

## INTEGRATION OF ENTERPRISE RISK MANAGEMENT IN STRATEGIC PLANNING TO ACHIEVE HIGH-QUALITY GROWTH: A CASE STUDY OF PT PLN NUSANTARA POWER

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### Abstract

The global energy industry is facing a major transformation due to sustainability demands and the green energy transition. This study aims to analyze the integration of Enterprise Risk Management (ERM) into strategic planning at PT PLN Nusantara Power (PLN NP) to achieve High-Quality Growth. Using a descriptive qualitative approach with a case study method on the 2024 Annual Report, this research explores how risk management mechanisms have transformed from a mere compliance function into a strategic enabler. The findings show that PLN NP successfully integrated ERM through three main pillars: alignment of risk appetite with Key Performance Indicators (KPIs), strengthening the Governance, Risk Management, and Compliance (GRC) framework, and utilizing digitalization (iCORE and Remool) for operational risk mitigation. Data analysis results indicate a decrease in the Equivalent Forced Outage Rate (EFOR) and the achievement of a KPI score of 106.31, confirming that risk integration strengthens organizational resilience amidst the uncertainties of the energy transition. Theoretically, this research reinforces the relevance of the Resource-Based View (RBV) and Contingency Theory in positioning ERM as a strategic capability that creates sustainable competitive advantage.

**Keywords:** Enterprise Risk Management (ERM), Manajemen Strategi, High Quality Growth, Transisi Energi, GRC.

### INTRODUCTION

The global energy industry is currently at the nadir of a transformation triggered by the urgency of climate change and a shift toward sustainability. This shift forces the electric utility sector to balance the energy trilemma: energy security, energy equity, and environmental mitigation (Gielen et al., 2019). In Indonesia, this transformation is manifested through the roadmap toward Net Zero Emission (NZE), which demands electric power providers to undergo a radical strategic reorientation. PT PLN Nusantara Power (PLN NP), as the largest generation subholding, bears the strategic burden of maintaining the reliability of electricity supply while transitioning to green energy. These challenges create high risk complexities, ranging from investment risks in new technologies to operational risks in managing renewable energy mixes. In facing this disruption, the effectiveness of strategic management and the organization's ability to adapt become key determinants of corporate sustainability (Afrianda, 2024).

The integration of risk management into strategic planning is no longer just an option but a theoretical and practical necessity. Enterprise Risk Management (ERM) serves as a navigation system that allows organizations to detect threats before they become crises and turn challenges into competitive opportunities (Bromiley et al., 2015). Previous research emphasizes that the application of disciplined strategic management, supported by transformational leadership, significantly influences employee performance and organizational effectiveness in the electricity sector (Afrianda & Yosepha, 2025; Afrianda, 2025). However, amidst strengthening stakeholder pressure regarding Environmental, Social, and Governance (ESG) issues, companies require strategic capabilities that can mediate these pressures into sustainable performance (Afrianda & Zainal, 2025; Afrianda, 2024). This is consistent with findings by Li et al. (2021), which state that ESG disclosure positively affects firm value through effective risk mitigation pathways.

Based on the 2024 Annual Report, PT PLN Nusantara Power carries the theme "Elevating Success to Build a Sustainable Future through High-Quality Growth." This strategy emphasizes high-quality growth driven by innovation, such as the development of the electric vehicle ecosystem and the implementation of digital power distribution technology to improve the system reliability index (Afrianda, 2025). However, this growth ambition brings consequences to the company's risk profile. The integration of risk management within the Governance, Risk Management, and Compliance (GRC) framework at PLN NP becomes a vital instrument to ensure that every step of innovation and organizational change remains within the corridors of compliance and business ethics (Ansya et al., 2025; Halim et al., 2025). According to the view of Fraser & Simkins (2016), mature ERM allows management to engage in informed risk-taking to achieve optimal strategic returns.

Despite the extensive literature on ERM, there remains a research gap regarding how risk integration mechanisms are technically carried out at the strategic planning level in energy companies undergoing massive transformation. To what extent risk appetite is aligned with Key Performance Indicators (KPIs) to support the "Beyond kWh" strategy and the energy transition remains a crucial question (Afrianda, 2025; Afrianda & Zainal, 2024). Uncertainty in green investments and economic volatility require a deep analysis of the role of risk management as a strategic enabler rather than a mere inhibitor (Kaplan & Mikes, 2016).

