



Policy Analysis and Decision-Making Framework for ESG Strategy Implementation at Pertamina's Refinery

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Abstract: This study develops a policy analysis and decision-making framework for evaluating Environmental, Social, and Governance (ESG) strategy implementation in Pertamina's refinery business. It responds to the managerial tension between energy security, operational reliability, decarbonization, ESG credibility, and market confidence in a state-owned energy enterprise. A sequential mixed-methods single-case design was applied by combining stakeholder analysis, PESTLE analysis, Kepner-Tregoe problem diagnosis, ESG benchmarking, and Binary Analytic Hierarchy Process based on executive-level judgments. The findings show that the main issue is not the absence of ESG commitment but the weak alignment between ESG pillars and decision routines. Binary AHP supports adjusting the existing decision-making system with a priority score of 58.5% and a consistency ratio of 0.044. The study recommends an integrated ESG materiality matrix, carbon-adjusted capital allocation, an ESG digital dashboard, and phased governance integration to improve ESG strategy execution.

Keywords: ESG Strategy, Policy Analysis, Decision-Making Framework, Kepner-Tregoe, Binary AHP.

INTRODUCTION

Environmental, Social, and Governance (ESG) strategy has moved from voluntary disclosure to a strategic control issue in energy-intensive industries. Firms are increasingly assessed not only through financial indicators, but also through material sustainability performance, stakeholder credibility, transition-risk management, and governance quality. Prior studies show that sustainability practices shape organizational processes and firm value when they are embedded in core decision systems rather than treated as peripheral reporting routines (Eccles et al., 2014; Khan et al., 2016; Siew, 2015).

The oil and gas industry faces a sharper version of this challenge because it must finance low-carbon transition while maintaining reliable supply, asset safety, and operational continuity. Evidence from the oil and gas sector indicates that ESG disclosure, financial performance, credit-market perception, and integrated reporting quality are connected to the credibility of sustainability governance (Al-Dosari et al., 2023; Alvarez-Perez & Fuentes,

2024). ESG controversies may also weaken the relationship between sustainability initiatives and corporate performance when governance credibility is questioned (Garcia-Amate et al., 2023).

This study focuses on Pertamina's refinery business, where ESG implementation is framed by a dual mandate. On one side, the refinery business must support national energy security and operational reliability. On the other side, it must respond to decarbonization expectations, market assessment, regulatory pressure, and the demand for more credible ESG performance. This condition creates a policy-practice decoupling risk: ESG commitments may be formally stated while capital allocation and operational decision routines continue to prioritize short-term reliability and conventional financial metrics.

Recent DIJEFA studies suggest that ESG outcomes in Indonesia are not always transmitted into firm value or financial performance through a simple linear path. Nurjannah and Raharja (2025) found that ESG performance can influence corporate value, while operational efficiency does not always serve as a significant mediator. Zen et al. (2025) reported that ESG disclosure in mining companies did not automatically improve company value when capital structure was more influential. In a related line, Puspitasari and Maryani (2025) found that environmental disclosure affected financial performance, while social and governance disclosure did not show the same partial effect. These mixed findings indicate that ESG strategy requires decision-making analysis, not only disclosure analysis.

Several DIJEFA articles also strengthen the need to examine governance, market interpretation, and investment logic. Hia and Gunawan (2025) showed that governance disclosure can affect company reputation, while Mulyadi and Khairunnisa (2025) found that profitability and ESG disclosure can jointly support company value in the basic materials sector. Ayu Nindita and Hanggraeni (2024) found that ESG affected return on assets and investment efficiency but did not affect Tobin's Q in ASEAN emerging markets. Alfredo et al. (2025) further showed that ESG risk rating and ownership concentration require moderation analysis to explain firm value. These studies support the argument that ESG implementation must be evaluated through a managerial decision architecture that links sustainability ambition, operational priorities, market credibility, and strategic compliance.

Based on this problem, this article evaluates the effectiveness of the Six Strategic ESG Pillars, examines whether the existing decision-making system can balance ESG performance and strategic compliance, and determines which alternative is more defensible: maintaining the current system or adjusting the decision-making framework. The article answers three research questions: 1) how effective are the Six Strategic ESG Pillars when assessed through ESG performance and strategic compliance; 2) how does the existing decision-making system handle the tension between energy security and ESG mandates; and 3) which decision alternative receives stronger executive support through Binary AHP?

