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IPA Newsletter

Recent Insights From the Head of IPA's Cost Analysis Group

By Aditya Munshi, Product Portfolio Officer

My group of researchers in IPA's Cost Group routinely monitors specific economic trends that IPA has long linked with capital project behavior and performance. Economic shifts influence capital portfolio decision making and that impacts project outcomes. Closely tracking economic metrics is also critical to the accuracy of IPA's project risk evaluations and benchmarks, making sure the appropriate escalation metrics and supply chain patterns are taken into account. Below, I provide a synthesis of key metrics and indexes we routinely monitor to give some insight into current market trends.

Market Overview

Economic data released over the past few months show a slowing global economy as rising energy prices and supply disruptions have resulted in high and broad-based inflation. The ongoing Russian invasion of Ukraine has triggered a costly humanitarian crisis, and economic damage from the conflict will contribute to a significant slowdown in global growth in 2022. The IMF Outlook[1] expects global economic growth to slow from about 6 percent in 2021 to 3.6 percent in 2022, which is significantly lower than

[1]International Monetary Fund, "World Economic Outlook Update, April 2022: War Sets Back the Global Recovery," April 2022, accessed June 27, 2022, at https://www.imf.org/en/Publications/WEO

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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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the 4.9 percent global economic growth forecast in October 2021. Similarly, the World Bank has lowered its global growth forecast for 2022 to 2.9 percent (the January forecast was 4.1 percent).

Rise in Inflation Puts Pressure on Central Banks

Even as the war reduces growth, it will continue to add to the inflationary pressures that have been in ascendance since early 2021, driven by rising commodity prices and pandemic-induced supply-demand imbalances. U.S. Consumer Price Index (CPI) figures showed an 8.5 percent increase for the 12 months ending in July 2022, while the Euro Area annual inflation rate increased to 8.9 percent. This elevated inflation is complicating the trade-offs central banks face between containing price pressures and safeguarding employment and economic stability. Interest rates have started to rise in the United States and United Kingdom as central banks tighten policy, which is exerting pressure on emerging markets and developing economies. In addition to the war, frequent and wider-ranging lockdowns in China—including in key manufacturing hubs—have also slowed activity there and could cause new bottlenecks in global supply chains.

Increased Capital Investment Supported by High Commodity Prices

Higher commodity prices should be supportive of increased capital investment in the industrial sectors, but business uncertainty continues to be high, driven by rising instability in financial markets, slowing global growth, China's lockdowns, and Russia's invasion of Ukraine. However, there are some good signs of increased capital investment as shown in the Federal Reserve Bank of Dallas' (Dallas Fed's) Texas Energy Outlook Survey. The Dallas Fed conducts a quarterly survey of about 200 oil and gas firms located or headquartered in the eleventh district—Texas, southern New Mexico, and northern Louisiana—that operate regionally, nationally, or internationally.

Based on the Q2 survey results reported on June 23, 2022, activity in the oil and gas sector expanded at a robust pace, according to oil and gas executives responding to the Dallas Fed Energy Survey. The business activity index—the survey's broadest measure of conditions facing eleventh district energy firms—edged up from 56.0 in the first quarter to 57.7, reaching its highest reading in the survey's 6-year history and indicating strong business conditions. Figure 1 shows that the capital expenditure and future capital expenditure indices continue to stay at historically high levels since the survey began tracking these data in 2016.

Supplier Delays at an All-Time High

The survey also showed that it is taking longer for firms to receive materials and equipment. The supplier delivery index for oil and gas producers increased from 41.6 to 50—a record high. Among oilfield service firms, the supplier delivery index edged up from 45.4 to 48.0—also a record high and suggestive of delays acquiring products and/or services (see Figure 2).

IPA is also observing similar trends in cost escalation and supply delivery delays from the information gathered directly from project teams across the process industries as part of project evaluations. Based on IPA data,

composite prices for a standard onshore facility grew at an 8 to 10 percent annual rate in 2021, while offshore facility costs grew 11 to 13 percent in the same period across the major global regions. The primary contributors to the significant price increases are rising equipment and bulk material prices, with engineering services and field labor costs growing at a much more modest pace.

Based on a survey IPA recently conducted of E&P companies, offshore facility costs increased by about 10 percent in 2021, driven by a 25 percent increase in bulk materials (pipe, electrical, instrumentation, steel) and 15 percent increase in equipment costs.

The survey also showed E&P companies are expecting some slowdown in price increase rates (albeit, they will still be at high levels compared to historic levels) in 2022 (6.1 percent), further slowing to 4.5 percent in 2023. We are beginning to see some pull back in commodities, as shown by a 15 percent pullback in the World Bank's Metals & Mineral Index since the last peak recorded in March 2022. The Metals & Minerals Index had increased by 115 percent over a 2-year period after bottoming in April 2020, which was in the early days of the pandemic.