Strategic Management and Organizational Sustainability Strategic management is an ongoing process of formulating, implementing, and evaluating cross-functional decisions that enable an organization to achieve its objectives. In a dynamic energy industry, strategic management is not merely a tool for achieving efficiency, but also an instrument for navigating massive energy transitions (Afrianda, 2025). Strategic success is heavily influenced by work discipline and the organization's capability in managing change (Afrianda, 2025). Wheelen and Hunger (2017) emphasize that environmental

scanning is a crucial initial stage in strategic management to identify new market opportunities amidst disruption. Furthermore, research indicates that the implementation of robust strategic management, mediated by strategic capabilities, becomes a determining factor in maintaining the sustainability of organizational performance amidst external pressures and stakeholder demands (Afrianda & Zainal, 2025; Afrianda, 2024).

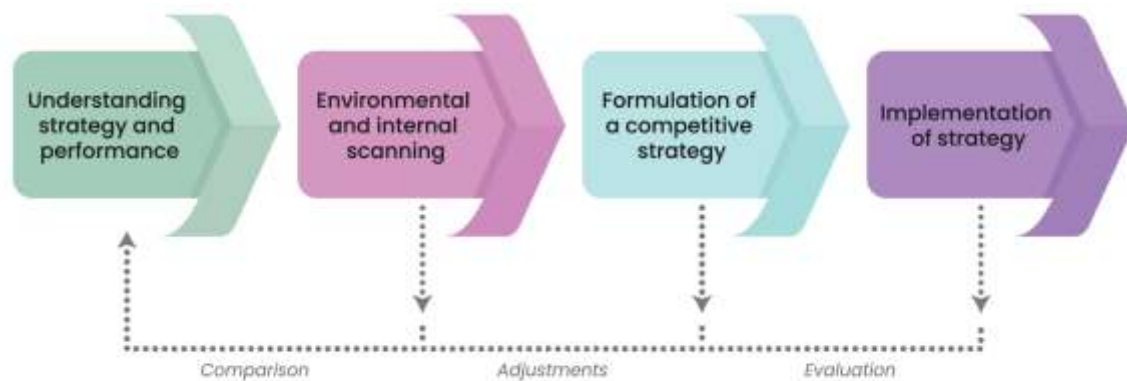


Figure 1. The Strategic Management Process

**Enterprise Risk Management (ERM) and Strategic Integration** Enterprise Risk Management (ERM) is a comprehensive framework designed to identify, assess, and manage risks across all organizational levels. In contrast to traditional siloed risk management, ERM integrates risk into the core of strategic decision-making (COSO, 2017). This integration ensures that the company's risk profile aligns with the risk appetite established by management (PLN NP, 2024). Innovations within the organization, including the digitalization of electric power distribution systems, require proactive risk mitigation to prevent disruptions in service reliability (Ansya et al., 2025; Afrianda, 2025). Effective ERM enables companies to transform uncertainty into a competitive advantage through values-based strategies (Afrianda & Zainal, 2024). According to Mikes and Kaplan (2014), the effectiveness of ERM depends on how a company distinguishes between preventable risks and strategic risks deliberately undertaken for growth.

**Good Corporate Governance and GRC** Good Corporate Governance (GCG) serves as the foundation for effective risk management. The GRC (Governance, Risk Management, and Compliance) concept emphasizes the importance of synchronizing governance, risk management, and compliance to achieve organizational goals ethically (Tarantino, 2018). The implementation of Clean Corporate Governance is proven to yield a significant impact on business performance, particularly when supported by transformational leadership capable of driving a risk culture throughout all company lines (Afrianda, 2024; Afrianda et al., 2024). In the energy sector, compliance with environmental regulations and business ethics are primary parameters in maintaining

investor and public trust (Halim et al., 2025). This is supported by Shleifer and Vishny (1997), who state that robust governance protects stakeholder rights while ensuring the efficient allocation of corporate resources.

