Independent Project Analysis, Inc. | Volume 15, Issue 4 | December 2023

# IPA Newsletter

ALSO IN THIS ISSUE:





## Incorporating Sustainability Goals Into Portfolio Planning

**By Allison Aschman, Director, IPA Capital Solutions**

A growing struggle for many companies is determining how to effectively incorporate sustainability goals into the ongoing business of long-range capital planning and into the identification, development, and definition of capital projects.

Common questions include:

- How are standalone sustainability projects identified and justified?
- How are sustainability goals included in stay-in-business and growth projects' objectives?

At IPA's biannual Carbon Working Group (CWG) meeting in August 2023, we met with 28 owner companies to discuss approaches to identify and justify standalone sustainability projects and how sustainability goals are included in stay-in-business and growth projects' objectives. The session aimed to have participants share prevalent practices with a goal to learn from each other.

### How Do Companies Incorporate Sustainability Into Their Portfolios?

Ideally, project portfolio creation should drive identification of the most valuable opportunities for the business by connecting the company's strategy to capital investment, allowing the company to achieve its goals through capital expenditure. A solid portfolio process requires a robust basis for selecting the right opportunities (and deselecting the wrong ones) by identifying potential returns (value) and risks to achieve informed decision making. A good portfolio creation process should allow a company to maximize its returns. (See **Figure 1**.)

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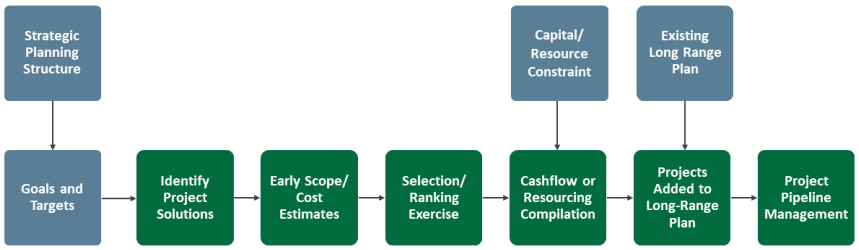


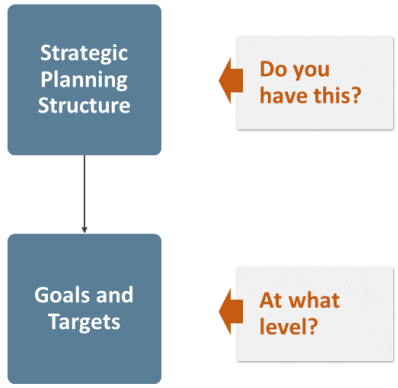

Figure 1

To be effective, the portfolio creation process should promote capital governance by enhancing transparency and accountability for capital investment decisions. Buy-in must be obtained from all internal, legitimate stakeholders to ensure a stable foundation for project planning and execution. Finally, portfolio planning should help the company leverage (often limited) resources to obtain optimal project performance.

For companies that address sustainability on a portfolio level, the starting point is in the portfolio strategic planning structure and the portfolio goals and targets. The following questions should be addressed. **Figure 2** lists some of the questions that should be addressed.

We asked CWG members how many had a structure to incorporate sustainability from the start of the project portfolio planning process and found that about half had some sort of mechanism—and half did not. Only slightly more than a quarter (27 percent) classified their company's mechanism as well defined, while another quarter (24 percent) said their organization's process was less defined. In total, about half were either missing a structure or had no systemic mechanism at all. (See **Figure 3**.)

Given the challenging sustainability targets most of these companies are working toward, a key takeaway for participating companies is the need to incorporate the sustainability function into the strategic planning structure in a way that specifically addresses capital projects.




- Is there a clear definition of success for sustainability?
- Where, within the organization, are goals being set?
- Are there corporate, business, operations goals?
- How are sustainability targets brought into decision making?
- Is there a clear definition of success for sustainability?
- Where, within the organization, are goals being set?
- Are there corporate, business, operations goals?
- How are sustainability targets brought into decision making?

Figure 2

How would you describe your mechanicsm to bring sustainability goals into the portfolio creation process at your company?

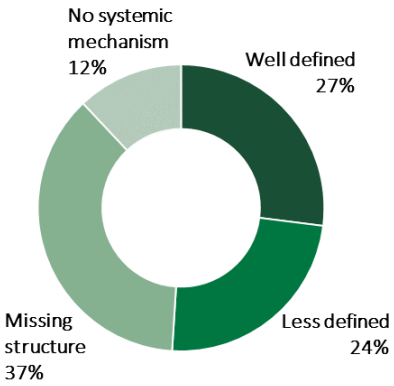



Figure 3

How integrated is sustainability in the early project lifecycle from opportunity identification to long-range plan to development and early scoping?

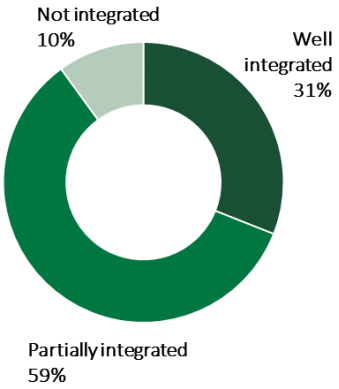



Figure 4

### Additional Ways to Incorporate Sustainability

**BEAM–**As an example of a tool for operationalization of sustainability across project development and planning processes, we discussed the additional consideration of sustainability in collaborative decision making forums such as Business and Engineering Alignment Meetings (BEAMs) and sought insights into similar practices that CWG member companies are using within their organizations.

BEAM facilitates multi-stakeholder decision making as a foundation for setting cost, schedule, and implementation targets. IPA is seeing sustainability professionals increasingly joining in BEAM or BEAM equivalents where decisions on priorities and trade-offs are being made. CWG members indicated the existence of similar practices in FEL 1 or early project stages. Companies intend to ensure sustainability is a part of the process, but this is still an evolving space and discussions on sustainability have changed dramatically since last year.