Downstream Market Trends

IPA is also conducting a market trends survey focusing on downstream (refining, chemical, consumer products, life sciences, mining, etc.) companies and we are witnessing similar themes in the survey responses. As shown in Figure 3, 79 percent of the survey responses collected thus far are reporting delays in vendor supply, and the average delay has gone up to 22 percent (relative to the 2019 baseline). Procurement delays are reported to be significant across regions and types of materials, especially fabricated equipment, specialty valves, and almost all types of electrical equipment. Owners are also reporting issues with engineering delays, as 36 percent of the companies reported experiencing higher delays in engineering than in 2019, with the average reported delay of 15 percent. Sixty percent of the owner companies also reported that they are concerned about how engineering companies are likely to respond when project activity ramps up, which is 8 percent higher than the average response received in the last survey done in September 2021. The survey also showed that there are significant concerns around the market availability of qualified and experienced engineering resources, which is hampering the recruitment efforts.

We will be finalizing the survey over the next few weeks and will be presenting the final results at IPA's Cost Engineering Committee meeting in September (see Figure 3).

Overall, we expect inflation to remain elevated above recent historical norms for some time, but the rate of change should moderate from the extremely high growth observed over the past 12 to 18 months, which was driven by supply chain issues, commodity price increases, and broadening price pressures. The medium-term trajectory of inflation is extremely uncertain and downside risks to the global outlook dominate—including from an escalation of the Ukraine crisis, increased sanctions on Russia, sharper-than-expected deceleration in China driven by the continued strict zero-COVID-19 strategy, and renewed flare-up of the pandemic.

Energy-Specific Survey Shows Stronger Outlook on Capital Expenditures

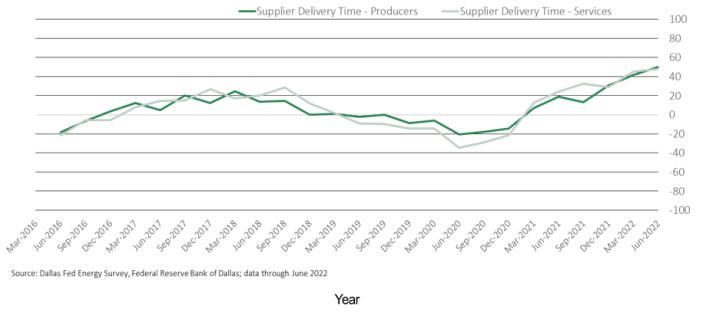

Figure 1

Supplier Delivery Times Are Increasing and Are Now at 6-Year Highs

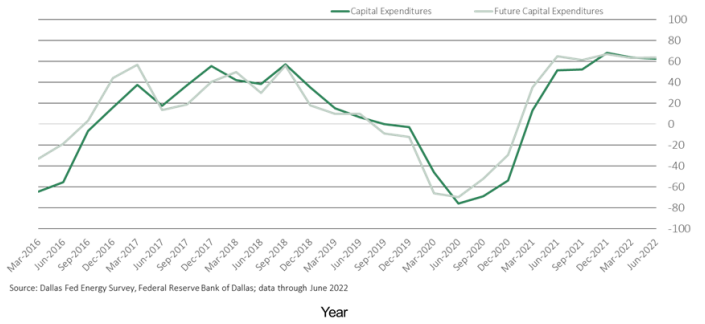

Figure 2

Vendor Supply Chains Are Not Recovering and Delays Are Increasing

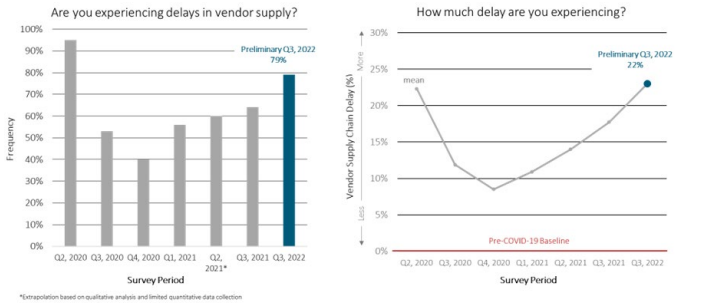

Figure 3

Low Cost and Low Carbon Are Not Mutually Exclusive

By Adi Akheramka, Research Team Leader, Carbon Management & Sustainability and David Rosenberg, Senior Consultant

As companies strive to lower their greenhouse gas (GHG) emissions from hydrocarbon-producing assets, most anticipate having to spend more to achieve their goals. Companies expect the CAPEX of their capital projects to increase as they try to meet the lower emissions target set by stakeholders. While this might be true for reducing emissions from existing assets—which have already some locked in equipment or design that needs to be replaced—trends emerging from IPA research show that this does not necessarily have to be true for new greenfield developments. Cost and carbon competitiveness are not mutually exclusive: both are achievable at the same time.