The theoretical foundation of this study combines institutional theory, stakeholder theory, sustainability materiality, and multi-criteria decision-making. Institutional theory explains how organizations respond to coercive, mimetic, and normative pressures from regulators, competitors, professional norms, and capital markets (DiMaggio & Powell, 1983; Delmas & Toffel, 2008). In the refinery business, coercive pressure arises from government mandates and regulatory expectations, while mimetic pressure appears through comparisons with global energy companies. Normative pressure appears through sustainability accounting, ESG ratings, professional standards, and investor expectations.

Stakeholder theory complements this logic by explaining that strategic decisions must balance different stakeholder claims. Environmental strategies become proactive when firms treat stakeholders as part of strategic management rather than external constraints (Buysse & Verbeke, 2003; Donaldson & Preston, 1995). For a state-owned refinery, the main stakeholders include government, regulators, investors, employees, communities, suppliers, customers, and

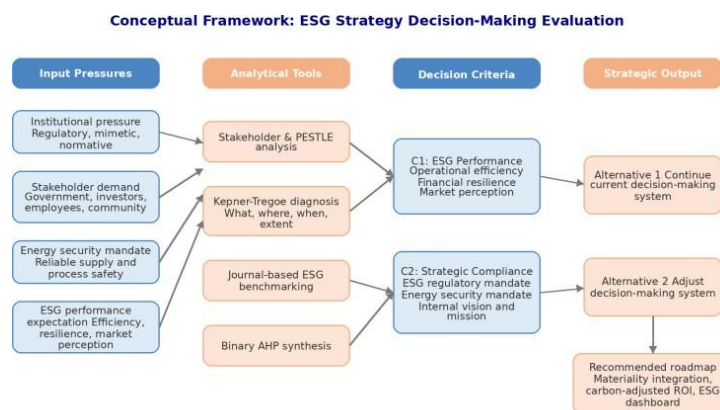
internal operating units. These stakeholders do not always demand the same outcome, which explains why ESG strategy requires structured trade-off analysis.

Corporate sustainability research emphasizes tensions between short-term financial objectives and long-term sustainability commitments. Hahn et al. (2015) explain that sustainability tensions are not always problems to be eliminated; they may need to be managed through integrative strategies. This view is relevant for refinery ESG decisions because energy security, process safety, emission reduction, financing credibility, and public accountability must be balanced within one decision architecture.

Material ESG issues influence investor interpretation when they are financially relevant and operationally embedded. Khan et al. (2016) show that performance on material sustainability issues is associated with superior financial outcomes, while Friede et al. (2015) find broad evidence that ESG and financial performance are often positively related across studies. Nevertheless, the relationship can be non-linear and sector dependent, particularly when ESG disclosure quality, operating efficiency, and market trust move at different speeds (Agarwala et al., 2024). Indonesian evidence reported in DIJEFA shows the same complexity because ESG disclosure and ESG risk rating may strengthen market interpretation only when supported by profitability, governance quality, ownership structure, and credible reporting routines (Alfredo et al., 2025; Mulyadi & Khairunnisa, 2025).

ESG strategy evaluation requires a decision method that can combine qualitative diagnosis and quantitative prioritization. The Kepner-Tregoe logic is useful for distinguishing what the problem is, where it occurs, when it emerges, and how far it extends. Peer-reviewed applications show that Kepner-Tregoe decision analysis can support structured alternative selection where multiple criteria and potential risks must be considered (Pancar Fransco & Siallagan, 2024; Parker et al., 2008). AHP is suitable for comparing alternatives under multiple criteria because it decomposes a complex decision into goals, criteria, sub-criteria, and alternatives. Saaty (2008) emphasizes pairwise comparison and consistency testing, while Ishizaka and Labib (2011) show that AHP has evolved into a widely used method for complex managerial decisions.

