many cases, gatekeepers are unprepared to correctly assess the project's readiness to pass through gates. A common question is whether the gates are even needed. Our research clearly shows that when a gated process is followed, the return on investment is far better (27 percent) than when the process is ignored. Gates are still needed—but that is not to say that existing work processes don't need some clarifications or modifications to better address the new challenges. This is, in fact, a common question posed to IPA and a common work front for our Capital Solutions group.

Addressing governance gaps will clearly be needed. Although our clients say that their process is clear and well understood by project teams (88 percent) and 70 percent of project teams say that the process is followed on every project, we find that only 18 percent of projects have *Best Practical* definition at full funding. This is likely because we allow deviations to the work process in response to project circumstances; in other words, when it comes to governance, exceptions became the norm.

Commercialization Capability Is Long Lost

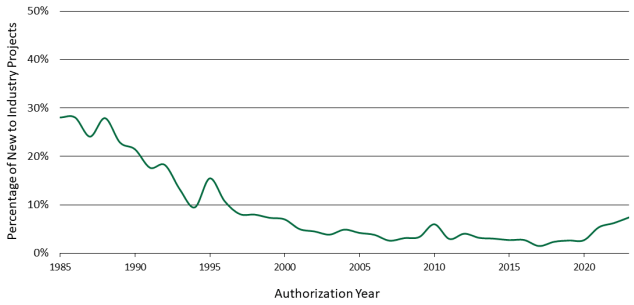
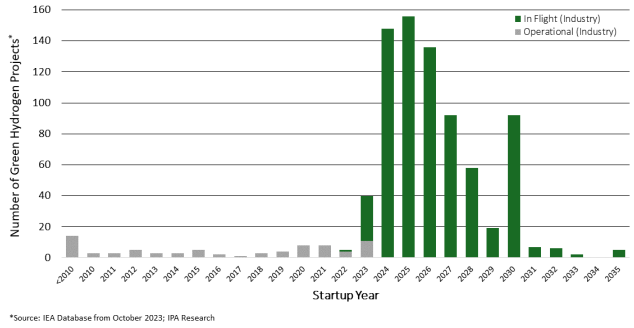


Figure 1

Number of Planned Green Hydrogen Production Projects Is Growing Rapidly

However, There Is Very Little Experience in the Industry



*Source: IEA Database from October 2023; IPA Research

Figure 2

Staffing Gaps Are Widening

Most Organizations Are Increasing Their Portfolios but Not Necessarily Their Staff

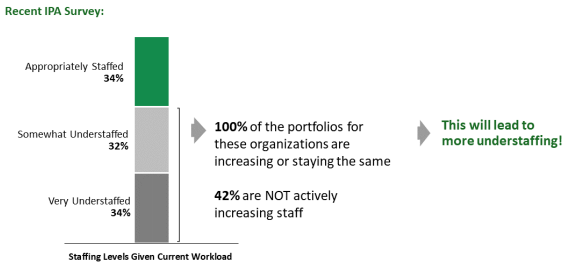


Figure 3

Staffing

The availability of personnel, particularly those with deployable experience, is compounding the industry's inability to cope with change. The workforce is aging and fewer people are entering the workforce to take their place. The result is a shrinking talent pool, which is exasperated by increasing competition from other industries. Ever changing portfolios, both in size and project type, make the situation even more dynamic and difficult to navigate.

We are increasingly hearing our clients say things such as, "We were only able to deliver half of our portfolio because we didn't have enough people," "Projects are taking longer because we are short on staff," or "The skills are not there." To make matters worse, most organizations plan to maintain or increase their portfolios—without a corresponding increase in staff. (See **Figure 3**.)

We Can Meet the Challenge

The challenges industry is facing are daunting. Combined with the uncertainties associated with the long-term viability of the business prospects many of the sustainability efforts face, we see corresponding patterns in long-term investment:

- Companies that had coherent strategies are being forced to rethink
- Company executives are struggling to plot a long-term strategy
- Oil companies have limited their exploration budgets and consequently have few projects to work on
- Chemical and minerals companies don't know whether they need to invest in the chemicals and metals to support the energy transition or not—and these are big, lumpy, and irreversible decisions
- Vendors and suppliers don't know whether to invest in the new capacity that is apparently needed

However, the change will bring many opportunities: new ventures, a different perception of the industry that attracts new talent, personnel growth, leadership development, and a lot of learnings. We can meet this challenge by:

- Focusing on technology strategy and how it aligns with our organization's business strategy
- Developing, maintaining, and leveraging existing project supply chain relationships to identify and shape the right opportunities
- Maintaining project discipline and strengthening the governance process for portfolio optimization
- Strengthening our staff: retaining current competencies and developing new ones

Starting (or Restarting) **a Site Improvement Journey**

By Pablo Cabezas, Product Development Leader, Site & Sustaining Capital

Starting a site-based measurement and improvement journey can be overwhelming. Although many IPA clients have well developed organizations with dedicated groups that drive and measure continuous site improvement initiatives, this is not the case for many companies in the industry. Each year, IPA hosts the annual meeting of the Industry Benchmarking Consortium (IBC), which measures the performance of both large and small projects. Many small projects are managed at sites that are just starting their improvement journey and have outcomes that are worse than those of companies that have been systemically developing and routinely benchmarking their improvement efforts.

As shown in **Figure 4**, first-time benchmarking sites (those starting site improvement initiatives or those getting back after many years) have an average cost that is about 20 percent higher than industry average. Sites that have measured their improvement initiatives two or three times are closer to industry average and, importantly, are more predictable; these sites have projects systems that are more competitive and also more in control.

There are many reasons for project systems to be out of control but some of the common root causes include lack of resources given the number of projects in the portfolio, a focus on production that can reduce the importance of a process or the projects group processes, or simply because there is no established way to define and develop projects. For systems starting the site improvement journey, there is a common question: where do we start?

Identify Strengths and Weaknesses, and Then Prioritize

Most companies decide to start site improvement efforts because of a known performance gap (e.g., projects are not predictable). A common mistake for these companies is trying to fix all or multiple issues at the same time. This typically does not end well as the lack of focus ends with site improvement efforts that are too much to successfully implement and are quickly abandoned. A key element is to understand the system weaknesses (gaps) is the project drivers.

As the IPA Framework outlines, there is a natural flow to improvements. If project objectives are unclear, it's hard for a team to efficiently complete robust Front-End Loading because there is recycle with the business on what the project is supposed to accomplish. If objectives are clear but the project team is missing key functions, projects struggle with missing inputs and late changes occur. If the objectives are clear and the team is integrated, robust Front-End loading can occur. Thus, sites should develop an understanding of their current drivers and correct issues in sequence.

Once the gaps are identified, they must be prioritized (again, do not try to cover everything at the same time), using the organization's strengths and understanding what drives system results.

What Causes Poor Site Performance? Three Common Scenarios

Many factors can contribute to poor site performance but we focus here on three common scenarios:

Scenario 1: there is no established way to define and develop projects; this means that everything depends on who is the project manager role.

Scenario 2: The site has a process but no resources

Scenario 3: The site has processes and resources but has not identified the driver gaps yet.

Let's start with some basics. In order to improve, a system needs to measure, and to measure there needs to be some sort of standardization (otherwise every project could be

measuring different things). In **scenario 1**, there is no process to define and develop projects. We find this scenario quite common outside of the major refining, chemical, and mining companies. These systems are generally not ready for a fully deployed FEL process (including strict gates or decision points with support from assurance groups) but can implement a checkpoint to make sure objectives are understood and another to ensure key deliverables have been defined. Most systems without a process also lack strong governance systems. This, of course, requires strong business support but in the absence of it some companies have implemented pilot plans in which this standardization is used on a handful of projects with a measurement system that is compared against the rest of projects in the portfolio. This can be a starting point to show some quick-wins and get management support to add governance.

Scenario 2 is one of the most common. These sites have a version of a process and governance (typically weak), but most of the project positions are covered by a few project team members. In this scenario, everyone wears multiple hats. For example, the project manager might also fill the roles of construction manager, estimator, scheduler, and controller. In this case, a key element is to understand performance gaps (e.g., cost predictability, schedule slip, frequent scope or design changes) and assign specific resources to close the gaps. Focusing on the most problematic issues and trying to get additional support from resources within the company or (ideally) adding new resources to cover certain functions is key.

In **scenario 3**, the system needs a root-cause analysis to identify the main causes of project failure and success. Once this assessment is complete, improvement efforts can be prioritized in alignment with available resources, and management support can be secured to drive the case for change. Although this is a better position to be in relative to the first two scenarios, an adequate prioritization process and identification of achievable targets is key to maintain momentum. The identification of a few quick wins to show results can help to increase the buy-in from members of the project system.

