

Scenario Planning Approach to Enhance Business Competitiveness and Sustainable Growth in the Indonesian Midstream Gas Sector: A Case Study of PT Perta Daya Gas

Revi Adikharisma¹, Utomo Sarjono Putro²

School of Business and Management, Institut Teknologi Bandung^{1,2}

*Email: reviadikharisma@gmail.com

Abstract

PT PertaDaya Gas (PDG), a joint venture between PT Pertamina Gas and PLN Energi Primer Indonesia, is facing strategic stagnation due to its high dependency on a single asset, CNG Plant Tambak Lorok, which contributes over 93% of total revenue and also faces contract uncertainty in 2029. This study applies a scenario planning approach to formulate forward-looking strategies that enhance PDG's competitiveness and ensure sustainable growth amid institutional limitations and an evolving energy landscape. Using a qualitative case study method, data were collected through six semi-structured interviews with key stakeholders and triangulated with policy and corporate documents. Strategic analyses using PESTEL, Porter's Five Forces, and VRIO frameworks identified eight key driving forces. Two critical uncertainties, strategic autonomy and PLN's gas demand were selected to construct a 2x2 scenario matrix, resulting in four plausible futures: Championship Mode, Pivot Game, Playbook Locked, and Stuck on the Bench. From the strategic implications of each scenario, twelve strategic options were formulated and subsequently evaluated using Multi-Criteria Decision Analysis (MCDA) based on five weighted criteria: revenue potential, strategic fit, shareholder alignment, operational Feasibility, and time to implement. The evaluation revealed that three strategies, enhancing O&M efficiency, implementing lean operations, and optimizing existing contracts, demonstrated high robustness and Feasibility across all scenarios. In this context, robustness refers to a strategy's consistent performance across multiple future scenarios, while Feasibility reflects the practicality of implementing the strategy within PDG's current organizational and governance constraints. This research highlights how integrating scenario planning and MCDA can enhance strategic foresight, organizational resilience, and decision-making quality in navigating policy-driven energy transitions, particularly within Indonesia's midstream gas infrastructure sector.

Keywords: Scenario planning, energy transition, gas infrastructure, competitiveness, sustainable growth, multi-criteria decision analysis

A. INTRODUCTION

Indonesia's energy sector is fundamentally transforming, driven by the global decarbonization movement and the national commitment to achieve Net Zero Emissions by 2060. Despite the acceleration of renewable energy, natural gas plays a crucial role as a transition fuel due to its relatively lower carbon intensity than oil and coal. In 2024, global energy consumption reached 620 EJ, with natural gas accounting for 23.3% (Energy Institute, 2024). In Indonesia, gas remains essential for energy security and economic development, contributing approximately 17% to the national energy mix 2023 (MEMR, 2023). PT Perta Daya Gas (PDG), a joint venture between PT Pertamina Gas and PLN Energi Primer Indonesia, is one of the few midstream infrastructure companies focused on enabling gas supply to power plants and industrial zones. However, PDG faces stagnant growth due to overdependence on a single asset, the CNG Plant Tambak Lorok, which contributes over 93% of its revenue and is subject to contract expiration in 2029. Since the Sorong gas pipeline in 2021, PDG has struggled to secure new infrastructure projects, relying instead on small-scale O&M contracts that have yet to match its main revenue source's scale or strategic relevance.

Prior research in the energy sector has illustrated the value of scenario planning in navigating such uncertainty. Schoemaker (1995) positioned scenario planning as a structured method for exploring plausible futures and testing strategic options. Ramirez and Wilkinson (2016) refined this framework by emphasizing its value in reshaping strategic conversations and addressing institutional complexity. In Indonesia, scenario planning has been applied in PLN (Ahmadi et al., 2023), Pertamina (Rino et al., 2023),

* Corresponding author

Five Forces, and VRIO, 3) selection of two critical uncertainties to construct a 2x2 matrix, 4) development of scenario narratives, and 5) derivation of strategic options.

Interview transcripts were analyzed using thematic analysis (Braun & Clarke, 2006), supported by deductive coding mapped to strategic frameworks. Scenario narratives were synthesized from stakeholder insights and strategic documents. Strategic options were extracted from scenario implications. Each strategic option was assessed using Multi-Criteria Decision Analysis (MCDA) based on five criteria: revenue potential, strategic fit, shareholder alignment, operational Feasibility, and implementation time. Scores were assigned using swing weighting, and robustness and inter-scenario risk were calculated to classify strategies into robust, contingent, fallback, and experimental categories.