To achieve this, the two fundamentals of capital projects remain the same:

- Adopting industry Best Practices during project selection, shaping, and development will significantly improve the project performance.
- Decisions made earlier in the project journey have a greater influence on outcomes, and this ability to influence project outcomes decreases as the project is further defined.

The key questions are: What emerging Best Practices positively influence the journey toward a lower cost and lower emissions project? And how do you adapt the existing stage-gated project development process to include these new practices?

Measuring Carbon Competitiveness

Working with members of the IPA Carbon Working Group, IPA developed standard frameworks to collect emissions data at the project level for all hydrocarbon producing asset classes. This standard emission breakdown structure is used to collect data related to Scope 1, Scope 2, and project-related Scope 3 greenhouse gas (GHG) emissions.[2] Similar to IPA's Cost Index, using the robust database of Scope 1 emissions profiles provided by individual project teams, IPA has developed benchmarking methodology to assess the Life of Field Carbon Intensity Index. This methodology allows us to benchmark a project's emissions performance relative to other projects in the industry with similar field development and design characteristics.

In addition to emissions performance, IPA also collects details about the project practices at each decision gate in the project development cycle. The Carbon Readiness Framework highlights gaps in the practices of any particular project and measures the readiness of that project team to move to the next phase of development. This framework includes detailed assessment of practices and decisions related to low-carbon target setting and Key Performance Indicator (KPI) balancing, calculation of accurate and comprehensive emissions estimates, inclusion of carbon pricing, response to regulatory requirements, and startup planning.

[2] Scope 1 emissions are direct emissions from within the operational boundary of the project. Scope 2 emissions are indirect emissions due to import of power, heat, or steam to the project. Scope 3 emissions are indirect emissions from other sources, including emissions due to third party activities, the supply chain, and use of products.

The above metrics and frameworks help project teams evaluate the competitiveness of their emissions performance. Project development practices ultimately deliver (or fail to deliver if not followed) on the potential that opportunity presents.

Lessons From Early Adopters

To successfully reduce carbon emissions—without adding significant cost—the low carbon and low cost mindset must be adopted early in opportunity screening, concept selection, depletion planning, and scope selection. This low carbon/low cost mindset continues into technology selection by optimizing and selecting the Best Available Technology (BAT) to meet the project targets. This journey usually focuses on decisions in three arenas:

1. Use design optimization and BAT selection to reduce energy demand
2. Choose the cleanest form/source of energy to service remaining energy demand
3. Deploy carbon reduction and carbon removal scopes to address the remaining GHG emission

Possible Cost-Carbon Outcomes

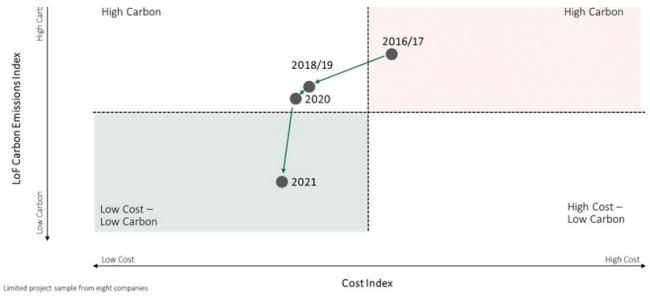

Figure 4

Pathway to Success for GHG Projects

The low carbon mindset must start early in portfolio management, opportunity selection, and field development planning to be effective

Figure 5

In this manner, effective opportunity screening and scope development sets a solid foundation for reducing carbon intensity of the asset for the entire life of the field.

It Is An Optimization Exercise

As shown in Figure 4, there are four possible scenarios with regard to cost and carbon competitiveness. At worst is a project that has both high costs and still has high carbon emissions. IPA's evaluation of cost and carbon competitiveness of recent projects has found that projects did, at first, fall into that top right quadrant of both high cost and high emissions. With dedicated efforts to reduce emissions, what early adopters anticipated is shown in the bottom right quadrant—low emissions but at a high cost. However, a project that is able to achieve both low costs and low carbon emissions is possible. In response to their poor cost and carbon performance, some of these early adopters are now setting more aggressive emissions targets for their projects and establishing practices and work processes to optimize this cost-carbon balance.