Traditionally, BEAM has been a cost vs. schedule or quality trade-off. IPA initiated a discussion on sustainability as a fourth pillar or metric in this trade-off. Methods to quantify the sustainability metrics and target setting mechanism were discussed in some detail. A few good practices were highlighted:

- Carbon competitiveness workshops as a mandatory step for capital projects
- Include a GHG value driver in the budget (instead of considering it an extra criterion)
- Include both carbon and cost as strategic considerations for concept development

**Carbon Reduction Value Improving Practice**–Another tool IPA sees as valuable in achieving better integration of sustainability in the project life cycle is a potential Carbon Reduction Value Improving Practice (VIP). IPA already evaluates the use of other VIPs and sees the Carbon Reduction VIP as an extension. The Carbon Reduction VIP is meant to focus on the reduction of carbon emissions during project construction and asset operations and could be used for Scope 1 (direct) and Scope 2 (indirect) emissions.

**Other Practices–**Other tools similar to the Carbon Reduction VIP in use in different companies include:

- Matrix of abatement options and regions where they may work well is used as a starting point, and then a project-specific Carbon Reduction VIP is done during concept development
- Energy VIPs where value per dollar of energy efficiency is an additional step during technology selection

**Summary–**The session closed with a poll on sustainability integration from FEL 1 to early scoping and integration through a life cycle. The majority of respondents indicated they were partially integrated. This finding likely broadly reflects industry trends. Final notes from members included comments on the challenges in enhancing the buy in from project stakeholders including engineers for better integration of sustainability goals. Other comments highlighted greater interest in sustainability among the younger population. (See **Figure 4**.)

Contact Adi Akheramka at **aakheramka@ipaglobal.com** for more information about the CWG's efforts or Paul Barshop to express interest in joining his ongoing study to be presented at Industry Benchmarking Consortium (IBC) 2024.

Contact Allison Aschman at **aaschman@ipaglobal.com** or Deb McNeil at **dmcneil@ipaglobal.com** for more info.

# **Hybrid Working** and Capital Project Teams

**By Katya Petrochenkov, Deputy Director of Project Research Division for Organizations and Teams and Charis Declaudure, Research Analyst**

From early 2020 to mid-2021, the COVID-19 pandemic forced many project teams into a new, daily routine of working from home. A 2020 IPA survey showed that this switch to remote working drove a self-perceived hit in team efficiency and productivity. As restrictions started to lift, a new mode, hybrid working, emerged, which involved having employees work partially from home and partially from the office or the field. This mode proved useful in allowing access to the office while limiting exposure to the virus. When this melded working method was introduced, many saw it as the first step in a gradual transition back to full-time office or field work–in other words, back to normal. In practice, hybrid working continued to evolve as a flexible working arrangement and is now considered a norm for many employees. In the post-pandemic era, hybrid working is often considered to be at the crux of what many are referring to as the new normal–at least in the workplace. And the capital projects are no exception.

Unlike most aspects of business, projects are almost completely team-based activities. Can hybrid working work for owner project teams? That is our subject in this article.

### What IPA Discovered About Hybrid Work

IPA recently interviewed 48 project managers and capital project leaders to discuss their company's hybrid working policies and how these policies manifest in day to day project work. Feedback from these interviews shows that hybrid working has indeed become an industry norm in project work, with the vast majority of project managers indicating that they are still using hybrid working models today. (See **Figure 5**.)

Those that have returned to the office have emphasized the importance of maximizing face-to-face interaction for project work, and the advantages that team colocation provides in terms of informal communication channels and resolving issues quickly. For companies where hybrid work has persisted, the most common reasons given emphasize the fact employees now expect to be given this flexibility, though we know there are likely other corporate drivers at play. For example, many companies are using the high uptake of hybrid work as a justification to downsize office space, which can provide an immediate boost to the bottom line, but with long-term consequences. Indeed, IPA has learned that some existing project office locations are planning to close within the next year, which will leave some employees with no choice but to endure very long commutes in order to get face time with colleagues.

On the other hand, for an industry where talent is in short supply, flexible working arrangements can allow companies to broaden their recruitment reach, though we have yet to see strong consideration for how distant or remote employees will be onboarded effectively. While this may not be as big of an issue for seasoned professionals, it is concerning for more junior employees for whom much of the learning takes place on the job and through interactions with more senior colleagues.

Corporate drivers aside, for an industry where success is reliant on work done by cross-functional teams, not just the tenacious efforts of individuals, are project organizations doing enough to ensure hybrid working models can actually deliver capital effectively?

### Hybrid Working Models for Capital Projects

Hybrid working really is a catch-all term, and our interviews revealed that its implementation varies widely across capital project systems. When it comes to the number of days that employees are expected to be in the office or in the field, this ranges from no strict requirements to 4 days in the office, although 2 to 3 days appears to be the norm. In many cases, the number of days is set by a

blanket corporate policy, which does not provide project managers with the authority to optimize working models for their teams as appropriate. In some cases, hybrid working arrangements are at the discretion of functional managers, meaning working arrangements can differ across the project organization and between team members.

This is concerning given that the main point of coming into an office, plant, or field location for project professionals is to maximize the effectiveness of collaborative work and communication with other team members, not simply to turn on the computer from another location. Only 38 percent of those interviewed had measures in place that ensured team members were coming to the office on the same working days each week–what we have termed "fixed" working days. For some project teams, there were no defined conditions or meetings at all that required in-person attendance by all team members, such as constructability reviews or milestone meetings. (See **Figure 6**.)