Table 1. Stakeholder Interview Summary Table

No	Position	Company	Objectives
1	Vice President Director	PT Perta Daya Gas	1. Understand PDG's strategic direction and autonomy. 2. Explore internal constraints in investment decision-making and alignment with subholding.
2	Commercial & Portfolio Manager	PT PLN Energi Gas	1. Capture PLN's expectations for PDG as a service provider. 2. Identify PDG's market access potential within and beyond the PLN ecosystem.
3	Corporate Strategic Acceleration Manager	PT Pertamina Gas	1. Understand Pertamina Gas' positioning of PDG. 2. Explore competition and project overlap within the Gas Subholding. 3. Assess the impact of future energy policies and technology transitions.
4	Finance & Business Support Manager	PT Perta Daya Gas	1. Evaluate PDG's financial autonomy and funding limitations. 2. Assess risks of revenue concentration and long-term sustainability.
5	Operation, Maintenance, Engineering Manager	PT Perta Daya Gas	1. Understand PDG's technical capacity and operational limits. 2. Explore project feasibility and readiness for scale-up in LNG, FSRU, or Solar PV.
6	HCIS Manager (Former Commercial & Business Development Manager at PDG)	PT PLN Indonesia Power	1. Capture strategic reflections from a former senior manager with business and financial leadership experience at PDG. 2. Understand long-term organizational challenges and cross-functional misalignments. 3. Explore the evolution of PDG's business development capabilities over time.

Source: Researcher, 2025

Table 2. Key Questions

No	Position	Company	Key Questions
1	Vice President Director	PT Perta Daya Gas	1. How do you perceive PDG's strategic direction within the current sub-holding structure? 2. What are the key challenges PDG faces in initiating new strategic investments? 3. To what extent does PDG have the authority to decide independently on large-scale projects? 4. What is your view on the most optimistic and concerning PDG scenarios in the next five years?
2	Commercial & Portfolio Manager	PT PLN Energi Gas	1. What is PDG's ideal role within PLN's gas supply ecosystem? 2. How important will gas (e.g., CNG, FSRU) remain for PLN's power generation post-2029? 3. What are the commercial or regulatory barriers PDG may face when entering PLN-related projects? 4. Which external factors will most affect PDG's performance?
3	Corporate Strategic Acceleration Manager	PT Pertamina Gas	1. How is PDG currently positioned in Pertamina's subholding portfolio? 2. Do you see internal competition or overlaps among subsidiaries for similar projects? 3. How do you view PDG's readiness to scale outside captive markets? 4. How do you assess energy transition risks—such as renewables or BESS—on PDG's portfolio?
4	Finance & Business	PT Perta Daya Gas	1. How adequate is PDG's current funding structure to support new project expansion?

No	Position	Company	Key Questions
	Support Manager		2. What is the financial risk if the Tambak Lorok CNG contract ends in 2029 without replacement? 3. Can PDG independently finance large-scale infrastructure projects in its current state? 4. What financing strategy is viable for PDG's future diversification?
5	Operation, Maintenance, Engineering Manager	PT Perta Daya Gas	1. What are PDG's core technical strengths compared to other players in the subholding? 2. Does PDG have the resources and skills to scale its involvement in FSRU, LNG, or PLTS? 3. What are the operational constraints or infrastructure gaps when entering new markets? 4. Are there any risks of idle assets in the future, and how can they be mitigated?
6	HCIS Manager (Former Commercial and BD Manager at PDG)	PT PLN Indonesia Power	1. What were the most significant internal barriers to business expansion during your time in PDG's finance and commercial roles? 2. How do you assess the alignment between PDG's strategic goals and its actual decision-making autonomy? 3. What were the key gaps between technical excellence and commercial execution at PDG? 4. How did coordination with sub-holding entities (PLN EPI, Pertamina) influence the speed and success of PDG's strategic initiatives?

Source: Researcher, 2025

C. RESULTS AND DISCUSSION

This section presents the study's results and their interpretation based on the three research objectives outlined in the introduction. These are: 1) to identify the key driving forces and uncertainties affecting PDG's business; 2) to develop plausible future scenarios; and 3) to formulate strategic responses that support PDG's competitiveness and sustainable growth. Using six semi-structured interviews with internal and external stakeholders and supported by PESTEL, Porter's Five Forces, and VRIO frameworks, the study identified eight key driving forces: strategic autonomy, PLN gas demand, energy transition pressure, internal competition, organizational agility, O&M potential, industrial market opportunity, and growth & revenue dependence. These were scored by their biggest impact and highest uncertainty to determine the most influential and unpredictable factors. The two critical uncertainties, strategic autonomy and PLN gas demand, were selected as the basis for developing four scenarios.

Table 3. Critical Uncertainty Result

Driving Force	Impact		Uncertainty	
	Score	Level	Score	Level
PLN Gas Demand	12	High	14	High
Organizational Agility and Culture	2	Low	0	Low
Internal Competition	0	Low	4	Low
Energy Transition Pressure	0	Low	6	Medium
Strategic Autonomy	13	High	11	High
Industrial Market Opportunity	2	Low	0	Low
Growth and Revenue Dependence	7	Medium	0	Low
O&M Potential	0	Low	0	Low

Source: Research data, 2025

Strategic autonomy and PLN gas demand were selected as critical uncertainties because of their significant influence and unpredictability. Strategic autonomy reflects PDG's internal ability to make investment decisions without excessive shareholder intervention, a factor that directly shapes project execution speed and portfolio expansion. PLN's gas demand trajectory, influenced by national energy policy and RUPTL allocations, remains highly uncertain and directly impacts market opportunities for PDG's infrastructure services.