Based on research presented at Upstream Industry Benchmarking Consortium (UIBC) meeting in November 2021, the early adopters are now able to achieve improvements in cost and carbon competitiveness as a result of significant mindset changes. These companies now routinely execute projects that are both low in cost and low in carbon emissions (see Figure 4).

Three Examples of GHG Emissions Reduction Efforts

In our research, we have come across projects that have ranged from missing the mark on both cost and carbon to successfully achieving competitive targets in both KPIs. Below, we explore three examples of GHG reduction efforts that illustrate the range of experiences.

In our first example, the GHG reduction KPI was not identified until Define, after a post-COVID-19 restart in this phase. Thus, this project did not apply GHG practices until mid-definition, which is not early enough. During the extended Define phase, the project team changed the power generation strategy, reducing carbon emissions. Although energy efficiency and safety benefits were also captured, the project remained 28 percent more carbon intensive than average (and the cost was slightly higher than average as well).

The second example involves a project that was part of a series. Projects in a series typically achieve cost efficiencies as the program progresses. This project fell in the middle of the program and that is when the organization established its corporate GHG goal. The

project was successful in its GHG aspiration. The team was able to reduce CO2 emissions by 35 percent relative to the previous project in the series. However, cost competitiveness degraded by 7 percent.

In our final example, the project was able to achieve both a competitive cost (9 percent lower than Industry) and good carbon performance (22 percent better than Industry). In this project, cost and carbon targets were quantified early in the definition phase, allowing the team to develop a scope that was both low carbon and low cost (see Figure 5).

As these examples illustrate, decarbonization must be at the forefront of decision making to be successful. To work toward meeting emission reduction goals, companies need to evaluate the positive and negative contribution of each opportunity and scope choice toward that goal. Low cost and low carbon outcomes are attainable in a single project. However, the low carbon mindset must start early in portfolio management, opportunity selection, and field development planning to be effective.

IPA continues to evaluate projects under development and research the drivers of optimal low-cost and low-carbon performance.

For more information about how companies are achieving this optimal performance, please contact Adi Akheramka, **aakheramka@ipaglobal.com** or David Rosenberg, **drosenberg@ipaglobal.com.**

Aditya Munshi Assumes Newly Created Product Portfolio Officer Position

In August, IPA promoted Aditya Munshi to the newly created role of Product Portfolio Officer (PPO). IPA added this position to address the company's rapidly growing range of product offerings. As PPO, Munshi is responsible for developing and maintaining IPA's entire product development set. He oversees IPA product development leaders in the many IPA product areas, including renewables, client research, organization & teams, and carbon management.

Munshi joined IPA in 2007 as a project analyst, and became Deputy Director of IPA's Project Research Department for Cost Engineering in mid-2016. In his 6 years in that role, he has developed and grown a number of new cost and schedule products. Munshi retains his cost engineering duties as he takes on the new product portfolio position.

Early Operations Integration Is Key to Meeting Production Targets in the Renewables Business

By Andras Marton, Director, Integrated Energy Practice and Ronell Auld, Senior Project Analyst

With increasing investment and strong competition in renewable energy projects, getting predictable and competitive capital and operational costs becomes imperative to long-term success. Working with these projects, IPA has observed a consistent gap in assigning operations representation to projects during the project development and execution phases. With this gap in the project team, we observed consistent shortcomings during the life of the project, particularly during commissioning, startup, and early operations—and ultimately in the overall success of these ventures.

Operations representatives provide critical input for selecting the right project scope, completing engineering and procurement, planning for construction, managing design changes, and of course commissioning and operating the completed asset. Relative to other industries, we find that the renewable sector (e.g., solar and wind farms) struggles to include owner operations representation much before the facility is started up. This is probably because including operations input early in the project is not necessarily intuitive at first, particularly because many of these projects are greenfield, meaning they lack existing operational staff. The low margin nature of renewables also makes it difficult to justify having owner operations on staff. However, because of their low margin nature, and their low tolerance for cost and schedule deviations dictated by agreements, any information that comes in late to the project is problematic. We observe that when operations comes on board late, misalignment between that function and the project team is a common root cause of changes and problems during commissioning and starting up large solar and wind farm assets.

Operations Representation Is a Critical Part of an Integrated Team

Not surprisingly, project outcomes are considerably worse when operations representatives are not integrated into project teams during the planning and execution phases that precede commissioning and startup. In particular, integration of owner operations representatives into project teams—or lack thereof—has a direct influence on project startup and operability results, which heavily determines overall business success. IPA's research shows that large projects (e.g., capital investments over $20 million) average 10 percent less production versus nameplate when a key function like operations is missing from the project team (see Figure 6).

