

# Avoiding mistakes of the past: A CEO's checklist in a commodity upswing

Having recovered from a downturn, miners are ready to build again. These nine core actions can improve the industry's poor project-delivery track record.

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During the last commodity supercycle, metals and mining capital projects were plagued by extensive cost overruns and schedule delays. A McKinsey assessment of 35 large mining projects completed between 2002 and 2015 showed that 30 of them went over budget and 27 were significantly delayed. As a result, companies experienced financial distress and many senior executives lost their jobs.

During the recent commodity downturn, metals and mining companies predictably scaled down their investments, with annual capital expenditures (capex) declining by about 15 percent per year between 2012 and 2016. Today, however, that trend is changing. Demand is growing, commodity prices are on an upswing, and new capacity is needed to compensate for mine depletions. Under these conditions, we expect investments to increase by about 9 percent per year until at least 2022, particularly in precious metals, copper, and other base metals. It's clear: the industry is ready to build again.

As it does so, how can it avoid the predictability, productivity, and performance issues of its recent past? Numerous explanations have been given for the troubling track record during the last supercycle, from poor project oversight to regulatory hurdles to growing geological and project complexities. In our survey of 44 large projects, we found that owners and contractors are misaligned on the root causes behind these poor outcomes (Exhibit 1). Yet the results provide valuable insights as to what must change.

Based on our survey and project experience in mining and metals, we have identified nine core actions—spanning mindsets and behaviors, management approaches, and technical systems—that can help mining and metals companies avoid past mistakes as they build anew (Exhibit 2).

### 1. Pay attention to the art of project leadership.

Typically, project owners focus disproportionately on the “science” of project management by striving for best-practice systems, processes, and standards. While those are essential, we believe that successful projects couple the science with the art of project leadership: “soft” factors such as mindsets, attitudes, and organizational culture that can be the hardest to embed. This art includes defining the team’s purpose, identity, and culture, and aligning incentives at the outset. Leaders also need to foster an ownership mindset among all team members, ensure timely decision-making, and proactively manage performance using leading indicators.

### 2. Treat productivity like you treat safety.

When it comes to shaping and enforcing behavior and mindsets on project teams, safety has always been treated with paramount importance—as it should be. Why not take the same approach to productivity? One North American natural-resource company implemented an “influence” model to build a culture of productivity excellence on its largest capital project. The initiative entailed an information campaign—through site signage, for example—and productivity-promotion mechanisms such as a productivity hotline, suggestion cards, celebrations of success stories, and a rewards program. The company also invested in worker training and used role modelling to instill values—for instance, by having every meeting start with a leader sharing a “safety and productivity” anecdote. The program increased field productivity by 15 percent.

### 3. Evolve the owner-contractor relationship.

History has shown that rigid and adversarial relationships encourage “liar’s poker” dynamics where project owners transfer risks to contractors, who in turn underbid and recover profits from change orders and claims. In the end, when projects struggle, the owners are left with the bill, regardless

**Exhibit 1 Owners and contractors differently rank the root causes of poor project outcomes**

	<b>Owners</b>	<b>Contractors</b>
Increasing project and site complexities	<b>1</b>	<b>1</b>
Design processes and investment are inadequate	<b>2</b>	<b>4</b>
Bespoke or sub-optimal owner requirements	<b>3</b>	<b>5</b>
Insufficiently skilled labor at frontline and supervisory level	<b>4</b>	<b>6</b>
Poor project management and execution basics	<b>5</b>	<b>2</b>
Industry underinvests in digitization, innovation, and capital	<b>6</b>	<b>8</b>
Contractual structures and incentives are misaligned	<b>7</b>	<b>3</b>
Extensive regulation and cyclical nature of public investment	<b>8</b>	<b>7</b>