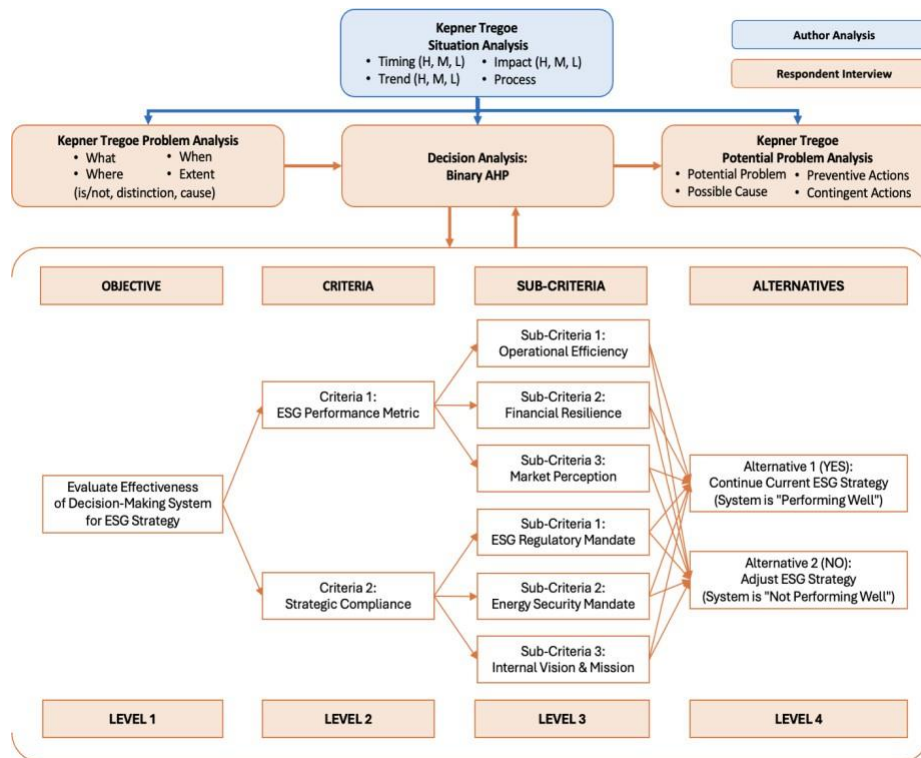
The conceptual framework connects institutional pressure, stakeholder demand, ESG materiality, decision diagnosis, and Binary AHP. The expected condition is a decision system that can integrate energy security, ESG performance, strategic compliance, and market credibility. The current condition is evaluated through stakeholder analysis, PESTLE analysis, Kepner-Tregoe diagnosis, ESG-performance benchmarking, and Binary AHP. The framework leads to two alternatives: continue the current decision-making system or adjust the system to integrate carbon-adjusted capital allocation, ESG governance integration, and stronger performance monitoring.



Source logic: Author analysis using peer-reviewed ESG, sustainability, institutional, stakeholder, Kepner-Tregoe, and AHP literature.

Source: Author Analysis

Figure 1. Conceptual Framework



Source: Author Analysis

Figure 2. Policy Analysis and Decision-Making Framework: Combining Kepner-Tregoe and Binary AHP

METHOD

Research Design

This study uses a sequential mixed-methods single-case design. The qualitative phase diagnoses the ESG decision problem using stakeholder analysis, PESTLE analysis, and Kepner-Tregoe problem analysis. The quantitative phase applies Binary AHP to compare two strategic alternatives: continuing the current decision-making system or adjusting it. This design is suitable because the research problem involves strategic interpretation, executive judgment, and multi-criteria trade-offs.

The study uses primary executive judgment and author-compiled case evidence. Primary data were collected through semi-structured interviews and structured pairwise-comparison questionnaires. The target respondents were executive-level decision makers representing operations, sustainability and digital transformation, and risk management. Company-specific performance figures were treated as case evidence and should be verified by the authors through approved internal data before final submission.

Table 1. Target Informants and Strategic Justification

Informant group	Strategic justification
Operations executive	Assesses refinery reliability, operational efficiency, process safety, and the energy security mandate.
Sustainability and digital transformation executive	Assesses ESG strategy, digital monitoring, materiality integration, and transition-roadmap alignment.
Risk management executive	Assesses financial resilience, external market perception, regulatory risk, and capital-allocation trade-offs.

Source: Author Analysis

Data Analysis Procedure

The analysis follows five steps. First, stakeholder and PESTLE analysis identify the external and internal pressures shaping ESG decisions. Second, Kepner-Tregoe analysis clarifies the problem specification and potential risks. Third, ESG pillar performance is benchmarked against peer-reviewed ESG, sustainability, and environmental strategy literature. Fourth, Binary AHP weighs ESG performance and strategic compliance criteria using executive pairwise judgments. Fifth, the preferred alternative is translated into an implementation roadmap.