Operability results play a large role in net present value (NPV) and rates of return (ROR) on capital investment—poor or delayed startup and operability shortfalls can more than offset good cost and schedule performance. Because of this relationship with final business results, integration of operations representatives is a key leading indicator (KLI) of project success.

The Importance of Operations in the Planning Phases

The value owner operations input provides is clear during both the planning (pre-authorization) phase and the execution phase. At the beginning of the planning phase, operations ensures that the project team has early alignment on how to prioritize and trade off operating expenditure (OPEX) goals against capital expenditure (CAPEX) goals. Operations can also provide critical input around realistic operational performance—a common reason why renewables projects miss their operational targets. Understanding trade-offs and setting realistic targets are two critical factors in developing a clear and viable business strategy.

Owner operations' input is also critical to better understand the long-term value (and cost) of various scope elements—and therefore what to include and what to exclude from the project scope. Consequently, we find that projects with early operations input have improved efficacy and timeliness of project scope selection and average fewer scope additions, fewer scope deletions, and fewer design alterations during the execution phase of the project.

Better understanding the operational aspects of the economics and the value of each scope element places the owner organization in the best position to negotiate with equipment suppliers and design and installation contractors. With operations representatives, project teams have a better understanding of what to prioritize in contract terms and conditions, such as whether to include or exclude maintenance support from equipment original manufacturers (OEMs).

Operations Plays an Important Part During Execution

There are also several benefits of having owner operations integrated into the project team during the detailed engineering, procurement, and early construction phases. While operations' participation during the planning phase leads to fewer changes, the changes that do occur are also handled better. Operations provides a necessary layer of quality control from an operability and maintainability perspective, ensuring that changes fit the project scope and the operational objectives of the project. We see project teams with operations representation employ better change management and control practices, and make faster and better decisions around proposed changes. We also see the changes better incorporated into later phases of the project, in particular with respect to commissioning and startup activities.

Finishing Strong: Commissioning, Startup, and Handover

Last but not least, operations' most obvious role is during the commissioning, startup, and handover phases. A common misconception is that they are only needed for the duration of these phases. However, to succeed we find that operations needs to get involved much earlier, and be given enough time and involvement to develop adequate plans. We have seen several projects with business cases severely tarnished by the lack of well-developed startup plans, inadequate or unqualified startup resources, unidentified stakeholders during startup, and misalignment with connecting carriers. These gaps typically lead to significant production delays after mechanical completion or long-term production shortfalls. We frequently find that the cause of these gaps could have been identified early on and completely avoided with timely involvement of operations.

Our data clearly show that early involvement of operations representatives is critical to the success of renewable energy ventures. We recognize that it can be a challenge to integrate the operations function early on due to staffing constraints, organizational design, or work process gaps. IPA has successfully worked with several clients to devise bespoke solutions to overcome these challenges. The reality is that project and business results are more predictable and more competitive when owner operations representatives are integrated into the project team in all project phases.

For more information, contact Andras Marton, **amarton@ipaglobal.com**, or Ronell Auld, **rauld@ipaglobal.com**.

Average Percent Availability

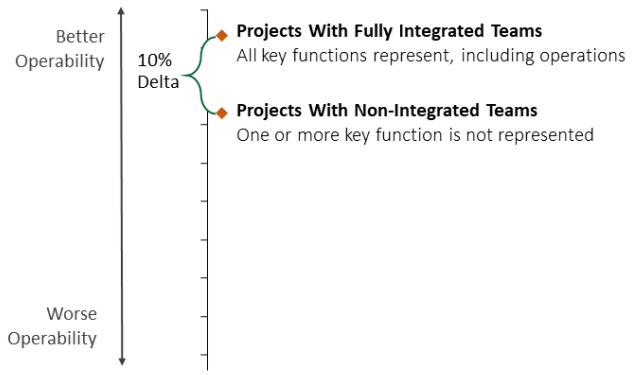

Figure 6

Luke Wallace to Take Over From Project Research Division Director Mike McFadden

Luke Wallace began the transition to Director of the Project Research Division (PRD) as long-time director Mike McFadden begins (semi) retirement after 22 highly productive years at IPA. Mike guided PRD through its rapid growth very successfully and leaves the organization much stronger than he found it. His retirement is only partial because Mike will continue to work part-time for IPA and lead the development of client-funded research.

Mike McFadden joined IPA in 2000 as a project analyst after 15 years as a research scientist and leader in the paper industry. Mike served as the Business Area Manager for Hydrocarbon Processing and Transportation (HPT) and as North America Regional Director before taking over responsibility for PRD, IPA's largest organization.

