



Integrating Sustainability into Technical Due Diligence

The Missing Link in Infrastructure
Investment Decisions

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Technical Due Diligence: Strengthening Infrastructure Investment

Traditional Technical Due Diligence plays a critical role in infrastructure investment decisions by identifying both risks and opportunities. However, it can fall short in fully quantifying how those risks affect cash flows, valuation, or execution.

The opportunities for value creation and protection are increasingly found at the intersection of technical and sustainability considerations; as such, the integration of sustainability within Technical Due Diligence provides a unified picture of an asset’s risk profile and value creation potential. By linking technical feasibility with sustainability performance, investors can assess whether an asset can generate sustainable cash flows under accelerating physical and market disruptions.

The Universe of Sustainable Infrastructure is Expanding

The definition of sustainable infrastructure has expanded beyond pure-play renewables to encompass assets that are not traditionally ‘green’ but are critical inputs in creating a more sustainable world. Consider data centers: for these assets, power demand, cooling systems, and grid access are both core technical and sustainability considerations. They are key determinants of cash flow generation, grounded in the technical realities of the asset, and drivers of sustainability performance.

As the universe of sustainable infrastructure expands to include increasingly complex assets, so do the risks and opportunities that sit at the intersection of technical and sustainability disciplines. Assessing these credibly requires a due diligence approach that considers how sustainability-related factors directly influence asset design, condition, operability, and cost.

Why Technical Due Diligence Must Evolve

Even well-executed technical and sustainability diligence, when run separately, can leave material value and risk unquantified. For example, decarbonization upside may be embedded into bid strategies before feasibility of implementation is tested against engineering constraints. Climate-driven CapEx shocks may sit outside the financial model until after close. This is not because either discipline failed, but because the connection between technical performance, sustainability drivers, and financial outcomes is not always made explicit.

A robust approach evaluates technical factors (e.g., asset integrity, operational efficiency, CapEx forecasting) alongside sustainability factors (e.g., climate resilience, regulatory exposure and compliance costs, physical climate risk), translating them into decision-grade insights that drive key model inputs. For investors, this means Technical Due Diligence must move from identifying risks, which are increasingly sustainability-linked, to underwriting how those risks affect cash flow, valuation, and execution certainty.

Integrated Due Diligence In Action

The themes and case studies featured in this guide indicate how an integrated due diligence approach, one that embeds sustainability considerations into Technical Due Diligence assessments and financial analyses, can help investors better identify risks, protect value, and capture upside.



Select a value theme to explore relevant case studies and key investor considerations shaping investment decisions and outcomes.

Value Theme 1: Unlock Investable Value

CASE STUDY:

Turning airport fleet refurbishment into a €55M value creation opportunity

Value Theme 2: Optimize Commercial Upside

CASE STUDY:

Smarter vehicle fleet electrification delivers \$2.2 million in annual savings and 34% emissions reduction

Value Theme 3: Embed Climate Resilience

CASE STUDY:

Climate risk analysis reveals up to \$780 million in risk exposure and \$54 million in annual OpEx savings

Value Theme 4: Strengthen Asset Resilience

CASE STUDY:

Resilient renewables design and construction strengthens deliverability and reduces long-term environmental risk

Value Theme 5: Improve CapEx and OpEx Forecasting

CASE STUDY:

Engineering and sustainability insights enable CapEx and OpEx prioritization for liquid energy and chemicals storage terminals

Value Theme 6: Reduce Post-Transaction Risk

CASE STUDY:

Integrated due diligence reduces power generation decommissioning liabilities and risks

Value Theme 7: Build Regulatory Confidence

CASE STUDY:

Uncovering environmental tax exposures equal to 10% of operating costs for power generation platform

Value Theme 8: Sharpen Investment Decisions

CASE STUDY:

Resolving permitting and engineering risks helps better inform Battery Energy Storage Systems (BESS) investment decisions

Integrating sustainability within Technical Due Diligence produces quantified, investable value creation and protection pathways

Sustainability-driven opportunities typically depend on technical feasibility, and vice versa.

CASE STUDY

TURNING AIRPORT FLEET REFURBISHMENT INTO A €55M VALUE CREATION OPPORTUNITY

The Role of Integrated Due Diligence

ERM helped a leading airport ground support equipment (GSE) provider create significant financial and environmental value through fleet refurbishment, electrification, and circularity-driven asset lifetime extensions. Using integrated due diligence, ERM identified and quantified opportunities for cost savings, fuel savings, and emissions reductions while maintaining operational performance.