Project managers with fixed working days for their teams see tremendous benefits to this approach, with some going so far as to say this is the only way you can actually make hybrid work for projects. While in theory individualized tasks can be done quite efficiently from anywhere, there is no substitute for face-to-face interaction when it comes to collaborative work. There is also no substitute for being able to walk down the hall and get the information you need to make an informed decision in real time. While most of the people (non-managers) we interviewed did not feel that hybrid working was having a negative effect on decision quality, 40 percent did acknowledge that decision-making was slower.

### Most Communication Is Going Virtual

If you discuss hybrid working with enough people, one of the common phrases you

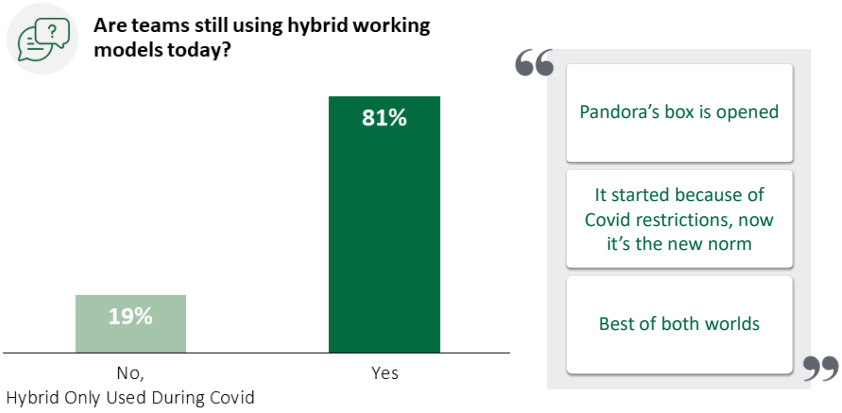



Figure 5

## Team Members Do Not Necessarily Come Into the Office on the Same Days

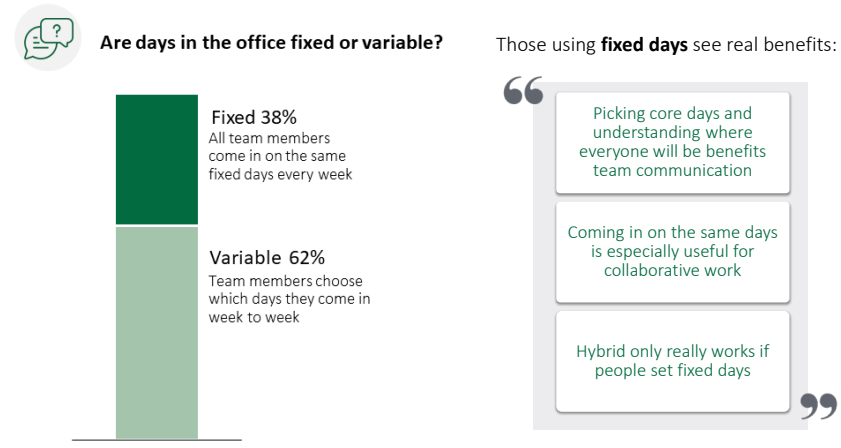



Figure 6

## Despite So Much Team Communication Going Virtual, Only a Minority Have Methods to Measure Virtual Team Engagement


Figure 7

hear is this idea that hybrid allows us to get the best of both worlds. However, our interview results show that many of us may be diminishing the value of one of those worlds by not capitalizing on opportunities for team members to get face time with each other. And indeed, we are seeing that communication norms for teams are shifting more and more toward virtual means, even when people are in the office. It is often perceived as more of a hassle to even get people together for a meeting face to face. It can be difficult to find an available conference room (could office downsizing be at play?), people tend to be in back-to-back meeting marathons, making it difficult to get to a physical meeting location on time, and some just don't want to show up if there is an option to join via a virtual link.

With so much virtual communication, one of the biggest challenges is how to ensure all team members are fully engaged and fully aligned. In face to face communication, there are numerous non-verbal cues that signal miscommunication, or the face that someone has completely checked-out. It's hard to miss someone's eyes glazing over or the perplexed look of a colleague when everyone is in the room together. Virtual communication also introduces the additional challenge of meeting participants multitasking. Many project managers have come to loathe the phrase, "Can you repeat the question?" while also admitting to succumbing to the temptation of multi-tasking during meetings themselves. Only about a third of project managers we spoke to had developed their own tactics for ensuring team members were engaged in virtual meetings. (See **Figure 7**.)

Such tactics include things like ensuring everyone has a speaking role during key meetings to limiting meeting attendance to only the key participants to making sure everyone keeps their cameras on. While keeping cameras on, at least for smaller meetings, seems like a pretty straightforward way to bring in some non-verbal communication to the virtual environment, very few teams had strict requirements for doing so, and about half tend not to use their cameras as a general norm.

### Hybrid Working Provokes Mixed Feelings

Although it has become an expectation for many project team members, project managers still have mixed feelings about its efficiency. About 60 percent of project managers believe their team members prefer hybrid working models over full-time office work or fully remote working, with about a third saying preference really depends on the individual. However, when asked about their own personal preference, about half of the project managers we spoke

**With These Preference Differences, Why Are We Not Seeing a Greater Shift Back to Full-Time Office Work?**

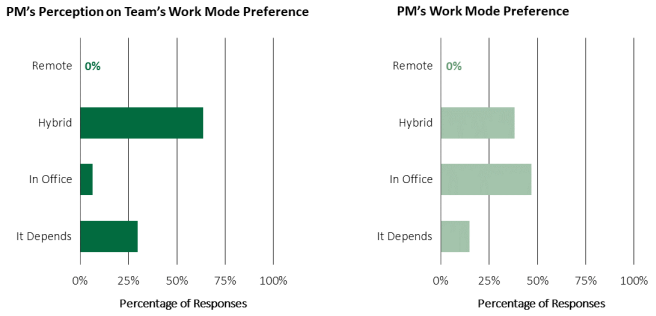



Figure 8

to would prefer to have all team members back in the office full-time versus 38 percent that are happy hybrid working setups. Most of the reasons given for wanting more face time were around the softer side of team dynamics, such as relationship building and team cohesiveness. Problems, and especially interpersonal conflict, are also much harder to resolve in a virtual environment. Some project managers feel that the makeup of the team can really influence how they feel about hybrid working, citing, for example, that more junior employees may benefit from being in the office. (See **Figure 8**.)