Luke Wallace served as the Director for Capital Solutions for the past year before stepping into the Director of PRD role. Luke joined IPA as an intern and became part of the research staff full-time in 2005. Luke has served in several leadership positions in his time at IPA. He took over as Research Team Leader for Oil and Gas in 2012 and assumed leadership of the Cost Group in 2013. After serving in a litigation support role, Luke returned to IPA in 2018. In his new role, Luke is responsible for IPA's research organization, which leads and supports IPA's research and develops the analytical tools IPA employs in evaluating capital projects.

FEL Toolbox **Project Definition Software**

IPA's **Front-End Loading (FEL) Toolbox** software has been the gold standard for site and sustaining capital project self-assessment for nearly 20 years. We are excited to share that the 2021 release of the software includes significant improvements to the overall user experience:

Redesigned user interface and navigation

Improved page layout, graphics, and readability

Improved navigation

Enhanced security

IPA research has shown that FEL, or project definition, is one of the most significant drivers of success for capital projects. The FEL Toolbox software aids the project definition work process to help improve project outcomes and return on capital investments.

To request a demo, contact Katherine Marusin, IPA Manager, Site and Sustaining Capital, at **kmarusin@ipaglobal.com**.

What Is Project Benchmarking?

By Andrew Griffith, Director Consortia Membership & The IPA Institute

Project benchmarking can be defined as the ongoing search for Best Practices that produce superior performance when adapted and implemented in one's organization.[3] The ultimate goal of benchmarking is continuous improvement of capital project systems, individual projects, and targeted functional activities. Benchmarking provides the tools and processes to accept change as constant, inevitable, and good. And it is this ongoing adaption of Best Practices that helps capital project systems to achieve predictability, drive competitiveness, and enable success.

[3] Adapted from Christopher E. Bogan & Michael J. English, *Benchmarking for Best Practices: Winning Through Innovative Adaptation*, New York: McGraw-Hill, Inc., January 2014, pg. 4.

What Are the Different Types of Project Benchmarking?

Project benchmarking takes several forms:

- Internal benchmarking compares operations across a company's divisions, regions, or businesses.
- Competitive benchmarking assesses advantages and disadvantages between direct competitors.
- Functional benchmarking allows learning from outside a company's immediate competitors and instead focuses on functional competitors.
- Generic benchmarking views business functions across industries and provides an opportunity for step-change learnings.

Why Is Benchmarking Project Systems So Hard?

First, deciding what to measure is not always clear. There is no single measure of project success that can be universally applied as a basis for benchmarking. Second, obtaining reliable competitor data is difficult as these data are typically not publicly available. Identifying the right learnings can also be challenging. Finally, maintaining a benchmarking process requires discipline and resources.

What Are the Steps of the Project Benchmarking Process?

The benchmarking process has 10 steps:[4]

1. Identify what will be benchmarked. This can come from the top down, for example from the company's mission statement, or existing performance measures can be used.
2. Identify comparative companies. This is driven by the type of benchmarking you want to do. For example, a company that wants to benchmark internally (e.g., across regions or divisions) will need different information than a company that wants to see how it stacks up against its competitors. Some immediate considerations for this step include the amount and accuracy of the data, as well as the cost and time needed to obtain the data. Possible sources for the data include internal information, product analysis, company sources, public domain information, consultants, and external experts and studies.
3. Determine the data collection method and collect the data.
4. Analyze the data to determine performance gaps between current performance and desired performance,
5. Project future performance levels. Projecting future performance is important to know if the company's gap from industry practices will widen, narrow, or stay the same.
6. Communicate the benchmarking findings and gain acceptance. Communicating the results to company leadership is a critical step as the identification of performance gaps may lead to skepticism on the validity of the results. Gaining acceptance drives the initiative for change.
7. Establish functional goals.
8. Develop action plans to meet those goals. Getting stakeholders to buy-in to the action plan is critical to the success of the plan's implementation and cannot be overlooked.
9. Implement specific action and monitor progress.
10. Recalibrate the benchmarks to drive continuous improvement.

[4] Adapted from Robert C. Camp, Benchmarking: *The Search for Industry Best Practices That Lead to Superior Performance*, Milwaukee, WI: American Society for Quality, May 1989.

Although important for the health of a company's capital projects portfolio, benchmarking is not easy to do with only internal resources. IPA has collected and studied detailed project data directly from owner organizations for decades, enabling us to determine empirical key performance indicators for our clients and assess their project system performance relative to industry peers. We know what drives capital effectiveness and we translate that knowledge into actionable intelligence that helps our clients improve the performance of their capital project systems, individual projects, and targeted functional activities.