The Impact

In 2024 alone, the activities identified through due diligence generated more than €7 million in value for the provider and 543 tCO₂e in avoided emissions, with cumulative value creation expected to exceed €55 million and 4,000+ tCO₂e savings by 2028.¹ ERM also quantified substantial benefits for the GSE provider’s airline customers, including more than 1 million liters of annual fuel savings and 79,000 tCO₂e in potential emissions reductions, translating to €15.5 million in annual customer fuel cost savings.

¹ Avoided emissions refers to emissions reductions that occur when a company’s products, services, or actions prevent emissions elsewhere ([World Business Council for Sustainable Development](#)).



Value Points:

€55M+	€55m+ cumulative value creation expected by 2028
€7M+	€7m+ value generated in 2024
4,000+ tCO ₂ e	4,000+ tCO ₂ e emissions savings expected by 2028
543 tCO ₂ e	543 tCO ₂ e emissions avoided in 2024
€15.5M+	€15.5m annual customer fuel cost savings
79,000 tCO ₂ e	79,000 tCO ₂ e potential customer emissions reductions

In Practice: Investor Considerations

APPROACH:

- Does the due diligence approach help identify sustainability levers only achievable through engineering or operational change (e.g., refurbishment, lifetime extensions, electrification)?
- Does the approach encourage quantification of both commercial upside (e.g., fuel/O&M savings) and emissions/environmental benefits?
- Does the approach test whether reported sustainability-related value is technically deliverable, costed, and realistic within asset constraints?

COMMERCIAL + DELIVERY:

- What does the combined technical and sustainability evidence say about the true condition, life expectancy, and reliability of the asset?
- Where do engineering degradation, environmental exposures, and safety issues overlap for the asset?
- Does the asset’s safety performance reflect strong engineering controls and operational discipline, and does it reinforce or undermine the asset’s reliability and sustainability performance?

Due diligence integration identifies commercially compelling pathways

Value creation and commercial returns can be optimized through an integrated lens.

CASE STUDY

SMARTER VEHICLE FLEET ELECTRIFICATION DELIVERS \$2.2 MILLION IN ANNUAL SAVINGS AND 34% EMISSIONS REDUCTION

The Role of Integrated Due Diligence

Using an integrated technical and decarbonization due diligence approach, ERM helped a U.S.-based company identify the most cost-effective pathway to decarbonize its vehicle fleet. Rather than an expensive all-at-once EV transition, the integrated analysis showed that electrifying vans - supported by a targeted pilot and creative leasing options - delivered the strongest balance of emissions reductions, operational savings, and capital efficiency.

The Impact

This integrated lens to fleet decarbonization delivered a 34% reduction in emissions intensity¹, \$2.2 million in annual O&M and fuel savings, and avoided significant upfront capital costs.

¹ Emissions intensity refers to the amount of GHG emissions produced per unit of economic activity ([World Resources Institute](#)).

Value Points:

\$2.2M	\$2.2m in annual O&M and fuel savings
34%	34% reduction in emissions intensity
↓	Reduced upfront CapEx
⌘	Identified the lowest cost decarbonization pathway
⚖️	Balanced emissions reduction, operational savings and capital efficiency

In Practice: Investor Considerations

APPROACH:

- Does the approach support comparative scenario analysis balancing CapEx, OpEx, emissions, operational impacts, and regulatory exposure?
- Does the approach include an assessment of locational constraints, infrastructure feasibility, and the practicality of decarbonization options?
- Will the approach identify technical elements at risk of obsolescence, and what elements create defensible advantage from a sustainability perspective?

COMMERCIAL + DELIVERY:

- Does the asset have the organizational and technical capability to execute sustainability-linked upgrades and value creation plans?
- Is the asset/technology ready for future regulation, market shifts, AI integration, and digitalization across both operational and sustainability lenses?
- Which value creation levers are jointly enabled by technical and sustainability interventions?

Climate and technical risk are inseparable

Climate resilience must be embedded in technical assessments to avoid underestimating future costs and performance.