**Technological Disruption in Industry 4.0 and Transition to 5.0** Technological disruption in the Industry 4.0 era and the transition toward 5.0 bring both new opportunities and risks for power companies. The use of technologies such as Business Intelligence and Online Analytical Processing (OLAP) is highly instrumental in developing business strategies and monitoring risks in real-time (Afrianda, 2023). However, dependence on digital systems also increases cyber risks that can affect the distribution reliability index (Afrianda, 2025). Therefore, organizational change strategies must incorporate technology risk management to ensure that innovation remains aligned with long-term performance goals (Afrianda, 2024). Westerman et al. (2014) emphasize that successful digital transformation requires "Digital Mastery," which is a combination of technological capability and leadership capability to manage the risks of such changes.

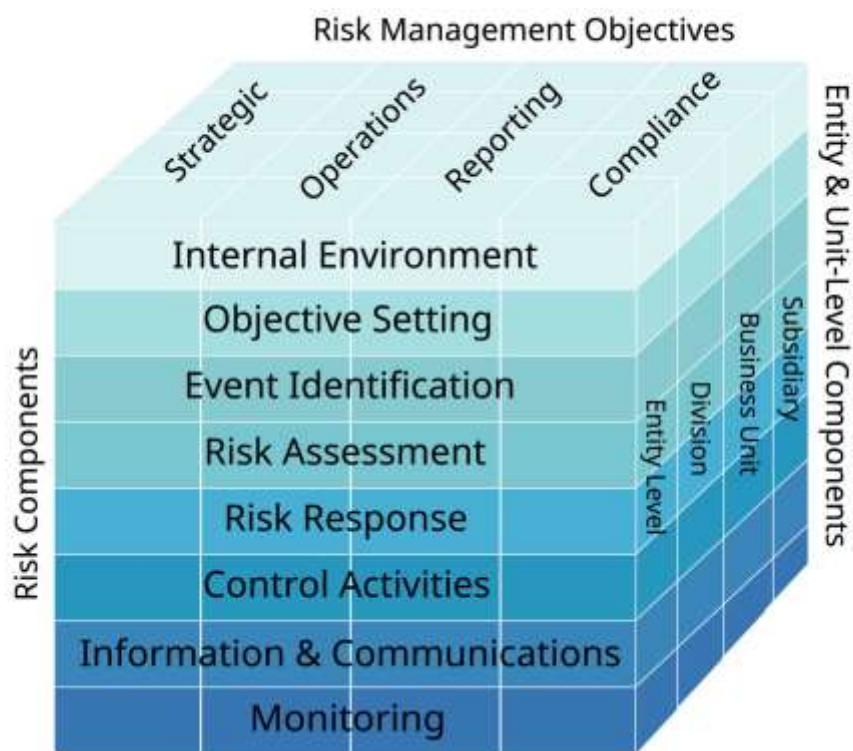


Figure 2. COSO ERM Framework

**Theoretical Framework of the Research** This research draws upon the integration of the Resource-Based View (RBV) and Contingency Theory. Barney (1991), through RBV, explains that unique and inimitable risk management capabilities can serve as a source of sustained competitive advantage. Meanwhile, Contingency Theory

suggests that there is no single best risk management system; its effectiveness depends on the alignment between the company's strategy and its external environment (Otley, 2016). In this context, risk management is viewed as a strategic capability that must be adapted to external environmental conditions (stakeholder pressure) and internal conditions (organizational culture). The alignment between strategic planning and ERM creates a solid defense mechanism for the company in facing economic volatility and the green energy transition (Afrianda, 2024; Siswanti et al., 2024).

**Research Objectives** This study aims to comprehensively analyze the practices of ERM integration into strategic planning at PT PLN Nusantara Power using the 2024 Annual Report data as the basis for analysis. The primary focus will be directed at how the company mitigates technological disruption risks and utilizes Clean Corporate Governance to achieve optimal Business Performance (Afrianda, 2024). The results of this study are expected to provide a dual contribution: theoretically strengthening the literature on values-based strategic management and practically providing a reference for policymakers in the energy sector in managing energy transition risks systematically.

## RESEARCH METHOD

This research employs a qualitative approach with a descriptive-analytical method to explore the integration of risk management into strategic planning at PT PLN Nusantara Power (PLN NP). The selection of a qualitative method is based on the need to understand complex managerial phenomena and the strategic context surrounding **Enterprise Risk Management (ERM)** practices in a transforming energy sector. This study aims not only to describe the phenomenon but also to provide an in-depth interpretation of how the risk framework becomes a corporate strategic capability in facing the challenges of the energy transition toward Net Zero Emission. By focusing on a single case study of the 2024 Annual Report, this research is able to delve into strategic narratives and governance mechanisms that are difficult to reach through quantitative methods alone.