Project Viability Assessment (PVA)

The PVA measures the strength of your project's business case, shares insights into the likely outcomes, and provides actionable recommendations for improvement.

Contact Edward Merrow (**emerrow@ipaglobal.com**) or Kate Rizor (**krizor@ipaglobal.com**) to determine if your business case is strong enough to set your project up for success.

Assessing the Current State Illuminates the Path Forward

By Allison Aschman, Director, IPA Capital Solutions

The Problem:

A mid-size global specialties company came to IPA with a common problem: its projects were unreliable. The company found that its promised new capacity was being delivered later than expected. And capital costs were both overrunning and underrunning—leaving funds unspent one year and oversubscribed in another.

For this company, with its focus on renewables, predictability is key, and they could not afford to keep getting their capital investments wrong. This science-driven company prides itself on being agile enough to deliver innovative solutions but also recognized the need for business rigor. Despite its efforts, however, the company was authorizing projects that had clear signs of being disaster projects.

The First Step: Assessing the Current State

Before moving forward with a solution to the company's issues, IPA proposed taking a look at the company's current state. This step allows us to confirm the diagnosis of what is causing the problem so that a plan to address it can be developed. (See Figure 7.)

In the diagnosis step, IPA gathers the information needed to assess a company's current state. We look at the company's project results, interview key stakeholders, and make a case for change.

We found that the company was operating as separate business areas with no common resources. Because the business areas were independent, they were each trying to build their own capabilities instead of sharing across the company. Recognizing the need for structured project delivery, the company imposed a stage-gated project approach. However, this new governance structure was not working as planned—for several reasons.

First, this new approach did not have large-scale buy-in. A change of this magnitude requires support from key stakeholders such as business sponsors and the investment-decision makers themselves, who–at this company–had not fully committed to stage-gating as their mechanism for capital governance.

Second, the company was missing the project competencies to make the process work effectively. The process called for the right work to be done in each stage, but the individual business organizations did not have projects-capable staff to manage that work.

IPA Capital Solutions Work Process Pathway

Figure 7

The Next Step:

To address the underlying issues and find a solution, the company top management needed to answer three basic questions on its commitment to improvement (see Figure 8).

Answering yes to all three questions commits top management to the necessary enablers such as staffing up and centralizing owner capability, holding businesses accountable for using the project governance process, and enforcing compliance. Answering no to any of the three means the company could expect to continue to have unpredictable and unsatisfactory results, with only slow improvement at best.

With targeted areas of improvement, the company is now ready to take the next steps of Solution Development and Implementation. These will be covered in part two of this case study.

*Are you committed to investing in what it takes to make capital project delivery excellence a company **core competence**?*

Do you agree that improvement requires centralized core project capability?

Are you ready to lead a culture of discipline in project governance, balancing the tension between business agility and project rigor?

If the answer to any of the above questions is "no," expect continued unpredictable and unsatisfactory results

Figure 8

Carbon Working Group Pursues Optimal Low-Carbon Scope Selection

The IPA Carbon Working Group (CWG) held its second bi-annual meeting for 2022 on July 19. It was attended by 33 of the member companies, with diverse representation from several industrial sectors, including hydrocarbon production, refining and petrochemicals, chemicals manufacturing, and mining and mineral processing.

The objectives of this meeting were to:

- Provide updates of two ongoing IPA multi-client efforts critical to the decarbonization of attending companies
  - Establishing performance norms of CCS projects
  - Understanding organizational models for a successful transition
- Dive into the "how to" of GHG reduction

Formed in 2020, the focus of the CWG in its first 2 years was on establishing industry-standard emissions breakdown structures and developing capabilities to evaluate the competitiveness and predictability of emissions reduction as an emerging performance indicator for capital projects. CWG has been largely successful in achieving this goal: use of metrics and frameworks began in mid-2021 for E&P projects and will soon be rolled out for other industrial sectors. IPA is now helping project teams improve their competitiveness by benchmarking GHG emissions for individual projects and project portfolios. Using the Carbon Readiness Framework, developed along with CWG members, decision makers can identify gaps in their project practices and adopt Best Practices to improve performance.

The next major objective is to help decision makers use this insight into carbon competitiveness and effectively balance it with other measures of performance, particularly cost. The discussions in the July meeting laid the foundation for identifying key metrics to aid in this optimization exercise, and highlighted some of the drivers and practices that are important for such KPI balancing.

Based on inputs received from the participating companies, IPA is now shaping these topics further and will soon kick off topic-specific technical sections to progress solution development with interested CWG members.