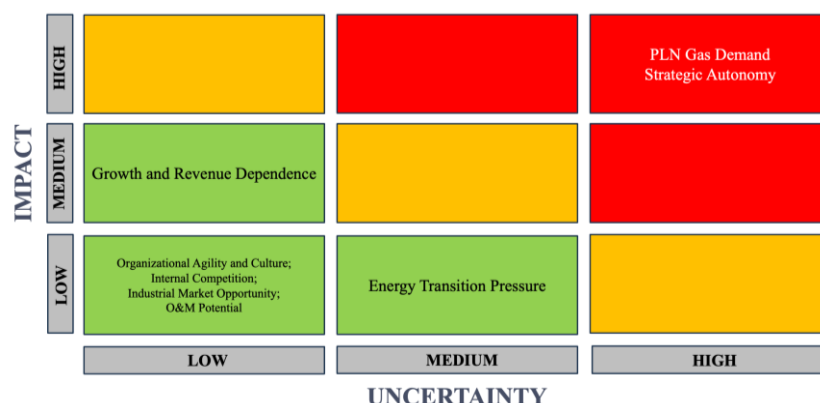


Figure 2. Uncertainty Matrix

Source: Research Data, 2025

These uncertainties were mapped into a 2x2 scenario matrix that generated the following plausible futures: 1) Championship Mode (High Autonomy, High Gas Demand); 2) Pivot Game (High Autonomy, Low Gas Demand); 3) Playbook Locked (Low Autonomy, High Gas Demand); AND 4) Stuck on the Bench (Low Autonomy, Low Gas Demand).

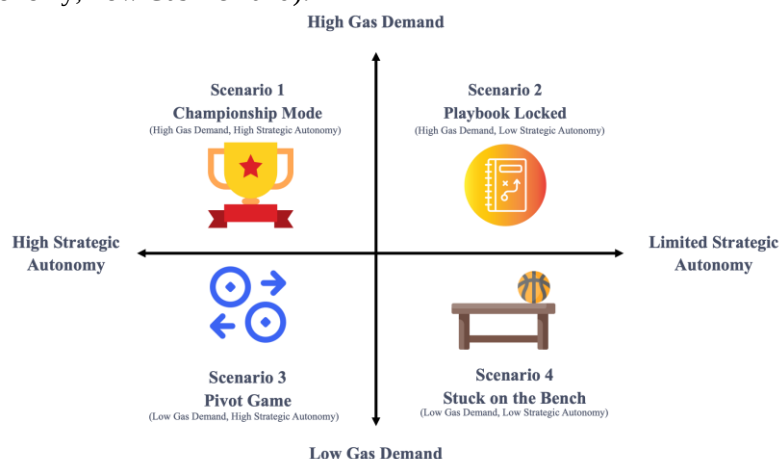


Figure 3. Four Scenarios Based on PDG's Strategic Autonomy and PLN's Gas Demand

Source: Research Data, 2025

Scenario 1: Championship Mode

This scenario portrays an ideal alignment between internal capability and external opportunity. PDG's investment authority is expanded, which is supported by streamlined decision-making and shareholder trust. PLN's continued reliance on gas, especially in peak and remote power generation, ensures a robust pipeline of potential projects. The broader energy policy sees gas as a transitional fuel that opens opportunities for national infrastructure investment. PDG become a frontrunner in executing strategic projects across Indonesia, maintaining its position and redefining its role as a value creator within the holding ecosystem. PDG benefits from the synergy between external policy support and internal decisiveness in this favourable environment. It is capable of securing projects and leading national gas initiatives. The company attracts high-level collaborations, taps into funding channels, and is seen as a key partner by PLN and the Ministry of Energi and Mineral Resources. This scenario also assumes smooth shareholder alignment and faster capital project approvals. PDG can accelerate diversification beyond CNG Plant Tambak Lorok and establish itself as a leader in midstream gas infrastructure, contributing to national energy security and transition.

Scenario 2: Playbook Locked

Here, the external market remains attractive, but PDG is hindered by structural rigidity. Despite the proven operational performance, it cannot capitalize on new opportunities due to bureaucratic

bottlenecks and overlapping authority between holding companies. The company continue to meet performance targets but misses out on strategic influence and visibility. Over time, there is a risk of demotivation, especially among innovation-oriented teams. Maintaining status quo performance becomes the main objective, and PDGs must rely on internal efficiency gains rather than strategic repositioning. Although PDG continues to operate reliably in this scenario, it becomes increasingly boxed into an executor role. The company has minimal influence over project origination or strategic direction, and new initiatives are limited to what is delegated by Pertamina or PLN EPI. PDG risks falling behind more agile or politically favoured subsidiaries as the industry evolves. The path forward involves managing internal excellence while lobbying for gradual reform or mandate clarification to avoid long-term stagnation.