So while some project managers are embracing hybrid working as a flexible working arrangement, others feel trapped in this new way of working due to hybrid working policies that have been imposed upon them, or out of fear of losing resources in an already difficult market. About 70 percent of project managers felt they would lose people if the company were to take away hybrid working options, though the companies we spoke to that have mandated a return to office have did not experience any mass exodus of employees.

### The Future of Hybrid Work

Adopting hybrid working constitutes significant operating model change; however, for most of the capital project industry, hybrid working was introduced only circumstantially—in response to COVID-19 restrictions. If organizations want to fully embrace hybrid working, this change needs to be managed like any other major change initiative: with deliberate intent and in such a way that organizations can identify what works and what does not. To this point, most project organizations have not taken these steps.

The way hybrid working is implemented also needs to be aligned with corporate strategy and the work being done. Adopting a one-size-fits-all approach to hybrid working–one where a single hybrid working policy is applied to the entire organization–may appear easier to roll out, but falls short in accommodating the nuances of project work. For one, it fails to consider whether the model is appropriate for all types of work and tasks–which are never uniform across all job functions that make up an organization. Furthermore, it undercuts the authority of project managers and other leaders to manage and integrate project teams in alignment with project priorities, which invariably shift throughout a project's lifecycle.

In order for the industry to establish Best Practices for hybrid working, organizations must first define what hybrid work will look like for capital projects, including the rules and norms and that project personnel will follow. In establishing well-defined parameters for these working conditions, organizations must consider:

- Which tactics, rules, or norms can mitigate the losses associated with less face-to-face time? When must in-person work be prioritized?
- Are there any roles, tasks, or activities that are more suited to hybrid working than others?
- How do team member roles and responsibilities and core competencies need to change?
- How will we train and develop newcomers?
- How will we build relationships with and integrate new team members?
- Does anything else in our project system (work process, organizational setup, information management systems, etc.) need to change to make this effective?
- How will we measure the effectiveness of our hybrid working models, collect lessons learned, and incorporate learnings about hybrid working back into our systems?

Going forward, IPA will continue to track and monitor the implementation of hybrid working on capital projects in order to measure the effects of hybrid working on project success and determine whether there are any Best Practices that can be employed by the industry to promote strong team integration and good project outcomes. In the meantime, our research has shown that the burden of mitigating any downsides associated with hybrid work will fall very much on our project managers. The ability of project managers to excel at both project management and people management, communication, and leadership will become increasingly important.

Contact Katya Petrochenkov, Deputy Director, Organizations and Teams, **kpetrochenkov@ipaglobal.com**, for more information.

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

People are the most critical component of a capital project. Poor project performance can often be traced back to problems rooted in the project team or even the project organization itself. We partner with companies to optimize the staffing, competence, and structure of project organizations and teams to drive successful results.

Contact Katya Petrochenkov at **kpetrochenkov@ipaglobal.com** to request more information.

# **Building a Sustainability Culture** in Capital Projects

**By Paul Barshop, IPA Global Director, Sustainability**

During IPA's most recent Carbon Working Group (CWG) meeting in August 2023, a comment about "winning the hearts and minds of project teams" really struck me. We were discussing barriers to incorporating sustainability goals into capital projects, and the person said that resistance or indifference by some project team members—in other words, a lack of strong sustainability culture—was a barrier to thorough identification, investigation, and implementation of alternatives to improve sustainability performance.

I had not heard that before as an issue. Then, it came up again in a few more conversations I had with both capital project and sustainability leaders. A couple of months ago, I relocated from Singapore to Houston, Texas, taking on a new IPA role—Global Director of Sustainability. Since landing in Houston, I have been reaching out to and talking with as many people as possible about sustainability and capital projects.

Capital projects are an important vehicle for IPA clients to advance progress toward meeting their sustainability goals. Corporate or business mandates for sustainability do not magically manifest into engineering designs. Project teams have to do the technical and economic studies to evaluate ways of meeting sustainability targets and then do the engineering to implement the selected alternative. Teams reluctant to do that work will cause delays and missed opportunities.

Also, it is not just the hearts and minds of project teams that need to be won. An IPA colleague was facilitating a strategy session for a company's expansion project. When the subject of sustainability goals was raised, the sponsor said in effect "this is a schedule driven project—there is not enough time to identify ways of reducing emissions, water, and waste." To the sponsor, the schedule priority far exceeded the company's sustainability imperative.

### Building a Safety Culture as a Model for Building a Sustainability Culture

Project people I talk to say the same effort that built a safety culture within their company is what is needed to build a sustainability culture.

I will return to the definition of a safety culture in a bit, but for now let's say it means safety is a company core value and number one priority. There are no compromises or trade-offs made that jeopardize safety.

Sustainability is not exactly the same. Compromises and trade-offs are integral to the activity.

Sustainability is often defined as the triple bottom line, the intersection of economic profit, environmental performance, and community and social development. Business success is finding the right balance between these objectives.

Do not get me wrong. Building a sustainability culture will not make the challenge go away. There will still be hard choices to make. But, a company with strong sustainability culture strives to explore options for the triple bottom line in a rigorous and deliberate way in all its activities.

