

# TMG

MINING PROJECTS MANAGEMENT

BUSINESS GUIDE

## **Excelling in Capital Projects** **A Comprehensive Guide for the Mining and Oil & Gas Industries**

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## **Introduction**

The mining and oil & gas sectors play vital roles in powering modern society and supplying essential resources across various industries. Nevertheless, these sectors are not without their formidable challenges, particularly when it comes to the management of capital projects. Capital projects are colossal undertakings that demand substantial investments, extended timelines, and meticulous planning.

Within the mining and oil & gas domains, capital projects encompass a wide array of initiatives, from constructing new facilities and infrastructure development to expanding existing operations. These projects serve as the lifeblood of these industries, exerting a direct influence on production capacity, operational efficiency, and overall profitability. Whether it involves the construction of a cutting-edge offshore drilling platform or expanding a mining operation, capital projects are indispensable for fostering growth and ensuring long-term sustainability.



## Navigating Uncertainties

### The Impact of Uncertainties in the Mining and Oil & Gas Industries

In the mining and oil & gas sectors, effectively managing uncertainties such as commodity price volatility, regulatory changes, and geopolitical risks is crucial for project success. Understanding these challenges is essential.

#### Navigate Uncertainties Effectively

**Commodity Price Volatility:** Fluctuations in the prices of labor, minerals, metals, and oil can significantly impact project economics.

**Regulatory Changes:** Environmental regulations and permitting requirements can change, leading to potential delays and added costs.

**Environmental Factors:** Miners are navigating the complex task of providing critical minerals for energy transition and reducing emissions amidst challenges in scaling up green energy and adapting to climate-related operational impacts.

**Geopolitical Issues:** Political instability in regions where projects are located can pose risks to operations.

**Technological Advancements:** Mining leaders anticipate a surge in technology and data investment to enhance efficiency and ESG outcomes, yet face challenges in managing data and integrating new technologies.

**Market Demand:** Changes in market demand for specific resources can affect the profitability of a project.

**Access to Capital:** Banks and private lenders are no longer the go-to for mining projects, and alternate financing is now a major consideration.

Executives must implement mitigation strategies such as risk assessment, scenario planning, adaptive planning, regular monitoring, and stakeholder engagement to navigate these uncertainties effectively. Operational consulting firms play a vital role in assisting executives in these efforts by conducting comprehensive risk assessments, developing robust mitigation strategies, and providing data-driven insights and market intelligence.



## Ensuring Design Consistency

### Maintaining Design Standards

In capital projects, maintaining design consistency is critical to ensuring project success. Design standards encompass architectural plans, engineering specifications, safety protocols, and environmental compliance. Deviations from these standards can lead to costly rework, delays, and safety hazards.

### Navigate Uncertainties Effectively

**Safety:** Consistent design standards help ensure that safety protocols are uniform throughout the project, reducing the risk of accidents.

**Quality:** Consistent design contributes to a high-quality end product, which is vital for the longevity, reliability, and operability of industrial facilities.

**Cost Efficiency:** Adhering to consistent design standards and general specifications across all contractors and consultants engaged in the delivery of a project reduces the likelihood of costly design changes and rework.

**Regulatory Compliance:** Meeting regulatory requirements is crucial for avoiding fines and project delays.

To maintain design consistency, executives must focus on engineering integration. This involves unifying consultants, suppliers, and contractors to ensure that everyone is on the same page regarding design standards and project objectives. Engineering integration encompasses collaboration, design reviews, and the use of technology to streamline performance tracking and reporting.

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**Effective Governance**

**The Role of Governance in Capital Projects**

Effective governance is a cornerstone of successful capital projects. It involves aligning team members, maintaining clear communication, and ensuring that everyone is working toward the same goals.

**Why Governance in Capital Projects is Crucial**

**Identify and Resolve Issues Promptly:** Governance ensures early detection, escalation, and swift resolution of issues, preventing minor problems from becoming major setbacks.

**Facilitate Team Alignment:** Align all team members and stakeholders with the project's goals, reducing misunderstandings and enhancing overall project efficiency.

**Ensure Seamless Communication:** Effective governance establishes clear communication channels, ensuring timely and accurate information flow among stakeholders.