RESULTS AND DISCUSSION

Stakeholder and PESTLE Analysis

Stakeholder analysis indicates that the refinery ESG strategy is shaped by actors with different levels of power and interest. Government and regulators carry high power because energy security and compliance remain mandatory. Investors and financial stakeholders carry high interest because ESG credibility can influence financing access and perceived transition risk. Employees, communities, and operating units carry strong operational interest because ESG implementation affects safety, jobs, and local environmental exposure. This confirms the stakeholder-management logic proposed by Buysse and Verbeke (2003) and Donaldson and Preston (1995).

Table 2. PESTLE Summary for ESG Strategy Decision-Making

Dimension	Key pressure	Implication for decision-making
Political/legal	Energy security, environmental regulation, and compliance expectations.	Creates a dual mandate between continuity of supply and ESG compliance.
Economic	Capital intensity, financing cost, and transition-risk perception.	Requires investment logic that captures long-term ESG and risk-adjusted value.
Social	Community safety, workforce acceptance, and legitimacy.	Requires transparent communication and credible process-safety governance.
Technological	Digital monitoring, low-carbon products, and operational optimization.	Requires integration between ESG dashboard, operational data, and investment selection.
Environmental	Emission reduction, resource efficiency, climate risk, and environmental footprint.	Requires performance metrics that go beyond disclosure and connect to operations.

Source: Author Analysis

Kepner-Tregoe Diagnosis

The Kepner-Tregoe diagnosis shows that the central problem is not the absence of ESG commitment, but the misalignment between ESG ambition and decision routines. The issue appears at the interface between corporate policy, refinery operations, capital budgeting, and external market interpretation. In other words, the strategic problem is located in the decision architecture that converts ESG pillars into investment priorities, operational metrics, and risk-adjusted performance evaluation.

Table 3. Kepner-Tregoe Problem Specification

Specification	Is	Interpretation
What	Uncertainty over whether the ESG strategy is effective under a dual mandate.	Strategic alignment problem rather than total operational failure.
Where	Corporate policy, refinery operations, capital allocation, and risk governance.	Gap between strategic ESG goals and operational investment routines.

When	During organizational integration and energy-transition pressure.	Transition pressure coincides with integration complexity.
Extent	Affects performance, compliance, market perception, and internal coordination.	Systemic decision problem across pillars, not an isolated pillar issue.

ESG Pillar Benchmarking with Journal-Based Evidence

The benchmarking discussion is framed through peer-reviewed literature rather than company reports, news, blogs, or lecture materials. The analysis shows that the Six Strategic ESG Pillars are conceptually aligned with established ESG and sustainability-performance literature, but the decision system must ensure that these pillars influence capital allocation, operational efficiency, financial resilience, and market confidence.

Table 4. Journal-Based Benchmarking of the Six ESG Pillars

ESG Pillar	Analytical Indicator	Journal Support	Draft Interpretation
Energy efficiency	Operational efficiency and cost advantage	Christmann (2000); Nurjannah and Raharja (2025)	Efficiency must be linked to ESG value creation, not only operational cost control.
Emission reduction	Material sustainability performance	Khan et al. (2016); Siew (2015)	Emission performance needs materiality logic and credible measurement.
Digitalization	Decision support and monitoring	Govindan et al. (2015); Ishizaka and Labib (2011)	Digital data should support multi-criteria prioritization and monitoring.
Resource efficiency	Environmental strategy and stakeholder pressure	Buysse and Verbeke (2003); Delmas and Toffel (2008)	Resource management reflects institutional and stakeholder demands.
Low-carbon products	Sustainability transition and innovation	Ayu Nindita and Hanggraeni (2024); Berrone et al. (2013)	Transition projects need long-term value logic, not only short-term ROI.
Process safety	Operational legitimacy and risk governance	Garcia-Amate et al. (2023); Hia and Gunawan (2025); Mshana (2024)	Safety and governance credibility influence stakeholder trust and reputation.

Source: Author Analysis based on peer-reviewed literature

Binary AHP Model and Results

The Binary AHP model evaluates two alternatives. Alternative 1 is to continue the current decision-making system. Alternative 2 is to adjust the decision-making system so ESG performance, strategic compliance, capital allocation, and market credibility are integrated more explicitly. The model contains two main criteria: ESG Performance and Strategic Compliance. ESG Performance consists of operational efficiency, financial resilience, and market perception. Strategic Compliance consists of ESG regulatory mandate, energy security mandate, and internal vision and mission.