People cite safety culture because it produced tremendous improvements in construction safety performance. **Figure 9** shows the remarkable construction safety improvement achieved by companies participating in IPA's Industry Benchmarking Consortium (IBC) since 2006. IBC participants are world leading companies in the extractive, processing, and manufacturing industries. As you can see, the average rate of recordable incidents dropped 86% in just over 15 years! (See **Figure 10** for the definition of recordable.)

### How to Build a Safety Culture

There are many definitions of what safety culture means, but this statement is a good summary: "Almost all of those attempting to define the safety culture construct agree it reflects a proactive stance to improving occupational safety and the way people think and/or behave in relation to safety."[1] The same definition could be adopted for building a sustainability culture.

The transformation to a safety culture starts by establishing organizational goals and management practices codified in corporate policy and safety management systems to ensure consistency project-to-project through plans and procedures, targets, and controls.

But more than policies and procedures are needed to get people to change "the way they think and/or behave in relation to safety"—winning hearts and minds, in other words. As one person recounted to me, "At first it was difficult to get people to embrace safety programs, exhibit the right behaviors, and get improvement. Over time, driven from the top down, people adopted construction safety as a core value."

An IPA study in 2016 about project safety culture developed a checklist for a strong safety culture by identifying what the best safety performers did more consistently than the others (See **Figure 11**). Common threads in the list

[1] Claude Gilbert, Benoît Journé, Herve Laroches, and Corinne Beder (Eds.), *Safety Cultures, Safety Models: Taking Stock and Moving Forward*, p. 49, Cham: Spring Nature Switzerland, 2018.

are deep senior leadership engagement, management integrity to always put safety first, working-level recognition and encouragement, and measurement of leading and lagging indicators.

Anyone who says we do not have time for safety would get fired in a company with a strong safety culture. That business sponsor mentioned earlier working in a company with a strong sustainability culture will have much greater focus on the triple bottom line and not dismiss it so quickly.

**A Sustainability Culture Is Not Enough**

Culture cannot achieve much without robust multi-year, often multi-decade, business and technology strategies for sustainable development. As a recent IPA survey done at the CWG meeting shows, only some companies have started to make progress toward this effort.

A company without a strong project system will struggle to incorporate sustainability targets into projects. The same is true for construction safety, by the way. Companies with weak project delivery systems do not achieve top construction safety performance.

**How You Can Contribute to Advance Sustainability**

I have started a research study for our upcoming Industry Benchmark Conference to be held in March 2024 to get a more complete picture of the project practices and system elements required for sustainability excellence. The importance of a sustainability culture is one of the things to examine. The study will by no means answer all the questions, but it will advance our understanding.

My colleagues and I will be collecting data through the projects IPA evaluates and categorizing the different organizational and management approaches to sustainability by surveying and talking with IBC participants.

Even if you are not a member of IBC, please contact IPA if you want to contribute. Everyone's input to the monumental challenge we face is welcome.

## IBC Recordable Rate Has Fallen Significantly

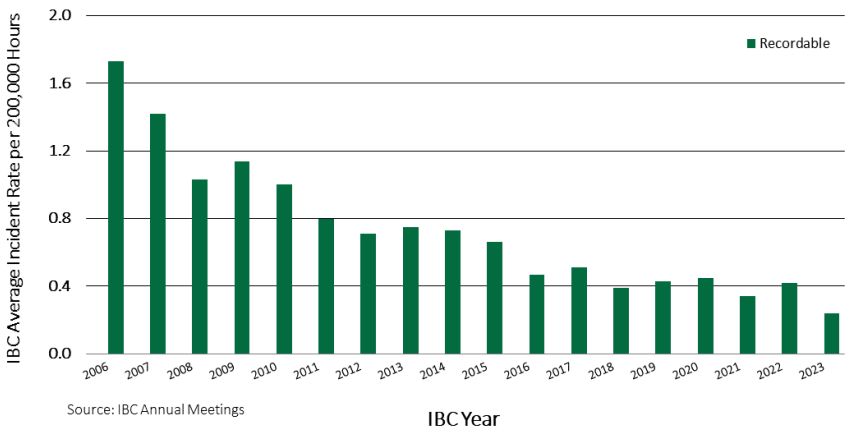



Figure 9

## Recordable Cases

Occupational injuries, illness, and fatalities

- DART cases (days away, restricted duty, or transfer)
- Injuries or illnesses that require medical treatment (other than first aid), loss of consciousness, or restriction of motion
- Fatalities (IPA includes these even though OSHA does not)

**Recordable Incident Rate**

Total Number of Recordable Cases per 200,000 hours worked

Figure 10

## Checklist for a Strong Safety Culture

- ☐ Behavioral observation system based on coaching
- ☐ Feedback/suggestion mechanism that empowers workers
- ☐ Stop-work authority, always backed up
- ☐ Personal and public recognition of initiative
- ☐ Senior leader participation, which is integral to field activities
- ☐ Support and guidance to ensure quality of leaders' interactions
- ☐ Leading indicators tracked and action taken on trends
- ☐ Performance measured by balance of leading and lagging indicators

Figure 11

# **Decarbonization Insights** for Offshore Oil and Gas Projects

**By Cheryl Burgess, IPA Staff Writer**

On November 1, 2023, Independent Project Analysis (IPA) sustainability experts Paul Barshop and Adi Akheramka led a live webinar on **Strategies for Decarbonization and Improving GHG Performance**. More than 300 people registered for the Offshore Magazine-hosted session to hear IPA's insights on the significant progress the oil and gas industry has made in meeting the challenge of lowering emissions while sustaining cost competitiveness. Continue reading for highlights from the webinar, including insights on driving continued improvement for oil and gas projects going forward.