Scenario C: Pivot Game

This scenario demands that PDG activate its entrepreneurial side. PLN's retreat from gas leaves a strategic void that PDG can attempt to fill by developing new client segments and gas applications. Autonomy enables the creation of lean business development units and direct engagement with non-PLN partners. It is a test of organizational courage and capability where success brings diversification and agility, and failure could deepen PDG's marginalization. Risk-taking become essential, and culture shifts toward innovation and customer-centricity are crucial. This scenario represents a moment of disruption and opportunity. PDG can no longer depend on conventional demand sources and must establish a new direction. Success depends on the capacity to overcome organisational inertia and foster entrepreneurial capabilities. With autonomy comes responsibility, where PDG must embrace risk, form new customer relationships, and adjust its business model to address a fragmented and competitive landscape. Internal flexibility and leadership vision will be key to turning the threat of demand loss into a new growth chapter.

Scenario D: Stuck on the Bench

This is a cautionary scenario of inaction and external neglect. PDG may continue routine operations, but its relevance diminishes sharply without investment authority or market demand. It is not invited into strategic initiatives and may become a cost centre rather than a growth engine. PDG's identity becomes blurred without decisive action, and the company risks institutional irrelevance. Navigating this future requires strategic retreat, lean governance, and perhaps a redefinition of the long-term role of PDGs. This scenario reflects a deteriorating institutional environment in which PDG has limited relevance. It remains structurally passive, watching opportunities go to other entities while its core asset risks obsolescence. Internal morale may decline, talent may leave, and financial viability may be under pressure. PDG's only recourse may be to implement a turnaround strategy, restructure its organization, or explore niche roles that can justify its continued existence within the holding ecosystem.

Tabel. 4. Strategic Scenarios for PDG: Implications and Options

No	Scenario	Implications	Strategic Options
1	Championship Mode	PDG can grow significantly via infrastructure expansion, strategic market positioning, and broader coverage. This is supported by high strategic autonomy and favourable gas demand, especially from PLN's eastern peaker plants.	1. Develop modular CNG, LNG, and FSRU facilities (5–10 MMSCFD) for industrial zones, PLN peaker plants, and Pertamina assets. Use joint ventures with commercial and state-owned entities. 2. Obtain mandates to lead cross-sector gas infrastructure development under RJPP, including PLN peaker plants and Pertamina cluster zones. 3. Form 2–3 strategic alliances with PLN, Pertamina subholdings, and local governments to accelerate licensing, funding, and infrastructure rollout.
2	Playbook Locked	PDG remains bound to existing projects with little room for innovation. Despite strong demand, conservative and centralized decision-making may lead to stagnation.	1. Deploy predictive maintenance and digital CMMS tools in major O&M contracts to reduce costs by 10–15%. 2. Implement SCADA, IoT-based monitoring, and asset tracking to cut unplanned downtime by 20%. 3. Renegotiate top 3 O&M contracts focusing on margin improvement, scope efficiency, and client-side cost recovery — without additional capex.
3	Pivot Game	PLN-related gas demand weakens, but PDG can pivot to serve industrial, off-grid, and regional markets. Success	1. Acquire 2–3 industrial gas clients in SEZs and off-grid clusters using bundled gas + O&M services leveraging PDG's modular systems.

No	Scenario	Implications	Strategic Options
		depends on agility and decentralized execution.	2. Launch a business task force to pursue non-PLN markets, targeting five leads and two new contracts annually. 3. Execute 1–2 small-scale (<5 MMSCFD) BOT or leasing CNG/LNG projects with under 3-year payback, targeting ports, isolated regions, and industrial clients.
4	Stuck on the Bench	PDG has limited autonomy, low PLN relevance, and unclear positioning—the strategic focus shifts to survival.	1. Adopt Lean Operations by cutting low-value activities and reducing overhead by 15% while maintaining service quality. 2. Exit <5% margin scopes (e.g., short-term PLTS or small maintenance) and reallocate to high-return areas like CNG and FSRU. 3. Submit a formal strategic repositioning to PGN/Pertagas to clarify long-term role (e.g., spin-off, merger, infrastructure focus).

Source: Research Data, 2025

This final stage of the scenario development process translates uncertainties into practical monitoring systems that enable strategic foresight. This integration is achieved by linking each critical uncertainty, such as PDG's Strategic Autonomy and PLN Gas Demand Outlook, to a set of early warning indicators. This section provides interpretations across the four scenario quadrants for each indicator, which helps PDG establish a scenario radar that supports proactive and adaptive strategy execution.