CASE STUDY

CLIMATE RISK ANALYSIS REVEALS UP TO \$780 MILLION IN RISK EXPOSURE AND \$54 MILLION IN ANNUAL OPEX SAVINGS

The Role of Integrated Due Diligence

Climate-driven physical risks were causing increasing uncertainty for a diversified multinational energy infrastructure portfolio, with hazards such as heatwaves and hurricanes materially affecting asset performance, operating costs, and long-term resilience. ERM applied an integrated due diligence approach to develop a more decision-useful view of risk exposure and adaptation needs, combining analysis of historical loss patterns with forward-looking climate scenarios to identify site-specific vulnerabilities. This work included quantifying the impact on EBITDA, revenues, and expenditure, alongside implications for insurance coverage and contractual arrangements. ERM also assessed targeted mitigation and adaptation measures on a cost-benefit basis, providing a clearer understanding of value at risk and helping inform post-acquisition strategy.

The Impact

ERM translated climate risks into clear financial and strategic insights for the transaction, quantifying the impact of hurricanes and heatwaves to inform the deal model and identifying a potential \$780 million exposure driven by increased event frequency and associated revenue losses over 15 years. The work also equipped management with targeted post-acquisition strategies, including adjustments to deal structure, insurance coverage, and site-level technical adaptation measures. Critically, it established a robust business case for resilience investment, highlighting up to \$54 million in annual OpEx savings from specific interventions and demonstrating attractive payback periods of 3–7 years, depending on whether risks materialize, thereby linking climate adaptation directly to value protection and creation.



Value Points:

\$780M	\$780m potential climate-related exposure quantified over 15 years
\$54M	\$54m annual OpEx savings from resilience interventions identified
	3–7 year payback periods identified
	Strengthened adaptation and insurance planning
	Linked climate adaptation directly to value protection and creation

In Practice: Investor Considerations

APPROACH:

- Does the approach assess how climate-driven hazards affect asset integrity, maintenance cycles, rebuild needs, and regulatory compliance?
- Does the approach consider whether the asset can operate safely, reliably and economically under future climate scenarios?

COMMERCIAL + DELIVERY:

- How do physical climate risks (heat, storms, hydrology) influence maintenance cycles, outage risk, and long-term CapEx?
- Are resilience measures embedded in both technical design and operational plans?

Strengthening asset resilience by improving operational deliverability and reducing execution risk

Integration confirms operational deliverability and highlights risks that could disrupt long-term asset performance.

CASE STUDY

RESILIENT RENEWABLES DESIGN AND CONSTRUCTION STRENGTHENS DELIVERABILITY AND REDUCES LONG-TERM ENVIRONMENTAL RISK

The Role of Integrated Due Diligence

ERM’s integrated due diligence for a renewable energy developer surfaced sustainability considerations that directly informed technical design, leading to a more efficient wind turbine layout, safer construction methods, and a longer-life asset.

ERM also incorporated climate and forestry scenarios into the project’s Energy Yield Assessment (EYA) to more accurately forecast future energy production and embedded social factors such as traffic impacts, cultural heritage, and landowner engagement into technical planning and construction management. ERM also helped incorporate sustainability requirements into technical contracts, including both Operations and Maintenance (O&M) and Engineering, Procurement, and Construction (EPC) agreements, to strengthen warranties, liabilities, and maintenance obligations.

The Impact

Integrated due diligence and the sustainability considerations it unveiled were instrumental in bolstering the long-term resilience of the wind energy project. For example, hydrology, forestry, and habitat assessments ensured appropriate wind turbine foundation types, cement options, and stormwater designs reduced environmental degradation risks and the project’s overall environmental footprint. Further, social due diligence actions helped minimize local impacts and reduce the risk that stakeholder pushback and social license to operate considerations could slow development.



Value Points:

	Strengthened long-term asset resilience
	Improved technical design and yield forecasting
	Reduced environmental and degradation risk
	Lowered construction and permitting risk
	Minimized stakeholder and social license disruption
	Strengthened EPC and O&M contractual protections

In Practice: Investor Considerations

APPROACH:

- Does the approach assess the integration of environmental, social, land, hydrology, forestry, and permitting constraints directly into technical design, EYAs, and deliverability plans?
- Does the approach test whether sustainability constraints change technical timelines, contracts, logistics, or availability?

COMMERCIAL + DELIVERY:

- Have sustainability drivers (community access, habitats, cultural heritage, hydrology, environmental constraints) been integrated into engineering design?
- Are proposed decarbonization pathways technically realistic and commercially defensible? Which abatement levers are technically achievable vs. aspirational, and do they align with asset constraints and cost structures?

Better CapEx/OpEx forecasting through combined perspectives

Integrated due diligence enables more realistic and defensible CapEx/OpEx and valuation models.

