



copperleaf

Delivering Value
in the Oil & Gas Sector

Copperleaf Decision Analytics

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Mounting pressures from investors, customers and regulators are creating huge capital planning challenges for oil and gas companies globally. Low commodity prices, aging assets, decarbonization, Environmental Social and Governance (ESG) commitments, digitalization, and increased regulation are forcing companies to rethink how they approach capital planning.

Every year, oil and gas companies spend billions of dollars and are challenged to build portfolios of investments that deliver their energy transition goals, as well as the hydrocarbon projects necessary to fund the strategy, pay off debt, and reward shareholders. Capital planners at a corporate level must strike the right balance between increasing production and reducing greenhouse gas emissions. From an asset management perspective, decision makers must make different trade-offs, for example between refurbishing or upgrading aging equipment. Each investment delivers a unique set of benefits, such as production enhancement, risk mitigation, fugitive emission reductions—yet an objective, quantitative, and rigorous approach has been elusive.

Typically, organizations create Excel spreadsheets to try to collect and normalize this data and prioritize these diverse investments. However, spreadsheets are incapable of managing the multi-dimensional complexity of these decisions and the scale of these investment portfolios.

There is a better way, using decision analytics. This approach has been proven and adopted by infrastructure industries such as electricity, natural gas, and water utilities, and rail and road networks. Decision analytics is now moving into the oil and gas sector.

Copperleaf's Decision Analytics Solution and value-based decision-making methodology provide a framework to manage the complexity of these investment portfolios. Investments are assessed based on the organization's agreed definition of value and strategic objectives, including financial, net-zero, ESG, risk mitigation, and other targets. This enables shareholders, executives, planners, and regulators to speak a common language—value—and quickly come to agreement on the best overall investment plan.

The rewards are measurable and substantial. You align spending to strategic goals and deliver greater value for the same capital spend. You make portfolio decisions quicker and with greater confidence, and when things change, you respond with agility. Finally, you build trust through a rigorous decision-making process that is objective, analytical, transparent, and defensible.

Decision Analytics FOR OIL & GAS



DELIVER CAPITAL EFFICIENCY

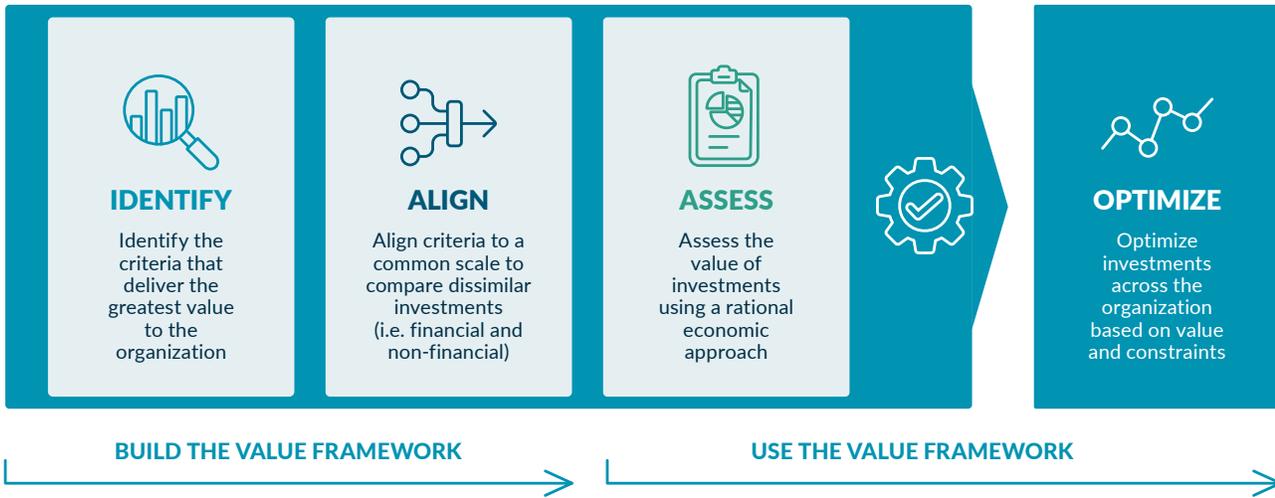


Value-based Decision Making

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Value-based decision making is Copperleaf’s approach to making investment decisions that are focused on delivering the maximum value to an organization.

This approach involves first building a strategic decision-making framework based on value, then using that value framework to assess all proposed projects and investment requests on a common economic scale. AI-enabled optimization techniques are then used to determine the right set of investments to execute and their timing that will deliver the most value while respecting all constraints.



Copperleaf’s Value-based Decision-making Methodology

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Oil and gas companies will likely face a capital-constrained future, one in which self-funded growth will be more commonplace. In turn, tighter capital will only add to the urgency with which oil and gas companies must respond to the complex, intrinsic and even existential market disruptions they face.”