**Monitor Project Progress and Performance:** Governance includes continuous monitoring of the project's progress and performance, facilitating timely adjustments to stay on track with goals, deadlines, and budgets.

**Defining Roles & Responsibilities and RASCI:** Essential for integrating project teams with operations in brownfields and capital projects, balancing operations' input with the Project team's decision-making authority for optimal business outcomes.

To achieve effective governance, partnering with an expert operational consulting firm provides project oversight and governance support. They help establish steering committees to safeguard owners' interests and governance throughout all project stages. Additionally, they offer construction monitoring, ensuring that on-site activities align with project goals and quality standards.

## Managing Costs and Quality Standards

### The Cost-Quality Balance

The balance between managing costs effectively and upholding high-quality standards is a perpetual challenge in capital projects. While executives aim to control costs and maximize efficiency, they must also maintain high-quality standards to ensure the long-term success of their projects. This balance is attained by rigorously monitoring and controlling costs and consistently upholding quality standards.

#### Monitoring and Controlling Costs

**Accurate Cost Estimates:** Developing precise cost predictions for effective budgeting based on the selected contracting approach and integrated project execution plan.

**Monitoring Spending:** Regularly comparing earned value measurements against the control budget to identify discrepancies.

**Cost Control Measures:** Implementing strategies and recovery plans to manage and realign costs when necessary.

#### Maintaining High Quality Standards

**Clear Quality Standards:** Defining and communicating quality assurance and quality control expectations to guide project deliverables.

**Quality Inspections and Audits:** Conducting systematic reviews to ensure adherence to quality benchmarks.

**Prompt Rectification of Quality Issues:** Quickly addressing quality deviations to maintain project integrity and standards.

Operational consulting firms specialize in managing costs and quality standards. They collaborate with project teams to establish cost breakdown structures, provide ongoing cost tracking through earned value management, and conduct quality supervision activities such as factory acceptance testing and non-destructive testing.

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Risk Management

**Identifying and Assessing Risks**

Risk management is a critical aspect of capital projects. Identifying and assessing risks early in the project lifecycle can prevent costly delays and budget overruns. Executives must proactively identify and evaluate potential risks and consider factors such as market volatility, regulatory changes, environmental factors, and geopolitical issues. Once risks are identified, executives must implement mitigation strategies to reduce their impact.

**Implementing Mitigation Strategies**

**Scenario Planning:** Identifying potential threats and opportunities that may have an unknown impact on the project outcomes.

**Adaptive Planning:** Creating flexible risk mitigation plans that can adapt to changing circumstances to guard against threats while leveraging opportunities.

**Contingency Plans:** Development of backup plans and what-if scenarios to address specific risks if they materialize.

**Capital Allocation:** Ensuring that proper Risk Reserves or Management Reserves are set aside over and above Project Contingency when the Control Budget is established to ensure that funds are allocated with a high level of confidence to deal with the most likely outcome scenarios.

Operational consulting firms specialize in risk management, helping executives navigate project uncertainties and hazards, proactively identify issues, implement mitigation strategies, and develop appropriately robust project budgets.



## Addressing Infrastructure Needs

### Understanding Infrastructure Requirements

Infrastructure needs can change as a project becomes more mature through the stage-gating process, necessitating adaptive planning and resource allocation. Executives must thoroughly understand infrastructure requirements, which may include power, water supply, transportation, and accommodations for project personnel.

### Solutions for Infrastructure Challenges

**Early Infrastructure Assessments:** Conducting initial evaluations to pinpoint program requirements and existing shortcomings, ensuring that all infrastructure needs are identified and planned for from the onset.

**Expediting Key Services and Materials:** Facilitating the rapid provision and setup of essential services and materials, crucial for timely project establishment.

**Execution Schedules and Budgets:** Crafting detailed schedules and financial plans that reflect the project's scope and infrastructure necessities, ensuring that all aspects are aligned and budgeted for.

Operational consulting firms can assist executives in addressing infrastructure challenges, ensuring that all required permits are obtained for the broader execution project.



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**On-Time,  
On-Budget Delivery**

**The Significance of Timely and Cost-Efficient Project Delivery**

Delivering projects on time and within budget is paramount for project success. Timely delivery ensures that operations can commence as planned, while cost-efficient delivery maximizes returns on investment. To achieve on-time, on-budget execution, executives must implement proactive measures.