CASE STUDY

ENGINEERING AND SUSTAINABILITY INSIGHTS ENABLE CAPEX AND OPEX PRIORITIZATION FOR LIQUID ENERGY AND CHEMICALS STORAGE TERMINALS

The Role of Integrated Due Diligence

ERM evaluated a portfolio of liquid energy and chemicals storage terminals to help a group of investors identify engineering integrity and regulatory risks. ERM evaluated technical issues, including tank corrosion, secondary containment condition, jetty structural issues, and pipeline maintenance, alongside environmental and safety risks, including soil and groundwater contamination, emissions controls, and dangerous substance regulation compliance. This integrated analysis aligned maintenance and refurbishment priorities with sustainability-driven spill prevention and regulatory expectations. ERM also assessed OpEx implications across maintenance, environmental management, emissions monitoring, safety systems, and energy use.

The Impact

By combining engineering integrity with sustainability insights, ERM delivered a credible, forward-looking view of CapEx and OpEx requirements, transforming asset condition findings into insights aligned with regulatory pathways and long-term asset performance. Together, these insights enabled the investors to align their CapEx and OpEx spending with both technical needs and regulatory drivers, reducing overall project risk.



Value Points:



More credible CapEx/OpEx forecasts



Linked asset condition to future costs



Better prioritized maintenance and refurbishment spend



Integrated technical, environmental and safety cost drivers



Reduced hidden liability and cost overrun risk



Clearer view of long-term asset performance

In Practice: Investor Considerations

APPROACH:

- Does the approach link asset integrity (corrosion, refurbishment, asset condition) with sustainability-driven requirements (spill prevention, contamination management, emissions controls)?
- Does the approach integrate climate risk, regulatory changes, and sustainability compliance, alongside any technical implications or considerations, into financial modeling assumptions?
- Does the approach support development of cost forecasts that fully integrate technical considerations, compliance, climate resilience, safety, and decarbonization requirements?

COMMERCIAL + DELIVERY:

- Are there soil, groundwater, drainage, or emissions exposures that materially affect value or CapEx, and are these issues symptoms of deeper technical integrity or operational failures?
- Are value creation claims grounded in engineering reality and supported by evidence?
- Where do sustainability-driven cost drivers (e.g., carbon tax, wastewater upgrades, remediation, modernization) materially reshape the technical case, and are availability, degradation, climate downtime, environmental liabilities, future taxes, and compliance-driven CapEx fully reflected in the model?

Better contracts and better protections mean fewer post-transaction surprises

Integrated due diligence improves execution certainty and supports better-informed investment decisions.

CASE STUDY

INTEGRATED DUE DILIGENCE REDUCES POWER GENERATION DECOMMISSIONING LIABILITIES AND RISKS

The Role of Integrated Due Diligence

ERM conducted integrated due diligence to help investors evaluate a power generation asset nearing end-of-life and decommissioning. The assessment identified technical misalignments across key contractual documents, particularly for liquidated damages, milestone risks (the likelihood of a project failing to meet key milestones), and responsibility for environmental liabilities. ERM also assessed sustainability issues, including soil and groundwater risks, human rights considerations linked to labor practices, and limited environmental permitting information.

The Impact

By integrating technical, contractual, and sustainability insights, ERM produced a unified view of delivery, environmental, regulatory, and reputational risk for the investors. This view clarified the drivers of decommissioning delays, highlighted potential financial and liability exposures, and strengthened investor decision-making where sustainability findings had direct technical and financial consequences.

Value Points:

	Reduced post-close liabilities
	Clarified decommissioning delay risks
	Strengthened negotiation leverage
	Improved contractual risk allocation
	Unified view of delivery, environmental, regulatory, and reputational risk
	Stronger investor decision-making

In Practice: Investor Considerations

APPROACH:

- Does the approach review EPC, O&M, lease, and wider contractual agreements through an integrated technical and sustainability risk matrix to identify any potential misaligned liabilities (e.g., LDs tied to technical milestones, environmental liability transfer, permitting obligations)?
- Does the approach assess whether contracts fully account for sustainability-driven constraints affecting delivery?

COMMERCIAL + DELIVERY:

- Where do supply chain or contractor weaknesses create operational, sustainability, or schedule risk, and are labor practices, modern slavery risks, or contractor governance aligned with technical delivery requirements?
- Do contracts (EPC, O&M, leases, concessions) reflect integrated technical and sustainability requirements, and are liquidated damages (LDs), warranties, availability guarantees, and environmental obligations coherently aligned?

Strengthened permitting, regulatory, and compliance readiness

Integration reduces regulatory, reputational, and compliance uncertainty early in a transaction’s lifecycle.