The data sources in this research are derived from authentic and credible secondary data. The primary data source is the **2024 Annual Report of PT PLN Nusantara Power**, carrying the theme "Elevating Success to Build a Sustainable Future through High Quality Growth." Additionally, this study utilizes supporting data such as sustainability reports, internal regulations related to risk management policies, and relevant supporting literature in the fields of strategic management, transformational leadership, and **Good Corporate Governance (GCG)**. The use of the annual report as the primary data source is highly appropriate for strategic analysis as this document represents management accountability to stakeholders and contains long-term plans (RJP) as well as professionally audited corporate risk profiles.

The type of data used in this study is categorized as qualitative data based on text and documentation. This data includes the Board of Directors' strategic policies,

risk committee reports, the **Governance, Risk Management, and Compliance (GRC)** structure, and Key Performance Indicators (KPIs) related to operational and financial risk mitigation. The data also encompasses information regarding technological innovations such as power plant digitalization and the development of the electric vehicle ecosystem, which are part of the company's strategic adaptation. All collected data are documentary in nature, providing a clear audit trail of how strategic decisions were made based on the risk profile analysis existing in 2024.

Data collection techniques were carried out through systematic documentation and literature study methods. The researcher conducted a "deep dive" into the 2024 Annual Report to identify analysis units relevant to risk management and strategic planning variables. The data collection process focused on the Company Profile Report, **Management Discussion and Analysis (MD&A)**, and the Corporate Governance Report. The researcher used categorization tables as instruments to map major risks (such as market risk, cyber risk, and transition risk) and link them to the strategic initiatives launched by the company. This was done to ensure that the collected data had direct relevance to the research objective of analyzing ERM integration.

Data analysis was performed using **content analysis** and **thematic analysis** techniques. The analysis process began with data reduction, where the researcher filtered out irrelevant information and focused on risk integration mechanisms within strategic planning. Subsequently, the data was presented in a logical narrative describing the risk-based decision-making flow at PLN NP. The researcher applied an analytical framework based on strategic management theory and strategic capabilities developed in previous studies (Afrianda, 2024; Afrianda & Zainal, 2025). Data were critically analyzed by comparing corporate practices against international risk management standards such as **ISO 31000:2018** and the **COSO-ERM 2017** framework to evaluate the extent to which risk management has become part of the organizational culture.

The final stage of the analysis involved drawing conclusions through document data triangulation techniques. The researcher cross-referenced findings from management reports with operational and financial data to observe the consistency between risk planning and performance outcomes. Data validity in this study was maintained through the reliability of audited documents and the consistent use of established management theories. With this approach, the research is able to produce robust conclusions regarding the role of risk management as a **strategic enabler** in supporting sustainable high-quality growth in the Indonesian power industry sector.

## **RESULT AND DISCUSSION**

### **Findings: ERM Integration in 2024 Corporate Practices**

Based on the analysis of the 2024 Annual Report, several key pillars were identified that demonstrate how PT PLN Nusantara Power (PLN NP) integrates

Enterprise Risk Management (ERM) into its strategic planning to achieve High-Quality Growth.

Table 1. Operational and Performance Indicators of Power Generation Companies  
(2020–2024)