In most cases, out-of-control project systems can be linked to weak project drivers. Project teams tend to protect themselves by adding more contingency or reducing checkpoints so risks are not as visible, which can hinder the decision-making process. But it is also very common to see that project outcomes are not in control because the systems elements are not in place, so project teams are defining and executing projects without a set of rules, clear requirements, and support.

Cost Effectiveness:

First Timers Can Expect Significant Improvement

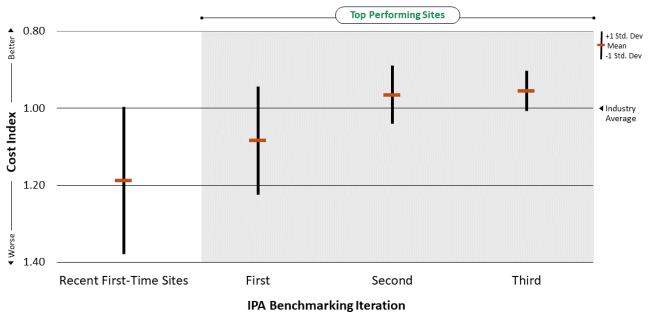


Figure 4

IPA Framework: Elements of Capital Effectiveness

IPA's Fundamental Approach Links Practices With Outcomes

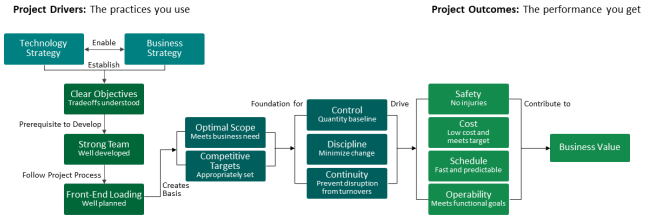


Figure 5

IPA Framework: IPA Project System Excellence Model (PSEM®)

All Elements of the Project System Must Be Sound

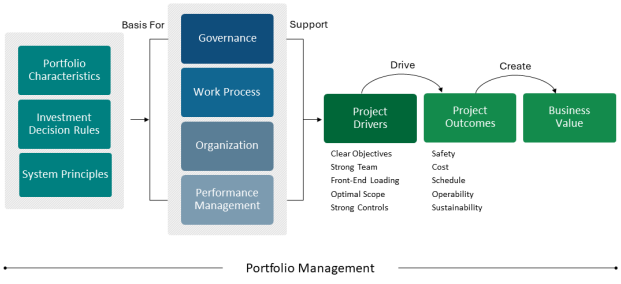


Figure 6

Regardless of the scenario, project systems that are starting their improvement journey should start with the basics, focus on aligning objectives (e.g., clear business case), ensure project teams include all key roles, and develop sound definition (e.g., risk assessments, execution plans, cost estimate, and schedule). Once these elements are in place and developed in a consistent way, the system can expand to focus on other practices.

How IPA Can Help

IPA can be a partner in this journey. IPA project assessments are strong tools that project systems use to quantitatively show business evidence of the benefits of these Best Practices. We can support the development of fit-for-purpose work processes and design project systems, compare current staffing levels against Industry to identity gaps and help you prioritize on key resources, and also support measurement efforts to identify and prioritize the gaps and strengths within a project system.

Learn Best Practices for Site-Based Projects

Sustaining and maintenance projects can represent up to 70 percent of capital portfolios for process industry organizations, but these projects are frequently less successful than larger projects executed by the same company.

Looking to improve your site-based project performance? **Join us in Houston on October 9-10**!

REGISTER TODAY!

IPA UCEC 2024 UPSTREAM COST ENGINEERING COMMITTEE

UCEC Members Come Together in Houston for Annual Meeting

This year's annual meeting of IPA's Upstream Cost Engineering Committee (UCEC 2024) was held on Thursday, June 13, 2024, in downtown Houston, Texas, with live webinars for key presentations following the meeting for those who were not able to attend in person.

The annual meeting is an opportunity for the member companies' cost engineering professionals to gather and review the latest UCEC metrics packages prepared by IPA. IPA shared the updates and highlights of this year's metrics program in addition to the research topics listed below:

- **Systemic Overestimation**: This study explores the accuracy of facility authorization estimates across different concept types, owners, estimating methodologies, and cost accounts. It highlights the nature of misestimation occurring across Industry, the drivers and consequences of this misestimation, and the path forward to address this issue.
- **Missing the Mark**: This study looks at the reasons projects in the post-COVID-19 market are taking longer to execute and missing their targets more often. It examines schedule slip by phase, comparing the current schedule performance with that during previous hot markets.