**Achieving On-Time, On-Budget Execution**

**Comprehensive Schedules and Budgets:** Conducting initial evaluations to pinpoint program requirements and existing shortcomings, ensuring that all infrastructure needs are identified and planned for from the onset.

**Continuous Progress Monitoring:** Regularly tracking the project against its baseline schedule and control budget to identify any deviations and develop recovery plans promptly.

**Timely Adjustments and Actions:** Quickly implementing necessary changes or corrective measures to keep the project on course and within budget.

Operational consulting firms offer project management and project control secondments, augmenting the owner's team with technical experts to oversee all project aspects on the client's behalf. They also assist in developing organization charts, defining roles and responsibilities, and fostering communication between on-site and off-site teams for issue resolution and risk alignment. Collaborating with owner's accounting and operational consulting firms helps establish cost breakdown structures and provides ongoing tracking through earned value management.

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**Commissioning Support  
& Operational Readiness**

**Operational Readiness Reviews**

Ensuring operational readiness is paramount for the seamless shift from commissioning to permanent operations in capital projects. Early and thorough operational readiness reviews are essential to facilitate this transition smoothly. They guarantee that all systems and processes are optimized and ready for full-scale operation.

**Commissioning Execution Planning**

**Tailored Execution Plans:** Adapting commissioning plans and start-up sequences specifically to meet the unique needs of the project site.

**Embedded Subject Matter Experts:** Integrating experts directly into the team to ensure clear communication and technical understanding across all project areas.

**Resource Forecasting with Construction Management:** Collaboratively predicting and managing resource needs with construction management to ensure efficient commissioning.

Operational consulting firms play a pivotal role in overseeing contractor-earned value management, field verifications, and reporting standards for site operational personnel. They also manage punch lists to ensure that all contractual work, safety issues, and client requests are addressed or turned over.



## Project Due Diligence Reviews

### Technical Assistance

Project due diligence is crucial for the success of capital projects. It entails thoroughly assessing plans, budgets, schedules, and technical viability. These reviews are critical to early issue identification, ensuring efficient project execution, and minimizing risks of delays and budget overruns.

### Maximizing Project Diligence Reviews

**Project Threat & Opportunity Evaluations:** Identifying areas for additional design optimization within corporate risk thresholds.

**CAPEX & Execution Plan Alignment Review:** Reviewing scope-related cost items to ensure alignment with the overall project execution plan and schedule.

**Financial Validation:** Execution planning ensures that shareholder value and lender covenants are reasonable and achievable in accordance with the repayment schedule and production ramp-up timelines.

Operational consulting firms are instrumental in offering technical assistance and ensuring industry best practice alignment, particularly before acquisitions. They excel in assessing project threats and opportunities using their real-world experience.



## Project Team Development

### Project Team Organization Development

Structuring on-site and off-site functions for overall project success is a fundamental aspect of project team development.

#### The Role of Project Team Development

**Roles & Responsibilities Definition:** Ensuring a clear understanding of positions and key interactions among project team members is crucial.

**Personnel Selection & Coaching:** Evaluating candidates during interviews and identifying high-potential team members for advanced roles, along with offering targeted coaching for their development.

**Team Structure Guidance:** Identifying necessary functions and roles as project needs evolve through stages, from studies to commissioning.

**Monitoring Tools Implementation:** Developing and applying tools to meet governance standards without overwhelming reporting.

**Corporate to Site Project Management Relations:** Fostering strong communication between on-site personnel and off-site executives for issue resolution and risk alignment is a key aspect of project team development.

Operational consulting firms are essential in aligning team structures with project execution strategies. They assist in defining team roles and responsibilities and help clarify team dynamics. These firms assess personnel abilities and potential, providing coaching and guidance for development. Additionally, they implement monitoring tools and enhance team communication, ensuring project alignment with industry standards.

## Early Works Programs & Site Establishment



### Early Infrastructure Assessment

Evaluating program needs and existing infrastructure gaps, such as power, water, warehousing, ventilation, and more, is crucial for early works programs and site establishment.