For more information, contact Adi Akheramka at **aakheramka@ipaglobal.com.**

Cost Engineering Committee Meeting to Be Held in McLean, VA

IPA's annual Cost Engineering Committee (CEC) meeting will be held on September 20-21, 2022, at the Hilton McLean Tysons Corner in McLean, Virginia. In addition to returning to an in-person event, IPA changed the CEC membership requirements recently to allow more companies to take advantage of CEC research and tools. The new requirements still include the need to contribute capital project data but accommodate clients who are specifically focused on cost engineering capabilities.

New and updated capital project research studies will be presented at CEC 2022. Following the keynote address, to be given this year by IPA alum and author of *Project Risk Quantification* John Hollmann, the following two research studies will be featured:

- Market Trends in Capital Projects
- Schedule Risk Analysis Using Parametric Methods

In addition, CEC member companies will be briefed on the latest trends in the engineering, procurement, and construction market and will have the opportunity to join in communities of practice discussions.

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IPA Institute
Public Virtual Training Courses

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Courses	Dates	Times	Language	Fee	Click to Register
Front-End Loading (FEL) and the Stage-Gated Process	September 20 & 21	9 a.m. to 11 a.m. (U.S. Eastern Time)	English	$400 USD	REGISTER
Establishing Effective Capital Cost and Schedule Processes*	September 26–30	9 a.m. to 11 a.m. (U.S. Eastern Time)	English	$1,000 USD	REGISTER
Gatekeeping for Capital Project Governance	October 11–13	9 a.m. to 11 a.m. (U.S. Eastern Time)	English	$600 USD	REGISTER
Best Practices for Site-Based Projects*	October 17–21	9 a.m. to 12 p.m. (U.S. Eastern Time)	English	$1,200 USD	REGISTER
Project Stakeholder Alignment Through Successful BEAM Implementation	October 25	9 a.m. to 12 p.m. (U.S. Eastern Time)	English	$300 USD	REGISTER
Front-End Loading (FEL) and the Stage-Gated Process	October 26 & 28	10 a.m. to 12 p.m. (E. South America Time)	Portuguese	$300 USD	REGISTER
Front-End Loading (FEL) and the Stage-Gated Process	November 1 & 2	9 a.m. to 11 a.m. (U.S. Eastern Time)	English	$400 USD	REGISTER
Gatekeeping for Capital Project Governance	November 8–10	9 a.m. to 11 a.m. (U.S. Eastern Time)	English	$600 USD	REGISTER
Front-End Loading (FEL) and the Stage-Gated Process	November 9 & 11	10 a.m. to 12 p.m. (Brasilia Time)	Spanish	$300 USD	REGISTER
Capital Project Execution Excellence and Project Controls	November 16 & 17	9 a.m. to 11 a.m. (U.S. Eastern Time)	English	$400 USD	REGISTER
Project Stakeholder Alignment Through Successful BEAM Implementation	November 29	9 a.m. to 12 p.m. (U.S. Eastern Time)	English	$300 USD	REGISTER
Best Practices for Site-Based Projects*	December 5-9	9 a.m. to 12 p.m. (U.S. Eastern Time)	English	$1,200 USD	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.

IPA Events and Presentations

Cost Engineering Committee (CEC)
September 20–21, 2022
Tysons Corner, VA

The CEC assists cost engineers by providing metrics and tools that offer an unbiased snapshot of industry cost and schedule estimates and trends. The CEC focuses on all aspects of cost (or investment) engineering, including cost estimating, scheduling, and project control practices and metrics, with the goal of expanding the owner cost engineer's capabilities. The primary vehicles for accomplishing these objectives are metrics, research, and practice sharing. Contact Andrew Griffith at **agriffith@ipaglobal.com** for more information.

ADIPEC
October 31–November 3, 2022
Abu Dhabi, UAE

IPA's Daoud Kiomjian will present his research, *Middle East Capital Projects Struggle With Schedule Performance*, at the ADIPEC Technical Conference organized by the Society of Petroleum Engineers. This technical conference covers a wide and diverse range of technical and engineering insights.

Upstream Industry Benchmarking Consortium (UIBC)
November 14–16, 2022
Tysons Corner, VA

The UIBC is solely dedicated to the exploration and production (E&P) industry. It provides an independent forum for each participating 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 Andrew Griffith at **agriffith@ipaglobal.com** for more information.

International Project Management Conference (IMPC)
December 12–13, 2022
Kuala Lumpur, Malaysia

IPA is sponsoring the IPMC 2022, which will focus its theme on The Era of Disruptive Technology and Sustainability. The IPMC is an exclusive cross-industry gathering of project practitioners. Per the event prospectus, IPMC 2022 will "explore the disruption to conventional business models in creating a new breed of project management that is capable of innovating and navigating technology disruption in a sustainable manner in response to world demands."