Table 5. Binary AHP Hierarchy

Level	Element
Goal	Evaluate effectiveness of the decision-making system for ESG strategy implementation.
Main criteria	ESG Performance; Strategic Compliance.
Sub-criteria	Operational Efficiency; Financial Resilience; Market Perception; ESG Regulatory Mandate; Energy Security Mandate; Internal Vision and Mission.
Alternatives	A1: Continue current decision-making system; A2: Adjust decision-making system.

Source: Author Analysis

Table 6. Mean Pairwise Comparison of Main Criteria

Comparison	Mean score	Interpretation
ESG Performance vs Strategic Compliance	0.58	Strategic Compliance is preferred over ESG Performance in the executive judgments.

Source: Author Analysis

Table 7. Priority Vector of Sub-Criteria

Sub-criterion	Priority vector
Operational Efficiency	0.130
Financial Resilience	0.090
Market Perception	0.126
ESG Regulatory Mandate	0.219
Energy Security Mandate	0.291
Internal Vision and Mission	0.144

Source: Author Analysis

The results show that Energy Security Mandate receives the highest weight at 0.291, followed by ESG Regulatory Mandate at 0.219 and Internal Vision and Mission at 0.144. Financial Resilience receives the lowest weight at 0.090. This result indicates that the current decision logic remains dominated by mandate compliance, while market-facing and financial-resilience dimensions require stronger integration.

Table 8. Selection Strategy Based on Binary AHP

Alternative	Score	Percentage	Rank
A1: Continue current system	0.4151	41.5%	2
A2: Adjust decision-making system	0.5849	58.5%	1

Source: Author Analysis

Since A2 receives the higher priority score, the study supports an adjusted decision-making framework. The consistency ratio is 0.044, below the 0.10 threshold commonly used in AHP applications, indicating that the executive pairwise judgments are acceptable for decision synthesis (Saaty, 2008). This result is consistent with recent DIJEFA evidence showing that ESG disclosure, ESG risk rating, and financial outcomes are shaped by governance, leverage, and operational conditions rather than by ESG reporting alone (Alfredo et al., 2025; Hia & Gunawan, 2025; Zen et al., 2025).

Implementation Roadmap

The preferred alternative should be implemented through phased integration. The roadmap focuses on building an integrated materiality matrix, revising capital allocation through carbon-adjusted ROI, strengthening the ESG digital dashboard, and aligning sustainability governance across legacy units. This recommendation is consistent with sustainability research arguing that material ESG issues must be embedded in organizational processes and performance systems to influence corporate outcomes (Eccles et al., 2014; Khan et al., 2016). It also aligns with DIJEFA findings that ESG-related performance is more credible when supported by profitability, governance disclosure, and decision-relevant indicators (Mulyadi & Khairunnisa, 2025; Nurjannah & Raharja, 2025).

Table 9. Draft Implementation Roadmap

Phase	Strategic action
Phase 1: Strategic alignment	Form cross-functional ESG transition team, harmonize materiality logic, and define decision criteria.

Phase 2: Pilot and data integration	Pilot ESG dashboard, integrate operational and risk data, and test carbon-adjusted ROI for selected CAPEX decisions.
Phase 3: Enterprise implementation	Apply adjusted framework across decision routines and engage market stakeholders with evidence-based ESG communication.

Source: Author Analysis

CONCLUSION

This study concludes that Pertamina's refinery ESG strategy requires an adjusted decision-making framework because the main challenge lies in translating ESG pillars into capital allocation, operational priorities, and market credibility. The journal-based review shows that ESG effectiveness should be evaluated through materiality, operational efficiency, financial resilience, stakeholder legitimacy, and strategic compliance. The Binary AHP result supports Alternative 2, namely adjustment of the existing decision-making system, with a priority score of 58.5% and a consistency ratio of 0.044. Managerially, the study recommends an integrated ESG materiality matrix, carbon-adjusted ROI for major investment decisions, an ESG digital dashboard, and phased governance integration. Theoretically, the study contributes to ESG decision-making research by combining institutional pressure, stakeholder theory, Kepner-Tregoe diagnosis, and Binary AHP in a state-owned refinery setting. The main limitation is that company-specific performance figures should be verified from approved primary or internal evidence before final submission. Future research should test the adjusted framework longitudinally after implementation and compare its effect on ESG performance, financial resilience, and market perception.

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