Two previous UCEC studies were also presented at this year's UCEC:

- Cost Estimation Work Processes and Best Practices
- Internal Benchmarking Work Process Review

The UCEC is a committee of IPA clients that have a common interest in cost engineering and metrics development. The committee's primary focus is the development and analysis of upstream cost metrics. Member companies use UCEC cost, schedule, and quantity-based metrics to validate their internal estimates with industry data. UCEC also provides research into practices and project characteristics that drive better cost and schedule outcomes.

Case Study

Resourcing Question Leads to **Insights on Project Organization**

By Vincent Mouraï, IPA Business Development Manager, CSLN and Aishwarya Vijayakumar, IPA Downstream Analyst

The Problem

A Europe-based global consumer products company approached IPA with a resourcing question. The company assumed they were resourced beyond their need and could reduce their direct costs and accommodate a planned portfolio expansion by shifting some project work to contractors.

After a discussion with senior company leadership, IPA observed internal differences of opinion, with some leaders stating the organization could easily absorb more work, while others thought the organization was ready to break. Further discussions highlighted that projects were taking too long, which was keeping resources mobilized for long periods; that miscommunication often led to re-work, cannibalizing resources; and that some projects needed fixing once completed. These contradictions signaled that opportunities existed to improve how projects are delivered and that the issues required more than a simple fix: a thorough system diagnostic was required to discover the root causes behind the issues.

What IPA Did

The ultimate business value projects generate is only as good as the elements that support the system used to manage projects. These elements are specific to the company's DNA (its portfolio and investment rules) and include:

- The work process: what system the company has in place to guide project teams to achieve good performance on projects
- The organization: who is available and accountable to drive performance on projects and how they are organized
- The governance rules: how project decisions are made and accountabilities allocated
- Performance management: how the system measures and reports performance

As proposed, the system diagnostic would provide the client with a complete understanding of the improvements required to tackle the expanding portfolio and to deliver it on time. IPA used five main tasks to gather system information (see **Figure 7**):

Although our work with this client spanned many areas, for this case study, we focus on the organizational review to address the resourcing question. IPA found that project resources were spread across various independent groups with the work done independently in silos, not accounting for other groups' risks. In **Figure 8**, this company's system most closely resembles a weak matrix organization. The advantages of this approach include strong functional competency and projects being more closely aligned with the business, but this approach also comes with disadvantages.

For the client, this organizational setup translates into the many late changes, as reported in the project sample. Indeed, the project management hubs sit in various parts of the organization: some sit within business areas, while others sit within site-based maintenance groups or within a central

project organization dedicated mostly to one large site. This means teams are often led by functions that have no authority over their team members, and team members are not nominatively assigned to projects, but rather support the leader as a functional group, breaking any sense of input continuity and overall accountability.

The analysis also revealed that the number of full time equivalents in the current portfolio is adequate but unbalanced, with some essential functions missing. We confirmed that engineering is well represented in the organization, as many believed. However, we also found that engineers take on many roles outside their functional duties—from construction management to estimating and scheduling. Some even serve as operations or maintenance representatives. Moreover, the lack of some essential functions meant that none of the sample projects we looked at had an integrated team, greatly diminishing the project outcomes. (See **Figure 9**.)

We also found that the central engineering organization was overly occupied with helping manufacturing sites with smaller projects, resulting in fewer dedicated resources being available for large and complex projects. This particular problem had never surfaced to the executives before this analysis because the portfolio never took into account resource availability. Instead, the problem of staffing fell to the project engineering department.

The analysis revealed that the organization was understaffed in key functions and inadequately organized to tackle the planned upcoming growth in new regions.

How It Turned Out

IPA's analysis showed that lack of company resources was not the problem. Rather, the company's resourcing issue was really a symptom of a deeper problem and required organizational changes. To resolve the system problems identified, IPA suggested a transformation program, which included:

A set of organizational workstreams to:

- Gradually install a central project management and engineering organization that is responsible for end-to-end delivery of project objectives. This includes restructuring some organizations (including a parallel workstream on staffing up sites to handle their small projects independently).
- Add new competences and re-train some engineers to other key functions.
- Staff up for the upcoming portfolio through a mix of direct hire and bespoke contracting to cope with the regional peaks and valleys of the portfolio.