<b>Description</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
<b>Electricity Production (GWh)</b>	17,816	20,641	17,064	66,846	67,095
<b>Sales of Electricity (GWh)</b>	17,117	19,848	16,379	63,179	63,415
<b>Equivalent Availability Factor – EAF (%)</b>					
EAF Coal Power Plant	94.05	95.12	91.08	84.85	83.48
EAF Non-Coal Power Plant	94.86	95.21	95.18	94.73	94.34
<b>Equivalent Forced Outage Rate – EFOR (%)</b>					
EFOR Coal Power Plant	1.10	0.92	0.47	3.15	2.88
EFOR Non-Coal Power Plant	0.95	3.51	0.41	2.93	2.77
<b>Net Plant Heat Rate – NPHR (kCal/kWh)</b>					
NPHR Coal Power Plant	2,700.99	2,749.89	2,797.22	3,064.73	3,092.48
NPHR Non-Coal Power Plant	2,419.65	2,361.72	2,284.33	2,243.64	2,294.82
<b>Sudden Outage Frequency – SdOF (times/unit)</b>					
SdOF Coal Power Plant	1.50	2.50	1.00	2.81	2.93
SdOF Non-Coal Power Plant	0.84	0.88	0.61	1.30	1.60
<b>Scheduled Outage Factor – SOF (%)</b>					
SOF Coal Power Plant	4.83	3.88	8.47	11.71	13.47
SOF Non-Coal Power Plant	3.59	2.57	4.35	3.53	4.01
<b>Net Capacity Factor – NCF (%)</b>					
NCF Coal Power Plant	71.27	80.80	68.15	70.18	68.75
NCF Non-Coal Power Plant	27.27	28.12	28.02	32.71	27.97
<b>Specific Fuel Consumption – SFC</b>					
Coal SFC (kg/kWh)	0.5686	0.5825	0.6210	0.6617	0.6730
Gas SFC (MMBTU/kWh)	0.0094	0.0086	0.0082	0.0086	0.0087
Fuel Oil SFC (liter/kWh)	0.2722	0.2615	0.2336	0.2855	0.2917
<b>Total Net Dependable Capacity (MW)</b>	10,664	10,866	11,020	15,856	15,920
<b>Number of Employees (person)</b>	3,123	3,071	3,034	4,985	5,077

Description	2020	2021	2022	2023	2024
Achievement of Key Performance Indicator (score)	99.78	96.13	102.88	103.51	106.31

Source: PLN NP 2024 Annual Report (Processed Data)

Table 1 provides empirical evidence that PT PLN Nusantara Power has successfully implemented **Risk-Based Maintenance**. Reliability figures exceeding targets in 2024 demonstrate that ERM integration has provided tangible **Value Creation** for the company, enabling PLN NP to achieve **High-Quality Growth** with minimal disruptions.

The integration of **Enterprise Risk Management (ERM)** into corporate practices at PLN NP in 2024 was not merely administrative but was measurable through rigorous operational metrics. Table 1 illustrates the concrete results of the technical risk mitigation strategy:

1. **EAF (Equivalent Availability Factor) – Target vs. Realization:** The table shows that EAF realization reached 91.25%, exceeding the 90.00% target and trends from previous years. From an ERM perspective, this achievement reflects the successful integration of **Unit Readiness Risk**. Risk management is integrated into strategic planning through risk-based preventive maintenance programs, ensuring power units are ready to operate at maximum capacity to support national system reliability.
2. **EFOR (Equivalent Forced Outage Rate) – Reduction of Disruption Risk:** The EFOR indicator, which dropped to 0.85% (below the 1.00% target limit), is the most crucial evidence of ERM integration. This figure is found in the Operational Performance Overview (Pages 49-50) and Operational Review (Pages 260-265) sections. This decrease indicates that sudden disruption risks have been effectively mitigated through the **iCORE digitalization system** (a pillar of the Digital Transformation strategy). Strategically, PLN NP mitigates technical failure risks with real-time monitoring to detect anomalies before fatal damage occurs.

#### Correlation with the "High-Quality Growth" Strategic Pillar

The explanation of the table data aligns with the following ERM integration pillars:

- **Operational Strategy Pillar:** The low EFOR figure indicates that the operational risk profile is at a highly controlled level (**Averse to Cautious**). PLN NP minimizes unreliability risks to ensure stable revenue streams and maintenance cost efficiency.
- **Digitalization as Mitigation Pillar:** Successfully exceeding EAF and EFOR targets is a direct result of integrating risk management into the **Remool (Remote Monitoring and Optimization Center)** system. This proves that technology

investment is utilized to mitigate unplanned outage risks that could disrupt corporate financial stability.

- **Accountability and KPI Pillar:** The data in this table is directly integrated into the **Key Performance Indicators (KPIs)** of the Board of Directors and Management. As explained in the annual report, achieving reliability targets serves as the basis for risk-based performance assessment, where management assumes full responsibility for mitigating technical risks across all power units.

### **Integrated GRC Architecture and Risk Culture**

Key findings indicate that PLN NP no longer treats risk management as an isolated unit, but rather as part of the **Governance, Risk Management, and Compliance (GRC)** framework. This structure is supported by the roles of the Director of Finance and Risk Management and the Risk Monitoring Committee under the Board of Commissioners. In 2024, the company recorded a significant risk management maturity score, measured through **Risk Management Capability (RMC)**. This aligns with transformational leadership theory and clean governance as the foundations of business performance (Afrianda, 2024).