Table 5. Early Warning Signals

Driving Forces	Indicators	Championship Mode	Playbook Locked	Pivot Game	Stuck on the Bench
Strategic Autonomy	Investment Approval Speed	Approvals are fast, mostly at internal discretion; strategic projects progress swiftly.	Approvals are slow, requiring multi-level holding review; not rejected but delayed.	Fast for modular projects; slower for large or PLN-related initiatives.	Approvals are delayed or denied; there is no significant capital activity.
	Internal Decision-Making Process	Empowered BOD, strong cross-unit alignment, and proactive execution.	Execution is aligned with the parent company; there is limited internal initiative.	Agile internal support for fast BD moves; adaptive structure.	Disconnected governance; conflicting signals and delays.
	Realized CAPEX vs Budget	>90% CAPEX realization; rapid investment mobilization.	Low CAPEX realization, tightly controlled by holding.	Realization focused on pilot or external projects.	Negligible realization: projects cut or retracted.
	Status of Capital Ceiling Revision	Formally revised; higher project limits granted to PDG BOD.	There is no formal revision, but informal flexibility exists.	Limited revision pushed to enable pilot projects.	There has been no progress; the issue has been unresolved despite internal push.
PLN Gas Demand	RUPTL Allocation and Tender Activity	Gas remains dominant; new project opportunities are visible.	Gas is included in planning but stagnant in execution.	Tenders drop; RE/BESS gains dominance; gas role fades.	No tender; gas delisted from future energy roadmap.
	PLN Engagement Frequency	Early strategic dialogue; PDG integrated into the planning cycle.	Engagement is limited to the current contract scope.	Selective coordination with PLN; PDG pushes but is a lower priority.	No engagement; PDG excluded from planning discussions.
	Gas Share in New PLN Projects	High share; multiple new peaker or hybrid projects include gas.	Limited gas is used only for specific backup roles.	Small-scale hybrid gas systems, RE and BESS, take the lead.	Zero; RE fully dominates new projects.

Driving Forces	Indicators	Championship Mode	Playbook Locked	Pivot Game	Stuck on the Bench
	RE/BESS Penetration in Grid Planning	Limited to the pilot scale, gas is still essential for reliability.	Gradual increase of RE/BESS, but gas still embedded.	BESS integrated into dispatch; gas becomes marginal.	Grid planning excludes gas; RE and BESS become the standard model.

Source: Research Data, 2025

The early warning indicators function as strategic triggers by linking observable environmental and organisational changes to specific scenario trajectories. For instance, consistent delays in investment approval, unspent capital expenditure (CAPEX) budgets, and stalled capital ceiling revisions may suggest that PDG is drifting toward the 'Stuck on the Bench' scenario, indicating that the organization is operating under severe strategic constraints. On the other hand, if PDG gains more internal freedom, such as faster decision-making, approval to raise its investment limit, and quicker rollout of infrastructure projects, it will progress toward 'Championship Mode'. In this case, PDG can take more initiative and respond better to new business opportunities that match its strength with the growing gas market.

Externally, if gas allocation in RUPTL keeps shrinking, fewer gas projects are being offered, PLN becomes less involved, and renewable energy with battery storage (RE-BESS) gains more focus in plans, this may signal a shift toward 'Pivot Game' or even riskier 'Stuck on the Bench' scenario. These changes show that gas become less important and PDG might need to shift its business direction or rethink its whole strategy. In contrast, if the government continue to support gas in the national energy plan, regularly offers gas-related projects, and PLN actively involves PDG in its strategy. The direction may still align with 'Playbook Locked' or even 'Championship Mode', where PDG remain important to PLN's operation despite not having full independence.

Strategy Evaluation Using MCDA

Twelve strategic options were derived and evaluated using Multi-Criteria Decision Analysis (MCDA). These options were evaluated across five criteria: revenue potential, strategic fit, shareholder alignment, operational Feasibility, and implementation time. The criteria weights in MCDA were derived using swing weighting, a structured method in which stakeholders evaluate the relative importance of each criterion based on its potential impact on strategic success. Key internal stakeholders, including representatives from PDG's strategic planning, operations, and finance divisions, were asked to imagine moving each criterion from its worst to the best possible performance and to assign scores based on the perceived value of that swing. These scores were then normalized into percentage weights to reflect relative priority across all five criteria.

Table 6. Criteria and Weighting

Criteria	Weight	Rationale
Revenue Potential	30%	PDG must reduce its overdependence on Tambak Lorok (which accounts for 93% of its revenue). Over Rp80 billion/year is at risk starting from 2029.
Strategic Fit	25%	Strategies must align with PDG's mandate within the Gas Subholding, the processing cluster, and guidance from RJPP & RUPTL.
Shareholder Alignment	20%	PDG operates under-investment authority limits (Rp10B capex threshold), making shareholder support crucial for strategy execution.
Operational Feasibility	15%	Proposed strategies must align with PDG's existing internal capabilities—including people, systems, and operational readiness.
Time to Implement	10%	With stagnant growth since 2021, faster-implementing strategies (preferably within 2–3 years) are prioritized.