A portfolio management workstream to formalize the portfolio management framework and provide a clear long-term view of projects, resource requirements, and resource utilization.

Figure 7

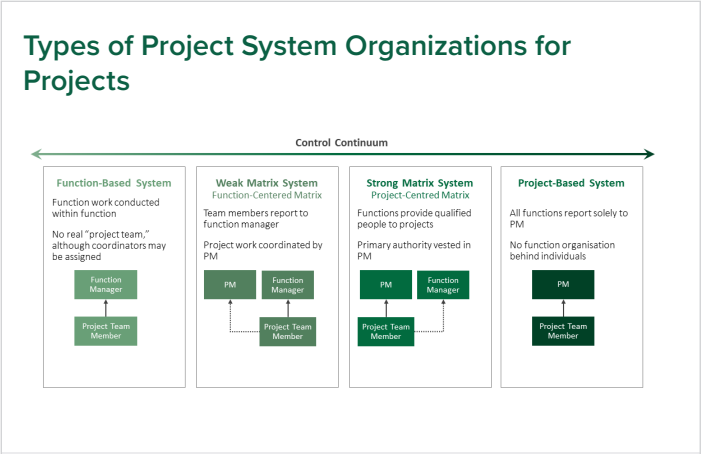


Figure 8

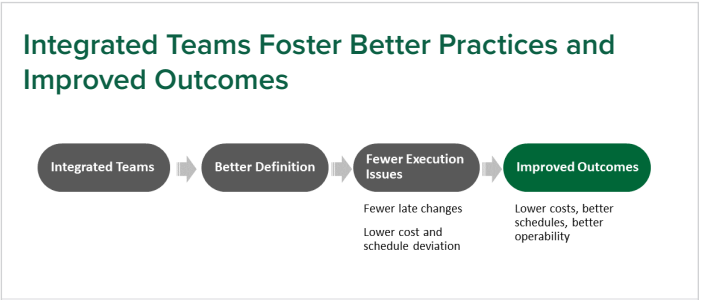


Figure 9

Optimize the Staffing, Competence, and Structure of Your Project Organization and Teams

Poor project performance can often be traced back to problems rooted in the staffing and/or functioning of the project team or to the project organization itself. Tap into IPA's knowledge on what drives competitive organizations and successful teams to maximize value from your capital projects.

LEARN MORE!

Live Webinar:

Overview of IPA's Cost Engineering Committee (CEC)

How does the Cost Engineering Committee (CEC) help members with unbiased conceptual cost & schedule estimating and validation? IPA's Shubham Galav will break it down in our live webinar next month!

July 10, 2024 at 11am US ET

All registrants will have access to the presentation materials and recording after the live webinar takes place.

REGISTER TODAY!

Shubham Galav
Deputy Director, PRD, Cost Group

IPA Organizational Announcements

Please join us in congratulating Nekkhil Mishra, Manasvi Mehta, Luke Wallace, and Pablo Cabezas in their new roles at IPA!

Nekkhil Mishra

Nekkhil Mishra has been promoted to the role of President of IPA! He reports to Ed Merrow, who continues to serve as IPA's Chief Executive Officer (CEO). As IPA President, Mishra now oversees all aspects of the company's global business operations and works closely with IPA leadership and the Board of Directors to implement the corporate strategy. He continues to serve on the IPA Board of Directors, a role he has held since 2022. Mishra previously served as IPA's Director of Europe, Middle East, and Africa (EMEA) from 2017 to 2024. In that role, he oversaw IPA's business operations within the region while leading and developing a team of project analysts, researchers, and support staff based in the United Kingdom and the Netherlands.

Manasvi Mehta

Manasvi Mehta is IPA's new Director of Europe, Middle East, and Africa (EMEA), taking on the role formerly held by Nekkhil Mishra. Reporting to IPA Chief Operations Officer (COO) Elizabeth Sanborn, Manasvi oversees IPA's business operations within the EMEA region while leading a team of project analysts, researchers, and support staff based in the United Kingdom and the Netherlands. She focuses on strengthening relationships with clients and building new partnerships with companies across industrial sectors to help improve the effectiveness of their capital project systems. In addition, she also continues to serve as the Client Engagement Leader for one of IPA's core clients, partnering with the organization to improve capital project delivery.