### Building a GHG Emissions Database

Adi Akheramka, IPA's Carbon Management & Sustainability Manager, kicked off the webinar by detailing how IPA has managed to build a robust database for measuring and researching greenhouse gas (GHG) emissions performance over the last several years. In 2019, IPA surveyed project teams from owner companies about the GHG emissions guidelines they were using. This survey brought forward 15 different GHG emissions estimation guidelines used by the 12 responding companies. The Carbon Working Group (CWG) was formed soon after, and IPA worked with the 35+ member companies to develop an industry-standard project-level emissions breakdown structure. Since 2020, IPA has used this structure to collect emissions data directly from project teams, build a growing database of emissions estimates, and use the data to guide competitiveness improvements for capital projects.

### GHG Performance Trends

The GHG emissions database provides a window into industry performance. IPA has observed that new exploration and production (E&P) projects are estimated to be 45 percent less carbon intensive compared to 2016, a mark of significant improvement as more companies embarked on low carbon journeys. (See **Figure 12**.) Additionally, a few companies have proven successful in achieving both low carbon and low cost in recent years. However, the E&P industry still has a long way to go because most companies are trading cost for carbon or carbon for cost—resulting in poor results for both. The key question companies must answer going forward is, "How can we lower emissions while sustaining cost competitiveness?" (See **Figure 13**.)

### Carbon Capital Effectiveness (CCE)

Paul Barshop, IPA's Global Director of Sustainability, continued the webinar by discussing how project teams can better balance cost and emissions competitiveness. The Carbon Capital Effectiveness (CCE) framework compares the estimated emissions and costs for different project development options/alternatives—relative to similar projects/concepts within the industry and within a company's own portfolio. Understanding the carbon competitiveness and cost competitiveness of all available options enables decision makers to confidently select the right scope to meet the desired business objectives for a given project.

### Emerging Carbon Optimization and Readiness Practices

Through research, IPA has identified a set of practices that enable projects to balance CAPEX and carbon emissions. These practices include *setting clear objectives and targets, appointing a GHG specialist on the team, ensuring input maturity, establishing clear methodologies, and managing risk*. IPA has observed that the oil and gas industry is

increasingly adopting these practices, leading to positive results. That is, these identified practices do help projects land in the low cost/low carbon quadrant rather than trading one for the other—or failing to achieve either. IPA and the Carbon Working Group will continue to add observations to sharpen the findings.

### Managing the Strategic Change

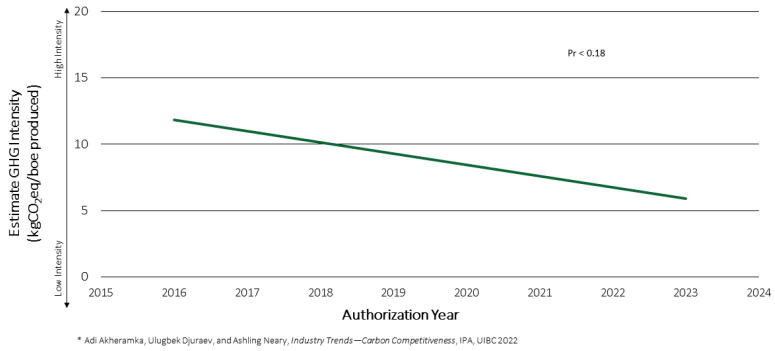
Strong change management will be required to adopt and use carbon optimization and readiness practices consistently across a company's entire project portfolio. Barshop noted that four key elements of change management, in particular, can help drive sustained improvement:

- Leadership from Top Management
- Support for Project Teams
- Performance Management
- Governance

### Request More Information

If your company is interested in tailored strategies and measurable performance indicators for sustainability and carbon reduction on capital projects, contact Adi Akheramka at **aakheramka@ipaglobal.com** for more information.

## GHG Intensity Performance Trend of Ongoing Projects Is Improving*




* Adi Akheramka, Ulugbek Djuraev, and Ashling Neary, *Industry Trends—Carbon Competitiveness*, IPA, UIBC 2022

Figure 12

## Carbon Capital Effectiveness (CCE) Performance Quadrants

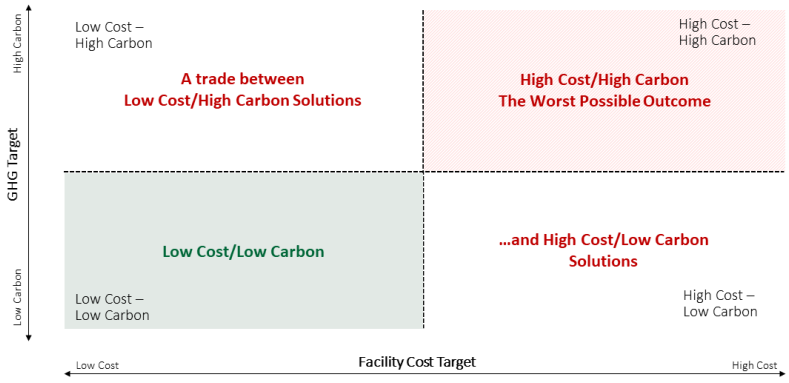



Figure 13

# Solutions for Capital Project Systems

Effective capital project solutions require a deep understanding of how projects work, which is why general management consulting firms struggle in this area. The sole focus of IPA Capital Solutions is on helping our clients to define and implement the work process, organizational structure, and governance changes needed to make their project systems successful.

Contact Allison Aschman at **aaschman@ipaglobal.com** or Deb McNeil at **dmcneil@ipaglobal.com** for more information.

# The Domino Effect of **Cash-Flow Restrictions on Projects**

**By Cheryl Burgess, IPA Staff Writer**

Every capital project plan carries with it a particular pattern of cash expenditure derived from the project's schedule and the peculiarities of the vendor and contractor markets and contracting strategy. More and more often in recent years, businesses have found it expedient or necessary to alter cash flow on projects to conserve cash in a particular calendar quarter or calendar year. Past IPA research has outlined the actual effects cash flow constraints have had on project outcomes.