CASE STUDY

UNCOVERING ENVIRONMENTAL TAX EXPOSURES EQUAL TO 10% OF OPERATING COSTS FOR POWER GENERATION PLATFORM

The Role of Integrated Due Diligence

ERM assessed technical performance and regulatory risks facing a power generation platform for the platform’s investors. Combining technical analysis with regulatory review enabled ERM to quantify financial exposures that would not have been visible through siloed assessments. For example, ERM identified escalating environmental tax exposures, representing 10% of operating expenditure through sustainability analyses. While the environmental tax exposure’s impact on financial modeling depended on technical operating assumptions, ERM identified a separate regulatory dispute linked to technical metering and grid-connection changes, highlighting a risk that could have affected the investment decision if left unresolved.

The Impact

By assessing technical performance alongside regulation, ERM’s integrated approach aligned technical asset life-expectancy assessments with regulatory horizons, including permit cycles and escalating environmental taxes, confirming approximately 20 years of remaining operation for the power generation platform. This approach produced a coherent forward-looking risk profile that strengthened investor confidence in the long-term viability of the asset and highlighted financial exposures that might otherwise have been overlooked.



Value Points:

10%	Identified tax exposure equal to 10% of OpEx
⚠	Regulatory dispute identified early, reducing transactions uncertainty
20 Year	20-year remaining operating horizon confirmed
✓	Clarified permits, tax, and technical risks
💎	Strengthened long-term viability confidence

In Practice: Investor Considerations

APPROACH:

- Does the approach provide a unified review of technical performance, regulatory regimes, environmental taxes, and compliance pathways?
- Does the approach test where sustainability findings directly affect technical assumptions?

COMMERCIAL + DELIVERY:

- Are all permits complete, compliant, and aligned with future regulatory pathways and technical and operational assumptions?
- Where do technical upgrades and regulatory compliance intersect, and what sustainability-driven obligations materially change the asset’s economics?

Integrated due diligence provides clear, investor-ready risk and opportunity pictures that improve competitive positioning

A single risk and opportunity framework enables better investment decisions

CASE STUDY

RESOLVING PERMITTING AND ENGINEERING RISKS HELPS BETTER INFORM BATTERY ENERGY STORAGE SYSTEMS (BESS) INVESTMENT DECISION

The Role of Integrated Due Diligence

ERM embedded sustainability considerations directly into the technical review of a BESS portfolio. The review assessed environmental approvals and planning constraints alongside technical design, grid studies, engineering procurement, construction scope, and operational strategy. ERM adopted a unified risk categorization framework to assess environmental and technical risks together, including aspects such as approvals status, fire risk, noise, equipment warranties, and grid readiness, to produce a single, integrated view of project risk.

The Impact

These integrated insights reduced project redesign and schedule delay risk and fed directly into CapEx, OpEx, and grid-related financial inputs. The final report aligned environmental-approval pathways with technical deliverability and financial assumptions to give investors a more realistic view of feasibility and final investment decision (FID) timing.

Value Points:



Improved investment confidence



Reduced redesign and delay risk



Strengthened CapEx, OpEx, and grid assumptions



Clarified feasibility and FID timing



Aligned permitting with technical delivery



Supported clearer go/no-go decisions

In Practice: Investor Considerations

APPROACH:

- Does the approach provide a single consolidated risk register covering both technical and sustainability considerations on the same scale?
- Does the approach provide clear line of sight into cross-workstream risks affecting investment timing, feasibility and FID readiness, grid/connection risks, environmental permitting pathways, and integrated CapEx/OpEx implications?

COMMERCIAL + DELIVERY:

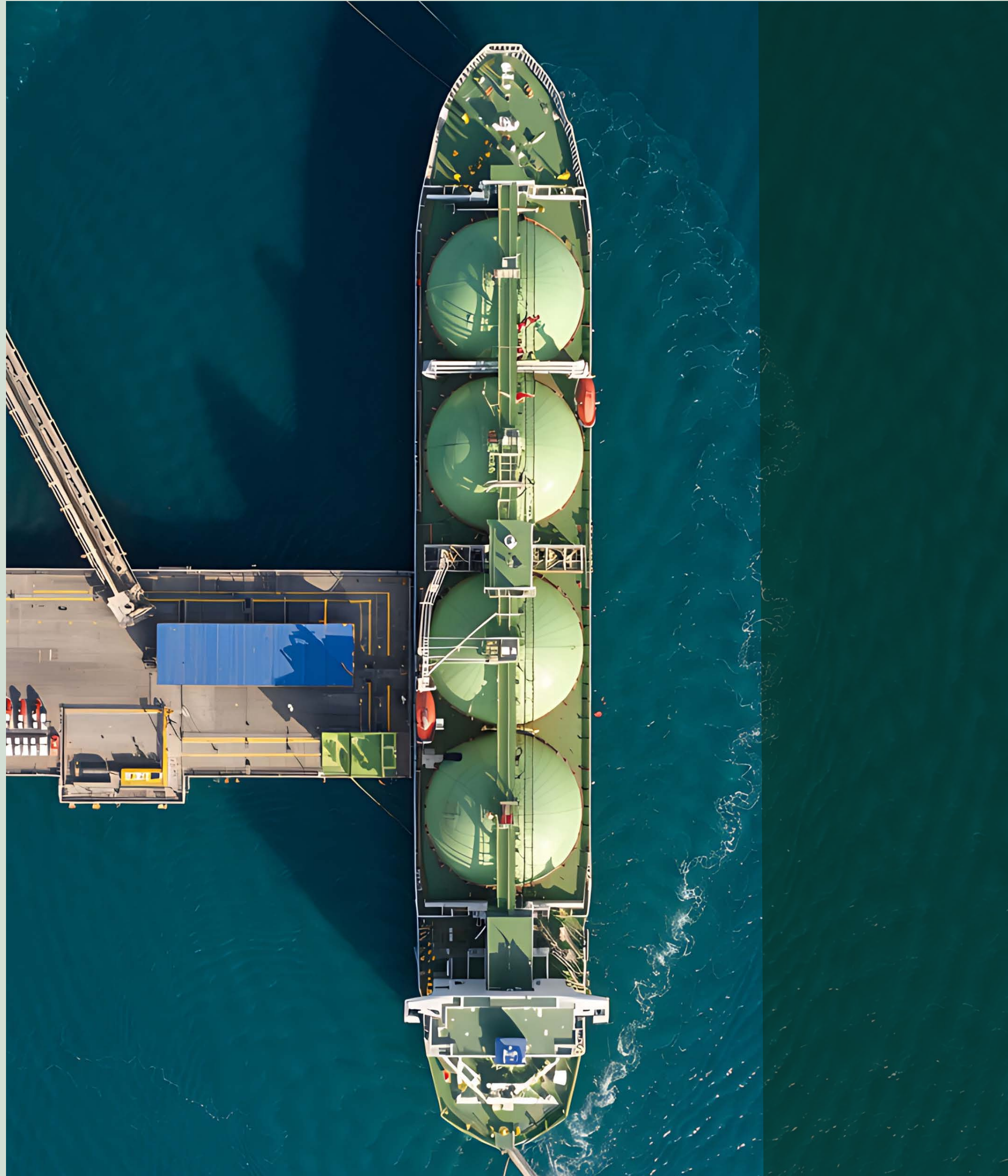
- Is the proposed business plan deliverable in a variety of future scenarios?
- Are technical, environmental, and safety KPIs measured credibly, consistently, and in real time, and is data quality sufficient to underwrite performance curves, emissions baselines, or resilience scenarios?



How ERM integrates sustainability within Technical Due Diligence

ERM operationalizes integrated due diligence by delivering a single, cross-functional assessment that joins technical, sustainability, regulatory, and operational considerations into one coherent commercial view. Rather than running technical and sustainability workstreams in parallel, ERM deploys a unified team and framework to ensure risks and opportunities sitting between disciplines are captured, costed, and directly linked to valuation, deliverability, and long-term resilience.

The unified ERM team applies a shared risk categorization and scoring system across engineering integrity, environmental performance, workforce and safety, climate resilience, supply chains, and regulatory factors. This approach produces one integrated risk and opportunity register, and one set of model inputs, covering CapEx, OpEx, availability, compliance costs, and climate-driven impacts, providing investors with a unified view of asset performance and value.



Integration at the point of assessment, not just reporting

Integrated due diligence is not about appending sustainability findings to Technical Due Diligence results. It is about embedding sustainability-driven insights directly into technical insights and inspections, design reviews, operational analysis, and climate risk modeling so that they directly inform technical life expectancy, asset availability, and capital allocation. When well-executed, this approach does more than just de-risk an investment. It strengthens resilience, optimizes value, and positions assets for stronger exit valuations in a world of mounting climate and geopolitical pressures.

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