Luke Wallace

Luke Wallace has been elevated to the role of Chief Technology Officer (CTO)! As CTO, Luke continues to lead IPA's research division, which is the nexus of IPA's analytical tools development and ground-breaking research on what generates successful capital projects. IPA's Project Research Division (PRD) is the largest single group of research professionals in the world focused solely on project improvement.

Pablo Cabezas

Pablo Cabezas has been promoted to the role of Product Development Leader for Site & Sustaining Capital! Pablo is responsible for managing the full suite of IPA site products and collaborating with business and regional leaders in site and sustaining capital projects, which make up an increasingly significant portion of project portfolios. Pablo now leads IPA's work with owner organizations across all industry sectors to improve the effectiveness of site-based projects, saving owner companies millions.

How Chemicals Projects Can **Minimize Changes During Execution**

By Natalia Zwart, IPA Director, Chemicals, Life Sciences & Consumer Products

A recent IPA study found that chemicals projects executed during the past decade spent about 6 percent of their total installed cost (TIC) on late changes, translating to billions of dollars wasted each year. Although it is commonly acknowledged that changes during execution destroy capital effectiveness and project value, chemicals projects continue to make changes. The IPA study found that three out of four chemicals projects make major late changes—and half make multiple changes! Major late changes lead to higher costs and longer execution durations, as well as cost growth and schedule slip.

What Are Late Changes and Why Do They Occur?

IPA defines major late changes as any change that occurs after full authorization funding that adds (or subtracts) more than 1 month to the project schedule or more than 0.5 percent to the project's cost. Late changes have greater effects on project results than typically estimated at the time of the change and encompass both scope changes (changes to functionality) and design changes.

Capital projects companies typically do not understand the root causes of changes, and many do not track them systematically. A common misperception is that business drives most changes and thus there is little that teams can do to avoid them. However, business only accounts for about a quarter of late changes. Business makes changes to a project's scope or functionality, like changing the site location or doubling the planned capacity. As shown in **Figure 10**, most late changes are design changes. These changes result when design was not done correctly or not done thoroughly in the first place. They are typically needed to make the facility work or to ensure safety. For example, a design change could arise if a project team didn't do soil borings and later finds that the foundations require piles and the design must be changed to include them.

It is not possible to avoid all late changes. The inclusion of contingency in capital project estimates reflects this reality. We can, however, reduce the number of major late changes because many are under the team's control and can be avoided by following Best Practices.

Best Practices That Minimize Changes Made in Execution

Let's take a look at some of the Best Practices that reduce execution phase changes in chemicals projects.

Clear Objectives and Trade-Offs

Projects in the chemicals sector made more changes when trade-offs among objectives were not clearly articulated (**Figure 11**). Missing business input during FEL does not allow for clarity and leads to scope changes. One way to achieve a clear understanding of trade-offs for chemicals projects is to hold a Business and Engineering Alignment Meeting (BEAM). BEAM facilitates early alignment with the business and leads to fewer major late changes for chemicals projects.

Team Development and Continuity

Having an integrated team (including all key team members) and maintaining that team throughout the project lifecycle is highly leveraging to minimize changes for chemicals projects. (See **Figure 12**.) Projects that were missing functional input made more changes on average than projects that had integrated teams. Staff experience and workload also plays a part. Project managers with more experience and with more time to devote to the project have projects with fewer late changes. Construction manager time on the job is also important—construction managers with more concurrent projects had more changes on their projects. Finally, avoiding turnover, especially of key team members like the project manager, is critical to avoiding changes in execution. The more key functions that turn over, the more likely a project is to have late changes. Moreover, project manager turnover, especially for teams that aren't integrated, and multiple turnovers can be devastating to project outcomes.

Thorough Front-End Planning

Poor quality Front-End Loading (FEL) continues to drive late changes in the chemicals sector: the worse a project's definition, the more likely it is to have major late changes that erode the project's benefits and prevent it from meeting its objectives (**Figure 13**).