PwC
Oil and Gas Trends 2019

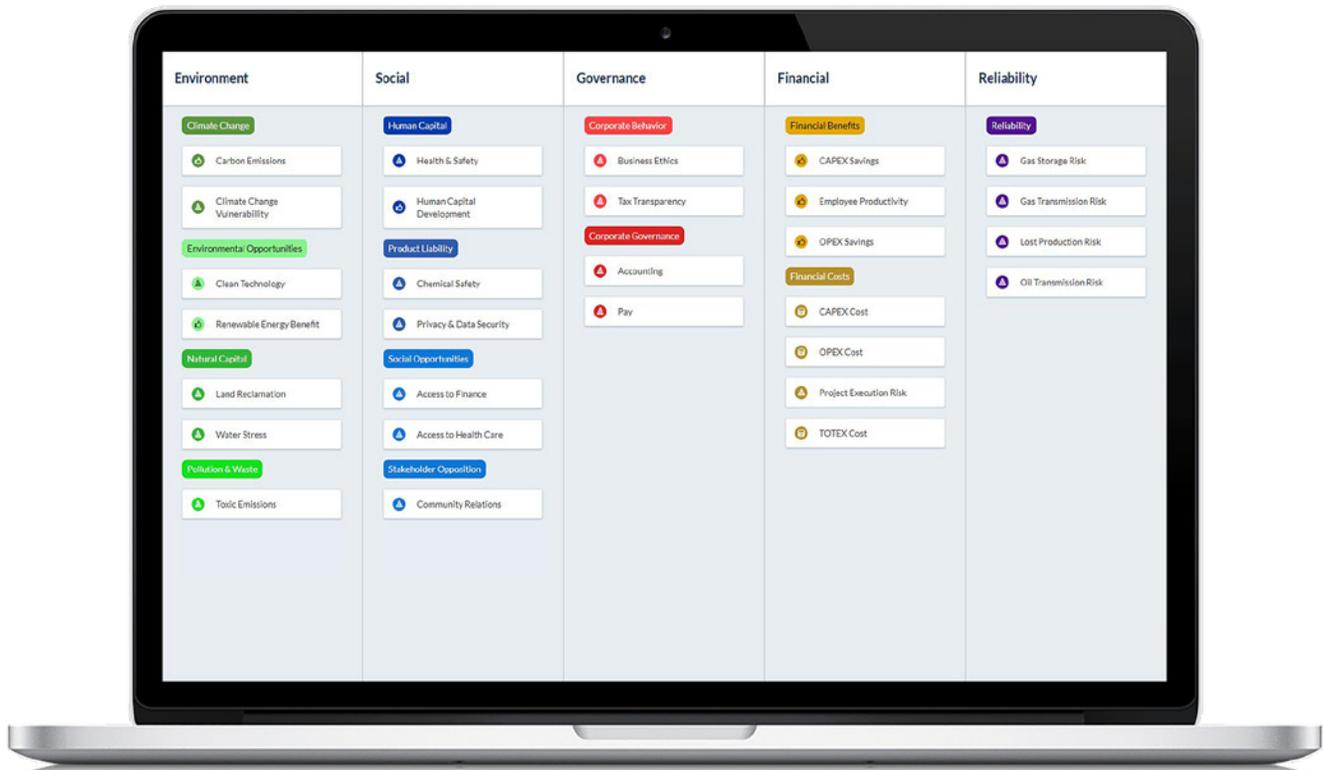


Create a Strategic Decision-making Framework 2

The first step in establishing a value-based decision-making process is to create a transparent, data-driven framework to assess the value delivered by each investment under consideration. Investments deliver benefits (value), however, these benefits can be quite wide-ranging. For example, the benefits of investments proposed to increase capacity will differ from investments that address greenhouse gas emissions. To perform the proverbial “apples to oranges” comparison, a framework is needed to consistently assess the value delivered to a common economic scale. This allows organizations to objectively compare the benefits created by all different types of projects. This is the essential groundwork that allows all stakeholders to speak the same language and is key to unlock the ability to make value-based decisions.

A value framework provides an objective, consistent and practical way to assess the value delivered by any project or investment—based on economics and risk. It includes an enterprise-wide view of the value measures that support the organization's strategic goals as well as the models used to calculate how projects affect those measures.

When a value framework is used to underpin decision-making, all stakeholders can understand the benefits projects deliver, making the allocation of budget across departments much easier. Suddenly the value of mitigating safety risk, reducing emissions, increasing throughput, etc. are comparable and transparent to all stakeholders.



The Copperleaf® Value Framework embodies a company's strategic objectives and unique definition of value



Develop Value-based Business Cases

Establishing a consistent process to intake project requests and develop complete and quantitative business cases is a prerequisite to value-based decision-making. Every business case must illustrate how the project contributes value to the organization, and the extent of that value. Since there are many ways a project can deliver benefits, it's important that value be expressed on a common scale so that dissimilar projects can be compared and trade-off decisions can be made. The Copperleaf Value Framework is used to assess all projects and uses an economic scale to ensure all projects are evaluated on an equal footing.

Recently, Copperleaf developed a value framework for an oil and gas company to enable the comparison of investments across business units. The framework considered the impact of projects on the company's strategic goals in several key areas, including safety, operational reliability, financial performance, environmental stewardship, shareholder return, and future growth.