#### The Benefits of Early Infrastructure Assessments

**Rapid Procurement:** Expediting key services and materials for quick site establishment is a core component of early works programs.

**Execution Schedule Planning:** Developing construction schedules to size equipment and infrastructure for early works ahead of permanent facilities is essential for efficient project execution.

**Budget Setting:** Establishing budgets based on the defined scope and infrastructure project requirements ensures rapid progress.

**Engineering Support:** Providing off-site engineering for appropriate infrastructure sizing while on-site personnel design and install roads, water management, and civil construction is a critical function of early works programs and site establishment.

**Quick Mobilization:** Utilizing established policies and procedures for accelerated onboarding, site understanding, and project scoping expedites the early works phase.

**Permitting Assistance:** Collecting and monitoring data to ensure all required permits are obtained for the broader execution project is crucial for a successful early works program.

Operational consulting firms significantly enhance early works programs by streamlining procurement, schedule planning, budgeting, and engineering support. They expedite site establishment through quick mobilization and efficient permitting processes, ensuring projects align with objectives and industry standards, thus facilitating smooth and rapid project progression.



## Independent Project Review Boards

### Establishing an IPRB

The Independent Project Review Board (IPRB) structure is based on the Independent Tailings Review Boards, a legal requirement in various regions. IPRBs are established during the pre-feasibility study phase and continue through Nameplate Production to ensure economically viable projects are delivered on time, within budget, safely, and sustainably.

#### To Form an IPRB, Collaboration with Clients is Essential to Define:

**The Composition of Board Members:** Typically, 4 to 6 subject matter experts.

**Review Frequency:** Typically, quarterly meetings, with at least one conducted on-site.

**Meeting Scope and Presentation Agendas:** For project leadership and technical teams.

The IPRB holds the responsibility of crafting thorough reviews and recommendations for corporate senior leadership. During review meetings, senior project and site personnel deliver presentations encompassing all aspects of the project's status. The IPRB compiles a report comprising observations and recommendations to be presented on the final day of the review meeting. The IPRB engages with corporate senior leadership through video conferences or visits to the head office to discuss recommendations.



## Project Recovery

### The Significance Project Status Audits

Evaluating the execution strategy, true completion status, assumption gaps, and deficiencies is essential in project recovery efforts.

#### Achieving Successful Project Recovery and Project Status Audits

**Strategic Planning Sessions:** Collaborating with the project team to assess strengths, weaknesses, opportunities, and threats for execution is a crucial step.

**Risk Mitigation Planning:** Identifying optimal actions to rectify project deficiencies and mitigate risks is vital for project recovery.

**Execution Plan Adjustments:** Tailoring plans to address specific project challenges and constraints based on progress is an ongoing task in project recovery.

**Schedule Revisions:** Amending schedules to recover from existing delays is essential to get the project back on track.

**Estimate Updates & Budget Realignment:** Reflecting commitments and remaining work in updated estimates and budgets is crucial for project recovery.

**Personnel Secondments:** Placing key personnel in crucial project roles for effective management is often necessary in project recovery.

**Vigilant Monitoring & Reporting:** P Ensuring program changes are effective through vigilant monitoring and reporting is the final step in project recovery.

Operational consulting firms are key in project recovery, focusing on strategic planning, risk mitigation, and execution plan adjustments. They revise schedules and budgets, place key personnel strategically, and ensure effective recovery through vigilant monitoring and reporting, aligning projects with industry standards.

## Conclusion

Capital projects are complex endeavors that present a multitude of challenges. From navigating uncertainties to ensuring design consistency, managing costs, and achieving on-time, on-budget delivery, executives must address various aspects of project management. The right operational consulting firm can provide invaluable support in overcoming these challenges by offering expertise, oversight, and strategic guidance throughout the project lifecycle. With their assistance, executives can navigate the intricate landscape of capital projects and ensure the success and sustainability of their ventures in the mining and oil & gas industries.

## Are you ready to start your journey to success?

Speak to one of TMG's highly skilled experts to take the first step.

**SPEAK WITH AN EXPERT**

TMG specializes in executive and management consulting for the mining and oil and gas sectors, offering tailored oversight and strategic guidance across all project stages to ensure optimal outcomes from conception to execution.