The good news is that projects that have better definition in the three main FEL components (site definition, engineering

Chemicals Late Major Changes Are Primarily Design Changes Initiated by Project Teams

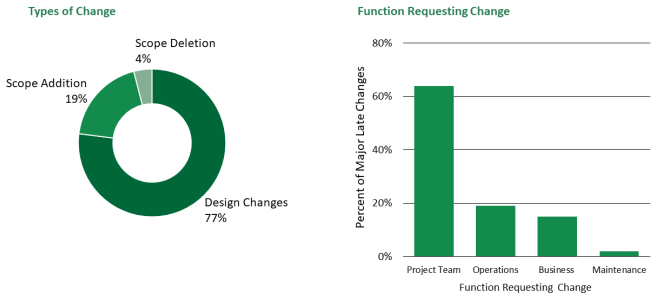


Figure 10

Unclear Trade-Offs Among Priorities Drive Changes for Chemicals Projects

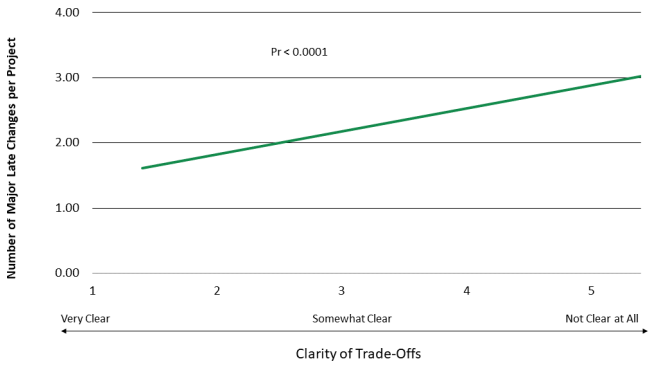


Figure 11

Integrated Teams Foster Better Practices and Improved Outcomes

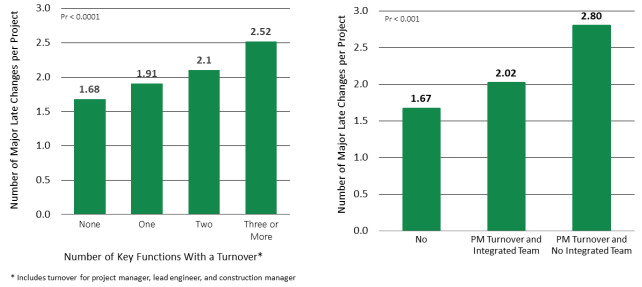


Figure 12

Integrated Teams Foster Better Practices and Improved Outcomes

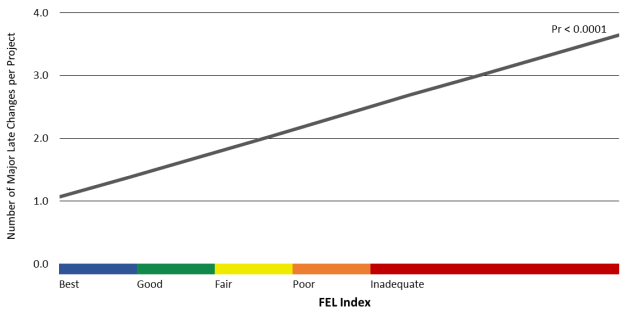


Figure 13

definition, and project execution planning) have few major late changes. Having incomplete basic design at the start of execution increases design errors for chemicals projects, and—not surprisingly—design errors lead to higher project costs as these errors are addressed with major late changes in execution.

Good Project Controls

Although project controls cannot make up for poor project definition and unintegrated teams, good project controls can help to minimize late changes. Several project controls practices have been shown to reduce major late changes, including:

- Estimate validation
- Comprehensive physical progressing
- Frequent detailed status reporting
- Having an owner controls specialist on the team

Where Do We Go From Here?

The vast majority of recent chemicals projects experienced major late change after authorization. Most of the changes were required to meet the project's intended functionality and came at a significant cost. Given these changes are largely self inflicted (i.e., in the hands of the project team), many can be avoided though the use of proven Best Practices during project definition and maintaining control in execution. Finally, many companies lack a solid change management process to categorize changes and decide if the change is acceptable. Understanding why change happens is the first step toward improvement.

CCUS Project Performance Norms

What is the total lifetime cost of a CCUS project? IPA's upcoming study will answer this question and generate the unbiased industry-level metrics needed to help participating companies:

- Improve decision making
- Understand feasibility
- Drive better competitiveness and overall performance

Join Our Study

Owner companies currently active in CCUS projects—that can contribute high quality data—are invited to join this important initiative!

LEARN MORE!