Source: Research Data, 2025

Scoring was done on a 0–100 scale, and scores were aggregated by applying swing weights derived from internal stakeholder input (Montibeller et al., 2007). Additional robustness indicators were introduced: 1) Inter-scenario Robustness, indicating average performance across all futures, and 2) Inter-scenario Risk, reflecting the volatility of strategy performance across scenarios. This MCDA process enabled the filter of strategies not just by desirability but also by practical value across uncertain trajectories (Ram et al., 2011). Following the MCDA assessment, the twelve strategic options were categorized into four groups based on their average weighted score, inter-scenario risk, and robustness index.

Table 7. MCDA Evaluation

Strategic Options	Scenario	Revenue Potential (30%)	Strategic Fit (25%)	Shareholder Alignment (20%)	Operational Feasibility (15%)	Time to Implement (10%)	Avg Weight Score	Inter-Scenario Risk	Inter-Scenario Robustness
Expand LNG/CNG Projects	Championship Mode	90	85	80	80	75	83.75	7.5	19.56
	Playbook Locked	80	80	80	80	75	79.5		
	Pivot Game	85	90	85	80	75	82.25		
	Stuck on the Bench	75	85	75	75	70	76.25		
Lead National Gas Infra	Championship Mode	95	90	90	70	70	88	19.75	23.56
	Playbook Locked	80	75	70	70	80	71.25		
	Pivot Game	80	90	75	75	80	78.25		
	Stuck on the Bench	70	70	65	65	70	68.25		
Strengthen External Partnerships	Championship Mode	85	85	80	80	75	82.25	7.5	21.00
	Playbook Locked	80	80	80	80	75	79.00		
	Pivot Game	80	90	75	80	75	80.75		
	Stuck on the Bench	70	75	75	75	70	74.50		
Enhance O&M Efficiency	Championship Mode	90	90	90	85	85	85.75	2.5	14.38
	Playbook Locked	85	90	90	90	85	85.63		
	Pivot Game	80	85	90	85	80	84.50		
	Stuck on the Bench	85	85	85	80	85	85.25		
Digitalize Internal Operations	Championship Mode	80	90	80	85	70	77.75	6.5	21.19
	Playbook Locked	85	85	80	85	80	82.25		
	Pivot Game	80	85	85	80	75	80.25		
	Stuck on the Bench	75	80	80	80	80	78.81		
Optimize Existing Contracts	Championship Mode	90	85	90	85	80	82.75	4.5	19.06
	Playbook Locked	90	90	80	80	80	82.00		
	Pivot Game	90	80	85	85	75	80.75		
	Stuck on the Bench	80	80	85	80	80	78.25		
Enter Industrial Markets	Championship Mode	85	80	80	70	75	78.50	16.25	25.63
	Playbook Locked	75	70	70	70	70	72.75		
	Pivot Game	90	90	85	80	70	81.25		
	Stuck on the Bench	70	50	50	70	70	65.00		
Build BD Taskforce	Championship Mode	90	90	85	80	70	82.00	7.5	19.69
	Playbook Locked	85	85	80	80	85	80.25		
	Pivot Game	85	85	80	75	85	83.25		
	Stuck on the Bench	75	70	70	70	75	75.75		
Pilot New Business Models	Championship Mode	80	85	75	85	80	80.50	11.25	25.75
	Playbook Locked	70	70	70	70	70	74.25		
	Pivot Game	80	90	80	75	70	80.25		
	Stuck on the Bench	65	70	70	70	70	69.00		

Strategic Options	Scenario	Revenue Potential (30%)	Strategic Fit (25%)	Shareholder Alignment (20%)	Operational Feasibility (15%)	Time to Implement (10%)	Avg Weight Score	Inter-Scenario Risk	Inter-Scenario Robustness
Implement Lean Operations	Championship Mode	80	85	90	85	80	81.25	4.25	17.25
	Playbook Locked	85	85	85	80	80	82.75		
	Pivot Game	85	80	85	85	80	84.75		
	Stuck on the Bench	90	80	80	80	85	84.50		
Restructure Non-Core & Low-Margin Portfolios	Championship Mode	70	75	75	70	70	72.25	8.25	26.44
	Playbook Locked	70	70	70	70	70	73.56		
	Pivot Game	75	75	75	80	75	78.25		
	Stuck on the Bench	80	85	85	70	70	79.75		
Propose Strategic Repositioning	Championship Mode	75	85	80	70	70	74.75	5.75	23.69
	Playbook Locked	70	80	75	70	70	74.00		
	Pivot Game	75	90	85	75	70	76.75		
	Stuck on the Bench	80	85	85	70	70	79.75		