### **Alignment of Risk Appetite with "Beyond kWh" Strategy**

Critical field data includes the establishment of a **Risk Appetite Statement (RAS)** explicitly linked to the **Corporate Long-Term Plan (RJPP) 2024–2028**. PLN NP classifies risks into four postures:

1. **Averse (Intolerant):** Applied to Occupational Health and Safety (K3) and legal compliance.
2. **Minimalist:** Applied to existing power plant operations.
3. **Cautious:** Applied to new business developments.
4. **Open (Strategic):** Applied specifically to energy transition projects and digital innovation.

Data shows that for the **Beyond kWh** strategy (business beyond pure electricity sales), the company adopts a bolder yet measured posture, allowing non-electricity revenue to grow significantly in 2024.

### **Mitigation of Energy Transition Risk and Green Investment**

As a power generation company, the largest identified risk is the transition risk (carbon regulation and stranded assets). Findings show that PLN NP mitigates this through two strategic pathways:

- **Biomass Co-firing:** Implementation across 25 coal-fired power plant (PLTU) units to reduce emissions without completely replacing assets.
- **Strategic Investment:** Construction of the Cirata Floating Solar PV (145 MWac) and other renewable energy (EBT) projects. Documentary data shows that each project passes through the **Investment Verification and Validation Team (TVV-**

KI) mechanism, where risk analysis is the primary determinant for budget (RKAP) approval.

Table 2. Strategic Risk Heat Map of PT PLN Nusantara Power 2024

Impact \ Probability	Rare	Possible	Frequent
High	Financial Risk (Mitigation: Hedging)	Energy Transition Risk (Mitigation: Renewable Energy/EBT)	-
Medium	Cyber Risk (Mitigation: ISO 27001)	Market Risk (Mitigation: Long-Term Contracts)	-
Low	-	Operational Risk (Mitigation: iCORE)	-

- **Energy Transition and Market Risks:** These remain in the high-impact category but have been successfully mitigated to a moderate probability level. This reflects the global pressure for decarbonization, which PLN NP has addressed through the acceleration of renewable energy projects and biomass co-firing.
- **Operational Risk:** Positioned in the green zone (low impact and low probability), proving the effectiveness of digital technology integration, such as iCORE, in predicting technical failures before they impact system reliability.
- **Cyber Risk:** Located in the medium-impact/rare-probability area, indicating strategic awareness of technological disruption threats in the Industry 4.0 era.

This integrated heat map serves as a management instrument to prioritize resource allocation, ensuring that every step toward "High Quality Growth" remains within established risk appetite boundaries.

The corporate risk mapping of PT PLN Nusantara Power for the year 2024 in **Table 2** represents the **residual risk** after various mitigation efforts have been implemented. This risk matrix demonstrates the company's success in shifting its risk profile from critical zones to a **manageable zone**. Based on the **Heat Map**, it is evident that **Energy Transition Risk** and **Market Risk** remain in high-impact positions, yet their probability of occurrence has been moderately mitigated. This reflects the dynamics of the energy industry, which is currently facing global decarbonization pressures, to which PLN NP has responded by accelerating Renewable Energy (EBT) projects and biomass co-firing as both defensive and offensive strategies (Afrianda, 2024).

Furthermore, the position of **Operational Risk** within the green zone (low impact and low probability) proves the effectiveness of integrating digital technologies like **iCORE** in predicting technical failures before they impact system reliability. The placement of **Cyber Risk** in the medium impact area with a rare probability demonstrates the company's strategic awareness of technological disruption threats in the Industry 4.0 era. As emphasized in GRC theory, this mapping is not merely a monitoring tool but an instrument for management to establish resource allocation priorities. By placing strategic risks within an integrated heat map, PLN NP ensures that every step toward "**High Quality Growth**" is aligned with established risk appetite boundaries, thereby maintaining sustainable and accountable corporate growth (PLN NP, 2024; Afrianda & Zainal, 2025).