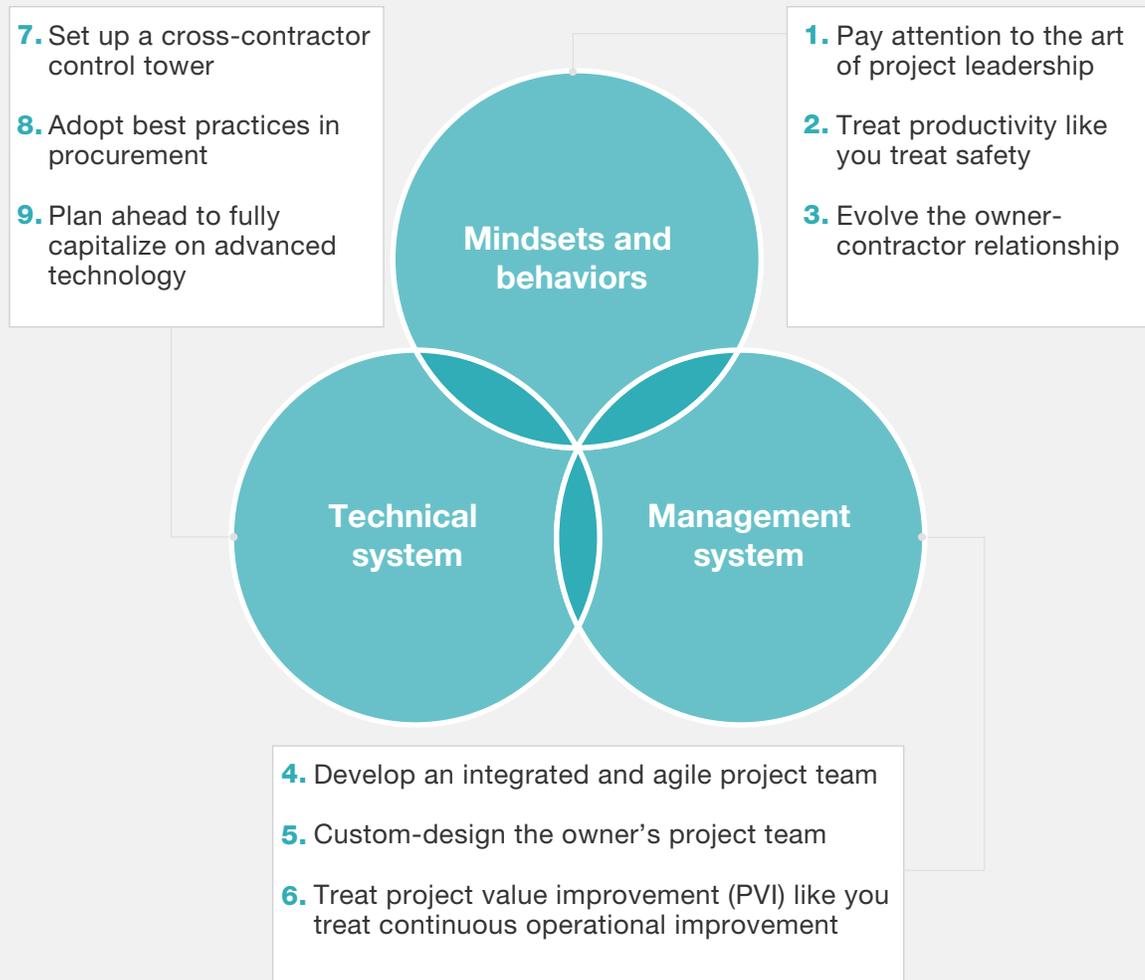
of risk transfer provisions. Instead, mining and metals companies should learn from large infrastructure developers and consider relational contracting, whereby they treat members of their supply chains as strategic partners. For example, pooling delivery risks ensures that profits are shared among all parties, while innovation pilots or continuous improvement programs (as in safety

and productivity) that involve all stakeholders foster collaboration and create a sense of joint ownership in project success.

**4. Develop an integrated and agile project team.**

Many large, multi-stakeholder mining and metals projects have a siloed organization and a command-and-control operating model. Such a setup is a recipe

**Exhibit 2** **Nine core actions can help mining and metals leaders improve the industry’s unfortunate track record**



for failure. Instead, companies should adopt an operating model that ensures all key participants see themselves as part of a unified project organization. Organizations are not machines, and while “hard-coding” individual roles with finite instructions may be the traditional approach, it does not breed long-term success. Instead, solutions should evolve through the collaborative effort of dynamic, cross-functional teams that are integrated with their customers.