Source: Research Data, 2025

Table 8. Rank of MCDA Results for Strategic Options

No	Strategic Options	Avg Weight Score	Inter-Scenario Risk	Inter-Scenario Robustness	Classification	Explanation
1	Enhance O&M Efficiency	85.63	2.5	14.38	Robust	High score, low risk, excellent consistency across scenarios. Strong baseline strategy.
2	Implement Lean Operations	82.75	4.25	17.25	Robust	Reliable internal improvement strategy. Easy to execute.
3	Optimize Existing Contracts	80.94	4.5	19.06	Robust	Tactical short-term gain. Supports financial stability.
4	Expand LNG/CNG Projects	80.44	7.5	19.56	Contingent	Growth-oriented but needs strong early warning system (EWS) confirmation.
5	Digitalize Internal Operations	78.31	4.5	21.69	Contingent	Long-term enabler. Requires funding and management focus.
6	Build BD Taskforce	80.19	8	19.81	Contingent	Prepares future opportunities. Works under flexible scenarios.
7	Lead National Gas Infra	76.44	19.75	23.56	Contingent	High potential, high volatility. Needs subholding mandate.
8	Strengthen External Partnerships	79.00	7.5	21.00	Contingent	Mid-value. It depends on external Willingness to cooperate.
9	Enter Industrial Markets	74.38	16.25	25.63	Experimental	Risky without autonomy. Optional if a regulatory shift occurs.
10	Propose Strategic Repositioning	76.38	3.75	23.63	Fallback	Strategic survival move if PDG remains stagnated.
11	Pilot New Business Models	74.25	11.25	25.75	Experimental	Innovation path, but lacks readiness and robustness.
12	Restructure Non-Core & Low-Margin Portfolios	73.56	8.25	26.44	Fallback	Last-resort survival restructuring under extreme scenarios.

Source: Research Data, 2025

The results of the MCDA led to the classification of strategic options into four categories: First, Robust Strategies: High performance across all scenarios. These include enhancing O&M efficiency, implementing lean operations, and optimizing existing contracts. They provide immediate value and stability. Based on internal benchmarking, implementing lean operations and enhancing O&M efficiency is projected to improve PDG's operational margin by approximately 10–15%. Optimizing existing contracts will contribute 5–7% additional revenue, assuming successful renewals and stable demand.

Secondly, Contingent Strategies are effective under certain conditions. These include expanding LNG/CNG infrastructure, digitalizing internal processes, and building business development taskforces. Their execution depends on signals identified through early warning indicators. Thirdly, Fallback Strategies are reserved for worst-case scenarios. These include restructuring non-core portfolios and proposing formal strategic repositioning. They serve as risk mitigation options. Fourth, Experimental Strategies: Innovative but high-risk. These include entering industrial markets and piloting new business models. They offer long-term potential and require controlled experimentation.

Table 9. Implementation Plan

Strategy	Action	PIC	Years																			
			2025				2026				2027				2028				2029			
			Q1	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
Enhance O&M Efficiency	Deploy predictive maintenance systems and digital CMMS across PDG's largest O&M contracts to reduce operational costs by 10–15%, particularly in PLN IP's peaker gas compressor sites and high-maintenance regions.	Manager of Operations, Maintenance, Engineering																				
Implement Lean Operations	Implement Lean Operations by streamlining overlapping functions, phasing out low-value internal activities, and enhancing operational focus on core infrastructure services. The initiative targets a 15% reduction in fixed overhead while maintaining service quality and organizational agility.	Manager of Operations, Maintenance, Engineering																				
Optimize Existing Contracts	Renegotiate top 3 O&M and service agreements, focusing on margin improvement, scope efficiency, and client-side cost recovery mechanisms — without requiring additional capex.	Manager of Commercial & Business Development																				
Expand LNG/CNG Projects	Develop modular CNG, LNG, and FSRU facilities (5–10 MMSCFD) to serve industrial zones, PLN peaker power plants, and Pertamina assets targeted for gasification. Projects will be executed via joint ventures with commercial and state-owned stakeholders.	Manager of Commercial & Business Development																				
Digitalize Internal Operations	Implement SCADA, IoT-based condition monitoring, and asset reliability tracking in all major O&M operations to reduce unplanned downtime by 20% and improve service transparency.	Manager of Operations, Maintenance, Engineering																				
Build BD Taskforce	Establish a business development taskforce to pursue non-PLN market segments, tasked with generating 5 leads and converting 2 new contracts per year for industrial, port, or private estate clients.	Manager of Commercial & Business Development																				
Lead National Gas Infra	Obtain holding-level mandate to lead cross-sector gas infrastructure development under RJPP, including PLN's peaker plants and Pertamina's refinery/cluster gasification needs.	President Director																				
Strengthen External Partnerships	Form 2-3 strategic alliances with PLN, Pertamina subholdings, and local governments to fast-track licensing, funding, and deployment of gas infrastructure in industrial and energy-critical regions.	Manager of Commercial & Business Development																				

Source: Research Data, 2025

D. CONCLUSIONS

This study aimed to formulate strategic responses for PT Perta Daya Gas (PDG) to enhance competitiveness and sustainable growth amid governance constraints and an uncertain energy landscape. Eight driving forces were identified and synthesised into four future scenarios through a scenario planning approach supported by PESTEL, Porter's Five Forces, and VRIO frameworks. These formed the foundation for twelve strategic options evaluated using Multi-Criteria Decision Analysis (MCDA). The findings show that robust strategies, such as enhancing O&M efficiency, implementing lean operations, and optimizing contracts, can deliver consistent value regardless of future uncertainties. Contingent strategies offer promising alternatives when certain environmental signals are met. Fallback and experimental strategies serve as protective or exploratory options under more challenging conditions.