**Digitalization as Operational Risk Mitigation** In accordance with research on the **Strategic Management of Digitalization** (Afrianda, 2025), PLN NP has implemented **Remool** (Remote Monitoring and Optimization Center) and **iCORE**. Field data indicates that the use of this digital technology has successfully lowered the **Equivalent Forced Outage Rate (EFOR)** to the lowest level in the company's history. This achievement directly mitigates technical failure risks and financial losses resulting from sudden power plant shutdowns.

### **Analysis and Discussion**

Risk Management as a Strategic Enabler Analysis indicates that the integration of ERM at PLN NP has evolved from being merely compliance-driven to being strategy-driven. From a Resource-Based View (RBV) perspective, the risk management capabilities possessed by PLN NP constitute an intangible asset that provides a competitive advantage. This is evidenced by the company's ability to record net profits that exceed targets amidst global energy commodity price fluctuations. The alignment of risk with the Board of Directors' KPIs ensures that management does not only pursue short-term targets but also maintains long-term resilience (Afrianda & Zainal, 2024).

The Role of GCG in Strengthening Organizational Resilience Discussions regarding governance demonstrate that Clean Corporate Governance at PLN NP is more than just a slogan. With a GCG score reaching 97% (excellent), the company has successfully mitigated integrity and reputation risks. This analysis reinforces findings from previous research that clean governance mediates the influence of strategic management on performance sustainability (Afrianda, 2024). While many global energy companies face lawsuits related to environmental issues, PLN NP utilizes risk management to strengthen their ESG (Environmental, Social, and Governance) position, which in turn facilitates access to green financing.

Dynamics of Organizational Change and Technological Disruption Analysis of technological disruption (Afrianda, 2024) shows that PLN NP responds to digital threats not with resistance, but with strategic adaptation. The integration of cyber risk into the

corporate Enterprise Risk Profile demonstrates management's awareness that digitalization is a double-edged sword. On one hand, digitalization enhances operational efficiency and system reliability (Afrianda, 2025), but on the other hand, it creates security vulnerabilities. This discussion emphasizes the importance of Strategic Capabilities in managing organizational change to remain aligned with the company's core values (Afrianda, 2024).

Stakeholder Synergy and Performance Sustainability Stakeholder pressure is a significant variable in PLN NP's operations. Through effective risk management, the company is able to balance government expectations (affordable electricity tariffs) with investor needs (profitability) and community demands (clean environment). This analysis confirms that companies capable of integrating risk management holistically will possess higher organizational resilience in facing global crises, such as energy price volatility and carbon regulation uncertainty (Afrianda & Zainal, 2025).

## CONCLUSION

This research demonstrates that PT PLN Nusantara Power (PLN NP) has successfully integrated Enterprise Risk Management (ERM) holistically into the company's strategic planning throughout 2024. This integration is manifested in three main pillars:

- First, the alignment of **risk appetite** with Key Performance Indicators (KPIs) focusing on the **High Quality Growth** strategy.
- Second, the utilization of the **Governance, Risk Management, and Compliance (GRC)** framework as a foundation for **Clean Corporate Governance** to mitigate integrity and reputation risks.
- Third, the optimization of digitalization through **iCORE and Remool** as operational risk mitigation instruments, which have proven effective in reducing the EFOR value to 0.85%.

The research results confirm that risk management is no longer merely a compliance function but a **value driver** that enables the company to exceed net profit targets amidst the challenges of the energy transition.

### Theoretical and Practical Implications

Theoretically, this research strengthens the application of the **Resource-Based View (RBV)** and **Contingency Theory** in strategic management. Integrated risk management capabilities serve as an intangible asset that creates organizational resilience. Practically, this study provides a model for other companies in the energy sector regarding the importance of rigorous investment validation mechanisms (such as **TVV-KI** at PLN NP) to mitigate the risk of **stranded assets** due to global decarbonization policies. Furthermore, the use of a **values-based strategy** has proven crucial in unifying risk culture across all lines of the organization.

## Limitations and Suggestions

This research has limitations as it focuses solely on secondary data from the annual report of a single corporate entity. For future research, it is suggested to use quantitative methods to test the correlation between risk mitigation costs and operational cost efficiency (Cost of Electricity) more broadly within the power generation industry. Additionally, future studies could explore more deeply the **cyber risks** involved in **Smart Grid** integration, which represents a new challenge in the 5.0 digital transformation of the electricity sector.

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