As market forces strain companies and cash flow restrictions re-emerged as a tool businesses use to cope, we look back at the effects these constraints have had on project results. While such restrictions may be necessary, recognizing how such restrictions affect project results gives businesses the information needed to make these types of trade-offs.

### What Is a Cash Flow Constraint?

Every capital project has a spending pattern that is synchronized with the project's schedule strategy. A cash flow constraint occurs whenever spending must be slowed to meet a non-project requirement. For IPA's definition, this must be after authorization to qualify. It must be important enough for the project manager to mention it as a management issue.

### Study

We limited our analysis to projects >$5 million because cash flow (and other resource) constraints are so common among smaller projects that effects would be difficult to discern. We selected 90 projects with complete outcomes information in which cash flow constraints were listed in the documentation. We developed a control set of more than 2,000 projects of similar characteristics that did not experience cash flow constraints. We then sought to understand whether the cash flow constrained projects had any special characteristics that could cause different results.

### Nature of Cash Flow Constraints

We only examined cash flow constraints that occurred after authorization; however, cash flow begins to affect outcomes starting in FEL 3. Most common is to slow the rate of spending in the second half of a calendar year by:

- Slowing engineering and delaying getting into the field
- Delaying the arrival time of major equipment to push payment into the next year
- Slowing down payments to vendors/contractors
- Slowing down the rate of activity in the field

### How Cash Flow Constraints Affect Schedule

Our study found that cash flow constraints add 18 percent to project execution time and projects with such constraints have 25 percent schedule slip. (See **Figure 14**.)

### What If I Want to Go Fast Too?

A schedule-driven project is one in which speed is the primary business objective and the business is willing to trade cost for speed. One-fifth of cash flow constrained projects were also schedule driven. The typical schedule-driven project that is not cash flow constrained does not slip and is completed in 87 percent of industry average time (i.e., 23 percent faster than average). Cash flow constrained schedule-driven projects (21 percent of all cash flow constrained projects):

- Had an average schedule slip of 23 percent
- Were 11 percent slower than industry average
- Were 24 percent slower than other schedule-driven projects

### What Is the Cost of Cash Flow Constraints?

Cash flow constrained projects had 13 percent higher capital costs on average and 7 percent cost growth on average.

### Why Such Large Effects?

Schedule and cost cannot be divorced except by careful upfront planning. Cash flow constraints will almost inevitably increase cost via schedule because they are unplanned. Cash flow constraints add 11 percent to construction schedule durations. Cash flow constraints are associated with increased equipment costs and lower labor productivity. The effects are often difficult to foresee and difficult to explain to those unfamiliar with projects.

### What Are the Business Effects?

For the average cash flow constrained project, the internal rate of return (IRR) decreases from 15 percent to 12.5 percent and net present value (NPV) drops 20 percent.

### Implications

IPA's study results are almost certainly understated. Not all cash flow constrained projects could be identified from the documentation. Often, cash flow constraints are applied to many projects in an owner portfolio, and IPA might analyze only a sample of projects.

Cash flow constraints on projects are much more damaging than previously thought. Use of capital projects for cash flow management should be a last resort.

The findings demonstrate that using projects to manage corporate cash flow is very damaging to a business. We suggest several alternatives to cash flow constraints and urge businesses to view cash flow constraint as a true last resort.

**The effect of cash-flow constraints on:**

| Schedule | Projects Trying to Go Fast | Cost |
|---|---|---|
| 18% longer execution durations | 11% slower than average | 13% higher capital costs |
| 25% schedule slip | 24% slower than other schedule-driven projects | 7% cost growth |

Figure 14

## IPA Invites you to the UIBC EMEA Roadshow 2024!

The inaugural UIBC EMEA Roadshow is coming to Stavanger, Norway on 9 January 2024!

This is a unique opportunity for integrated energy project professionals—from both UIBC member companies and non-member companies—to explore the latest E&P market trends, discover practical research findings, and network with peers. Ed Merrow, Nekkhil Mishra, and other IPA leaders will share insights on the following topics:

- Market Trends in Capital Projects
- Key Principles of Contracting
- Carbon Emissions Performance
- Production Attainment Performance
- The Role of Executives in Decision Making
- Latest Megaproject Findings

Contact Emily Gonzalez at **egonzalez@ipaglobal.com** to request more information!

# IPA's CSRA Helps Project Course Correct in Mid-Execution

**By Shubham Galav, Deputy Director of Project Research Division, Cost Group**

### The Problem

A Europe-based chemicals company faced a problem in the execution phase of a major capital project. The project had experienced significant cost growth and schedule slip due to unforeseen events and was looking to develop a new forecast to completion based on the events that began almost immediately after the project received full funding.

The project had some significant setbacks after it was authorized. In addition to facing COVID-19 restrictions, the use of liquidated damages and chosen contracting strategy (a mix of time & materials and reimbursable) were uncommon in the local market and had to be modified. In addition, the complexity of the project scope did not become apparent until after authorization, meaning the team was not properly prepared to execute it. Finally, serious problems with the prime project contractor after execution started led to construction being stopped. All of these issues made the final execution strategy much more complex than originally planned.

### What IPA Did

IPA had the original project premises and plans from sanction, but new information was needed to derive an accurate forecast to completion based on where the project was in its life cycle and what events had occurred up to that point in time. In addition to holding discussions with the project team, IPA reviewed the project's monthly progress reports to understand the quantities that remained to be installed as well as the key events that had contributed to the changes to the project's cost and schedule forecasts. (See **Figure 15**.)

The monthly reports provided IPA with a lot of information, including progress made by discipline and craft, engineering progress made based on deliverables, and construction progress made based on quantities installed. Using this updated information, IPA was able to develop the project's most likely cost and completion date based on what had occurred on the project to that date and what remained to be completed.