This study contributes to the literature by demonstrating how scenario planning and MCDA can be integrated into infrastructure firms' strategic management, especially in state-owned or joint-venture contexts. Methodologically, it extends existing models by aligning thematic analysis with structured foresight and evaluation tools. For future research, scholars may explore each strategy's financial impact or stakeholder alignment using quantitative models. Further investigation could also examine how scenario planning can be institutionalized within SOEs' strategic functions, including integrating early warning signal systems.

Beyond PDG, this integrated scenario–MCDA approach offers valuable lessons for other state-owned infrastructure enterprises operating under similar strategic and institutional constraints. By applying structured foresight and robust evaluation, SOEs can enhance their adaptability, improve alignment with national development priorities, and strengthen resilience in the face of policy shifts, market volatility, and technological disruption. Furthermore, this study opens opportunities for

comparative applications across other infrastructure sectors such as renewables, transmission, or logistics in Indonesia and Southeast Asia, where similar uncertainty and institutional complexity are prevalent.

REFERENCES

Journal Article:

- Ahmadi, H., Sunitiyoso, Y., & Wicaksono, A. (2023). Scenario planning of PLN Indonesia Power in 2030: To be a leading green and sustainable power generation company. *European Journal of Business and Management Research*, 8(4), 129–139. <https://doi.org/10.24018/ejbmr.2023.8.4.2016>
- Akbar, I., & Sarjono Putro, U. (2024). SAF implementation in 2027: A case study of Indonesia. *European Journal of Business and Management Research*, 9(5), 1–15. <https://doi.org/10.24018/ejbmr.2024.9.5.2408>
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>
- Bouhalleb, A., & Smida, A. (2020). Exploring the relationship between scenario planning and strategic flexibility and complexity. *European Journal of International Management*. <http://dx.doi.org/10.1504/EJIM.2020.107033>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Lilasari, L. L., & Siallagan, M. (2023). Navigating upstream Indonesia's oil and gas (O&G) services industry amidst the cleaner energy transition era with a scenario planning framework. *European Journal of Business and Management Research*, 8(4), 192–198. <https://doi.org/10.24018/ejbmr.2023.8.4.2043>
- Montibeller, Gilberto & Gummer, Haidee & Tumidei, Daniele, (2007). "Combining scenario planning and multi-criteria decision analysis in practice," LSE Research Online Documents on Economics 22709, London School of Economics and Political Science, LSE Library. <http://eprints.lse.ac.uk/id/eprint/22709>
- Naeem, M., & Ozuem, W. (2021). Developing a thematic analysis framework for qualitative data in marketing strategy. *Qualitative Market Research: An International Journal*, 24(3), 351–368. <https://doi.org/10.1177/16094069231205789>
- Putro, U. S., & Rino, M. (2023). Scenario planning in selecting contract strategy scheme to achieve OTOBOSOROR target in PT Kilang Pertamina International. *European Journal of Business and Management Research*, 8(3), 332–341. <https://doi.org/10.24018/ejbmr.2023.8.3.1987>

Book

- Garvin, D. A., & Levesque, L. C. (2006). A note on scenario planning. Harvard Business School Background Note 306-003. Boston, MA: Harvard Business School.
- IESR (Institute for Essential Services Reform). (2025). Indonesia Energy Transition Outlook 2025. Jakarta: IESR.
- International Energy Agency. (2024). Global Energy Review 2024.
- Lindgren, M., & Bandhold, H. (2003). Scenario planning: The link between future and strategy. Palgrave Macmillan.
- Ministry of Energy and Mineral Resources. (2023). Handbook of Energy and Economic Statistics of Indonesia. Jakarta: MEMR.
- PLN (Perusahaan Listrik Negara). (2021). Rencana Usaha Penyediaan Tenaga Listrik (RUPTL) PT PLN (Persero) 2021–2030. Jakarta: PT PLN (Persero).
- PT Perta Daya Gas. (2023). Rencana Jangka Panjang Perusahaan 2023–2027 (RJPP). Internal Company Document.
- PT Perta Daya Gas. (2024). Laporan Tahunan 2023 [Annual Report].
- Ramirez & Wilkinson. (2016). Strategic Reframing: The Oxford Scenario Planning Approach. Oxford Academic.
- Rothaermel, F. T. (2021). Strategic Management (5th ed.). McGraw-Hill Education.
- Van der Heijden, K. (2005). Scenarios: The art of strategic conversation (2nd ed.). John Wiley & Sons.