Optimize Investment Portfolios to Targets

The key to planning is selecting the right projects to execute when there aren't enough funds or resources to do them all. Almost every organization has more requests to spend money than the budget can support, as well as a finite supply of people and qualified resources. Dependencies between projects must be respected and portfolios must be optimized to deliver on strategic goals and targets. To add to the complexity, some projects may be mandatory while others may need to be carried out by a specific time.

Planners must consider all of these real-world constraints and targets to create plans that include the right projects to execute at the right time that deliver the most value to the organization. With hundreds or even thousands of projects to consider, this can be an impossible task to accomplish using traditional methods, such as spreadsheets.

Copperleaf's AI-enabled optimization gives organizations the ability to create optimal plans that deliver the most value and drive strategic outcomes—while meeting funding, resource, timing, and other real-world constraints.

Develop a Value-based Culture

The key to creating consensus and working collaboratively across organizational boundaries is to establish a culture focused on delivering the greatest value overall to the organization. This means being able to communicate how value is measured and how specific investments contribute to increasing that value.

This transparency creates trust and enables a value-based culture where every employee can understand what really matters to the organization and see how their projects and teams are contributing. This drives support for the initiatives that deliver the most benefit, regardless of where the project or initiative may have originated, allowing decisions to be made confidently within and across organizational boundaries. In a value-based culture, everyone becomes focused on creating value and achieving the organization's strategic goals.



The outcome of the planning process is an agreed budget and a list of projects to execute. These projects will be impacted by cost variances, delays, and unforeseen external factors that will inevitably occur. As the year unfolds, organizations respond as best they can, however limited visibility of the impact of these changes to the overall plan makes it difficult to react effectively and decisively.

Information from project management systems can be used to compare planned versus actual performance and identify variances. Understanding these variances quickly allows organizations to re-forecast and re-optimize portfolios to focus resources on the right projects given the new constraints. This “adaptive planning” delivers the business agility needed to react quickly to unforeseen events and refocus efforts on the opportunities that deliver the most value.

Perform Scenario Analysis

Your business environment is constantly changing. Things might look very different next year or 5 years into the future, so it's important to be able to create what-if scenarios to model your response to potential events. For example:

- What if budgets are reduced by 15%?
- What if exchange rates or commodity prices change significantly?
- What if the organization wants to accelerate greenhouse gas reduction targets?

In each of these scenarios, projects must be shifted to meet the constraints and targets.

While the future is unclear, having the ability to simulate a variety of situations to understand the potential outcomes helps you be better prepared. Currently, the COVID-19 pandemic has created much uncertainty and being able to model different scenarios for pandemic response planning is proving critical for many organizations.



Governance

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By adopting a formal value framework and a rigorous system to leverage it for all decision making, organizations can ensure that every decision will be made in accordance with internal governance processes and procedures. **Copperleaf Value™** provides clear visibility and traceability across the organization for any changes to the value framework and their associated rationale. It also ensures that decisions are being made based on a broad consensus across stakeholder groups, both internal and external, as required by the growing need to adopt wider ESG targets in decision-making.

Copperleaf Portfolio™ assures that every investment request and associated business case is checked, processed, and evaluated using well-defined, repeatable, and transparent processes. This increases confidence in the quality of the investment data and of the resulting decisions. With good data, stakeholders can confidently make critical trade-off decisions that are both optimal and defensible.

Copperleaf Asset™ enables organizations to accurately predict and value asset risk—key factors in most asset-related decision making and important aspects of governance assurance for internal and external stakeholders. Equally important: Copperleaf's Decision Analytics Solution builds a full audit trail of all decisions, scenarios, and changes made over time, enabling organizations to justify and defend their actions with accurate and complete information.

Case Study

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One of the largest oil and gas companies in North America set a strategic goal to make asset management the cornerstone of its enterprise transformation and decision making. The company partnered with Copperleaf to help the company apply consistent and transparent decision-making processes across all business units and implement industry best practices in capital planning.

The first step was to develop an enterprise value framework that could be used as the basis for all investment decisions. Several key business processes were re-engineered, from project entry to plan development and governance. Asset management, capital planning, and financial systems were integrated to streamline operations. Following the implementation of the Copperleaf Decision Analytics Solution, several benefits were achieved, including:

- Consistent, higher-quality investment entry
- The ability to create and rapidly adapt multi-year investment plans
- Investment optimization across business units



Copperleaf Decision Analytics

Copperleaf has an important role to play in helping organizations in the oil and gas industry achieve their strategic goals and operate in the most efficient way possible. We have been working at the forefront of asset management best practices for more than 20 years, delivering best-in-class decision analytics solutions to asset-intensive organizations across the globe. Every Copperleaf client to date has recovered their investment within their first planning cycle—and every organization that has implemented our solution continues to use it successfully today. Business benefits include:



IMPROVED PLANNING EFFICIENCY

50% reduced planning time



HIGHER-VALUE PLANS

20% increased value from investment portfolios



IMPROVED PLAN EXECUTION

10% improved execution accuracy



ENHANCED RISK MANAGEMENT

200% less risk for the same spend



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