The key to IPA's updated forecasts was taking into consideration all risk factors the project was facing—and how those risk factors interact. Typical Monte Carlo risk simulations only look at a project's risks in isolation—they do not predict outcomes well because they underestimate the compounding effect these risks have on each other. For example, one of the challenges in getting a Monte Carlo schedule analysis to work is estimating correlations between activity durations in an effective fashion. Similarly, Monte Carlo-based methods for cost contingency setting fail because, although they focus on individual cost element distributions, cost estimates overrun because not all scope items are defined, not because the distributions around the individual elements are incorrect. Most industry projects use fabricated distributions, which are not based on historically observed and unbiased distributions of outcomes. In addition, these analyses assume orthogonality of the distributions, which denies the reality of projects in which most things are intimately connected.

### How It Turned Out

IPA's analysis showed that the team's updated forecast to completion was still on the optimistic side and the likely cost and schedule at completion were higher than they anticipated. The updated cost and schedule forecasts provided the insights needed for the project team to return to the investment committee for additional funding. Although the project was too far into execution to avoid cost and schedule overruns, IPA's updated forecast and recommendations allowed the team to target a more realistic final cost and schedule and complete the remaining execution phase as efficiently as possible.

### Request More Information

Contact Shubham Galav at **sgalav@ipaglobal.com** to request more information about IPA's Cost & Schedule Risk Analysis (CSRA).

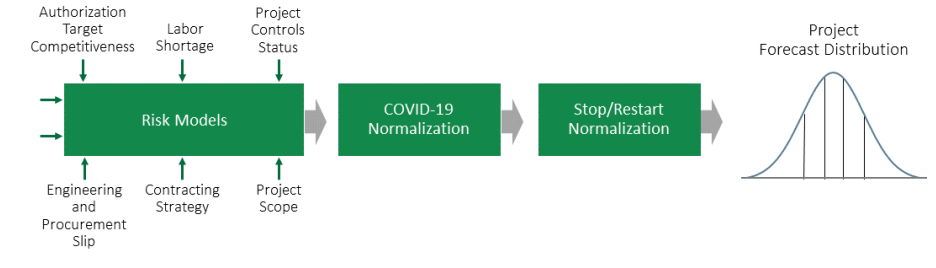



Figure 15

# IPA Events and Presentations

### UIBC EMEA Roadshow
January 9, 2024
Stavanger, Norway

The UIBC is a voluntary association of owner E&P firms that exchange data, information, and metrics, and support research, to improve the effectiveness of their capital project systems. Current member companies are encouraged to send less-familiar representatives to the UIBC EMEA Roadshow 2024 to expand their knowledge of UIBC concepts. Non-member companies are invited to come discover how the consortium drives improved competitive performance, to learn about the latest market trends and research, and to network with IPA and industry peers. Contact Emily Gonzalez at **egonzalez@ipaglobal.com** to request more information!

### American College of Construction Lawyers (ACCL) 2024
February 23, 2024
Carlsbad, CA

IPA President & CEO Ed Merrow will discuss how project delivery methods align with project outcomes at the ACCL 2024 conference in Carlsbad, CA. The ACCL is an invited association of construction law practitioners, professors, and judges. Founded in 1989, its mission is to improve and enhance the practice and understanding of construction law and to promote the positive role of lawyers as "friends of the project." Visit **www.accl.org** for more information.

### PDC Summit
March 17-20, 2024
San Diego, CA

Ed Merrow will participate in a roundtable discussion on Guidelines to Managing Healthcare's Megaprojects at the International Summit & Exhibition on Health Facility Planning, Design & Construction (PDC) in San Diego, CA. The PDC Summit brings together thousands working in all disciplines of health care planning, design and construction to advance the health care-built environment. Visit **www.ashe.org** for more information.

### Industry Benchmarking Consortium (IBC)
March 18-20, 2024
Lansdowne, VA

The IBC is a premiere group of the world's leading industrial companies in the processing, refining, infrastructure, and mining and minerals sectors. IBC member companies receive exclusive insights into how their capital project systems and outcomes stack up against their industry peers with respect to safety, cost, schedule, and operational performance. IPA helps each company to assess the strengths and weaknesses of its project system and map out a plan for improvement.

# 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* **London, UK** | April 16–18 | English | REGISTER |
| Project Management Best Practices* **New Orleans, LA, USA** | May 14–15 | English | REGISTER |
| Project Management Best Practices* **Curitiba, Brazil** | May 15–16 | Portuguese | REGISTER |
| Megaprojects: Concepts, Strategies, and Practices for Success* **Perth, Australia** | July 23–25 | English | REGISTER |
| Megaprojects: Concepts, Strategies, and Practices for Success* **The Hague, The Netherlands** | 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 5–6 | English | REGISTER |
| Megaprojects: Concepts, Strategies, and Practices for Success* **Houston, TX, USA** | December 10–12 | English | REGISTER |
| **Virtual Courses** | **Dates** | **Language** | **Click to Register** |
| Front-End Loading and the Stage-Gated Process | January 23–24 | English | REGISTER |
| Capital Project Execution Excellence and Project Controls | February 13–14 | English | REGISTER |
| Successful BEAM Implementation | February 20 | English | REGISTER |
| Best Practices for Site-Based Projects* | April 8–12 | English | REGISTER |
| Successful BEAM Implementation | May 2 | English | REGISTER |
| Capital Project Execution Excellence and Project Controls | May 7–8 | English | REGISTER |
| Front-End Loading and the Stage-Gated Process | May 27 & 29 | Portuguese | REGISTER |
| Front-End Loading and the Stage-Gated Process | June 4–5 | Spanish | REGISTER |
| Front-End Loading and the Stage-Gated Process | June 11–12 | English | REGISTER |
| Front-End Loading and the Stage-Gated Process | October 28 & 30 | Portuguese | 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.