IPA Events and Presentations

Critical Minerals Conference 2024

August 26-28, 2024
Brisbane, Australi

IPA Asia-Pacific Director Sally Glen will serve as a keynote presenter at the Critical Minerals Conference 2024. At this event, Sally and several other industry leaders and global experts will lead discussions on the mining industry's significant role as the world moves toward a more sustainable future. Visit **www.ausimm.com** for more event details.

Forum Fasilitas Produksi Migas (FFPM) 2024

August 26-28, 2024
Surabaya, Indonesia

IPA Singapore Office Director Manoj Prabhakar has been invited to speak at the Forum Fasilitas Produksi Migas (FFPM) 2024 in Surabaya, Indonesia. Prabhakar will participate in a panel discussion entitled Global Project Landscape and National Competitive Readiness. The conference takes place August 26 to 28 and the overarching theme is Enhancing National Oil and Gas Industry Resilience Amidst Growing Competition. Visit **https://ffpm-iafmi.com/** to find more details.

Cost Engineering Committee (CEC)

September 17-18, 2024
McLean, VA

The CEC focuses on advancing the cost engineering and project controls capabilities of the world's leading industrial companies to drive improved business results for capital projects. CEC members get exclusive access to cost and schedule metrics and tools, in addition to cutting-edge IPA research and industry trends—all of which aid in unbiased conceptual cost and schedule estimating and validation. Contact Shubham Galav at **sgalav@ipaglobal.com** to request more information

Upstream Industry Benchmarking Consortium (UIBC)

November 18-20, 2024
McLean, VA

The UIBC provides an independent forum for each participating exploration and production (E&P) company to view key metrics of its project system performance such as cost and schedule, Front-End Loading (FEL), and many others against the performance of other companies and share pointed and detailed information about their practices. The consortium highlights Best Practices, reinforcing their importance in driving improvements in asset development and capital effectiveness. Contact Carlos Tapia at **ctapia@ipaglobal.com** to request more information.

2024 IPA Institute Course Schedule

THE IPA INSTITUTE
Advancing Project Knowledge

In-Person Courses	Dates	Language	Click to Register
Megaprojects: Concepts, Strategies, and Practices for Success* **Perth, Australia**	July 23–25	English	SOLD OUT
Minerals Capital Projects: Drivers of Excellence **Brisbane, Australia**	August 29	English	REGISTER
Complex Projects: Concepts, Strategies, and Practices for Success* **The Hague, The Netherlands**	September 24–26	English	REGISTER
Complex Projects: Concepts, Strategies, and Practices for Success* **Calgary, AB**	September 24–26	English	REGISTER
Best Practices for Site-Based Projects* **Houston, TX, USA**	October 9–10	English	REGISTER
Contract Strategies for Major Projects* **Perth, Australia**	November 12–13	English	REGISTER
Megaprojects: Concepts, Strategies, and Practices for Success* **Houston, TX, USA**	December 10–12	English	REGISTER
Virtual Courses	**Dates**	**Language**	**Click to Register**
Capital Project Execution Excellence and Project Controls	June 25–26	English	REGISTER
Front-End Loading (FEL) and the Stage-Gated Process	September 10–11	English	REGISTER
Establishing Effective Capital Cost and Schedule Processes	September 23–27	English	REGISTER
Capital Project Execution Excellence and Project Controls	October 8–9	English	REGISTER
Project Stakeholder Alignment Through Successful BEAM Implementation	October 22	English	REGISTER
Front-End Loading (FEL) and the Stage-Gated Process	October 28–30	Portuguese	REGISTER
Gatekeeping for Capital Project Governance	November 5–6	English	REGISTER
Front-End Loading (FEL) and the Stage-Gated Process	November 12–13	English	REGISTER
Front-End Loading (FEL) and the Stage-Gated Process	November 19–21	Spanish	REGISTER
Project Stakeholder Alignment Through Successful BEAM Implementation	November 27	Portuguese	REGISTER
Project Stakeholder Alignment Through Successful BEAM Implementation	December 10	English	REGISTER

***Group Discount Available:** *Register 3 and send a 4th for free!*

About the IPA Institute

The IPA Institute is the training and education division of Independent Project Analysis (IPA), the world's leading advisory firm on capital projects. Our courses equip industry leaders and capital project practitioners with Best Practices for projects, portfolio, and project system management/delivery. All course instruction, presentations, and supplementary course materials are rooted in IPA's unparalleled capital project knowledge and research, and based on data from IPA's proprietary project database.