Key tasks should be handled through focused, one-to two-week long sprints, during which the agile team quickly produces a first draft (or minimum viable) solution. This can then be further iterated based on feedback. In addition, project leaders should act as catalysts who establish the culture, direction, and systems that enable the team to work effectively—not as masterminds who delegate tasks and instructions top down.

#### 5. Custom-design each owner project team.

Executives have a natural tendency to replicate the same team composition and organization in every project. But that doesn't work; one size does not fit all. Instead, team setup and size should flow from a detailed assessment of project risk, complexity, and contracting model. In the case of simple, repetitive projects with relatively small capex, low technological risk, and well-controlled execution environments, owners should consider a model with relatively low oversight. In contrast, unique undertakings involving new technologies (such as digital mines), large scopes (such as mine, processing and port sites), and multiple stakeholders should warrant greater oversight.

#### 6. Treat project value improvement (PVI) like you treat continuous operational improvement.

Project value improvement is a process through which owners raise a project's net present value by leveraging technical, commercial, schedule, and design optimization tools from early concept development to detailed engineering. Mining project owners frequently treat PVI as a one-off exercise at a late stage in the project, resulting in undesirable trade-offs between an optimal design and the need to meet schedule-driven pressures by avoiding design changes. Instead, PVI should be deployed continuously—for instance, by a dedicated team or structure—through a project's lifecycle. Doing so can significantly increase the odds of successful delivery.

#### 7. Set up a cross-contractor control tower.

While dashboards are sometimes used on mining and metals projects, our experience suggests that they rarely integrate all the necessary dimensions of project performance, nor do they trigger collaborative issue resolution. In contrast, true project control towers should integrate cost and schedule management tools (for example, P6, Last Planner, or Ecosys) with a war room and a strict meeting structure to establish a daily "drum beat"

and facilitate rapid issue detection and resolution. Effectively creating control towers also requires fostering a collaborative project culture that focuses on finding solutions rather than assigning blame, as well as ensuring transparent and early reporting of issues.

Control towers can have substantial impact. As an example, implementing one resulted in the recovery of a distressed iron-ore expansion project that lacked a clear end date and final cost forecast. By focusing effort on workforce planning and performance optimization, the approach resulted in an earlier first-ore date.

#### 8. Adopt best practices in procurement.

Traditionally, the industry's contractor-driven procurement strategy systematically selects the lowest technically acceptable bid. However, mining and metals project owners can extract more value from procurement by better integrating with their contractors and adopting a set of simple best practices:

- Create a joint owner-contractor procurement strategy and roadmap, including spending baselines for various categories.
- Involve procurement and contracting teams early in the engineering process to ensure that supplier capabilities are considered when developing material and equipment specifications.
- Enforce the use of:
  - Total cost of ownership (TCO) when selecting major packages (for example, consider maintenance and operating costs for process equipment, not just their upfront costs)
  - Advanced procurement techniques such as "should-cost" or "clean-sheet" models to understand actual costs of goods

Such procurement strategies can have a significant impact. One multi-billion-dollar copper project generated \$300 million in savings on key packages by using this approach.

### 9. Plan ahead to fully capitalize on advanced technology.

Many miners are already making strides in digitizing their operations and back offices. However, implementing technology on large projects requires planning at the earliest project stages. During the last investment cycle, owners left value on the table by rushing projects out the door, realizing too late that they had missed the opportunity to deploy many of the latest technologies.

Owners should make their technological aspirations an integral part of developing a project's scope, execution, construction, and operating strategy. Most importantly, they must set the appropriate contractual provisions very early in the project to enable proper deployment. Even then, organizations don't change quickly, and many require support in undertaking a full digital transformation. While thoughtful use of technology can improve productivity, safety, and reliability, leaders should beware of embracing technology as a panacea. Digital solutions should be viewed as an integrated part of a holistic effort to improve delivery rather than a silver bullet to solve all woes.



As mining and metal companies start investing again in major projects, they need to address the pitfalls that derailed capital projects in the past. By changing team mindsets and behaviors and adopting stronger technical and management systems, industry players can unearth significant value while improving their project-delivery track record. ■

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