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NAVIGATING THE ENERGY TRILEMMA IN INDONESIA: ENERGY TRANSITION CHALLENGES AND STRATEGIC IMPLICATIONS

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Extended Abstract

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Abstract Summary

Energy transition in developing countries involves navigating complex trade-offs among energy security, affordability, and environmental sustainability, commonly referred to as the energy trilemma. Indonesia represents a critically important case: its energy demand reached a record 2,007 million BOE in 2024, while domestic oil production has structurally declined to 581 MBOPD, driving growing import dependence. New and renewable energy contributes only 14.65% of the primary energy mix, well below the national target of 23% by 2025. Despite abundant renewable resources, Indonesia’s energy transition is shaped primarily by structural and demand-side constraints rather than resource limitations. This study examines how Pertamina, as Indonesia's NOC, navigates the energy trilemma within a state-led, hybrid transition pathway a gap that remains underexplored in the existing literature.

Employing a qualitative design based on document and policy analysis, the study draws on peer-reviewed literature, institutional reports, and publicly available materials on Indonesia's energy policy. The findings reveal five key dimensions of Indonesia's energy transition. First, energy security remains the dominant policy priority, with Pertamina serving as the central actor in energy value chain. Second, refinery modernization is critical to improving crude flexibility and aligning downstream capacity with international upstream expansion. Third, infrastructure development is constrained by Indonesia's archipelagic geography with natural gas emerging as a key bridging to energy transition, supported by Indonesia's recent hydrocarbon discoveries which are dominated by gas. Fourth, renewable energy deployment remains gradual due to regulatory gaps, weak domestic demand, and affordability constraints. Fifth, SOE governance constraints limit Pertamina's ability to form strategic joint ventures, requiring flexibility.

The study concludes that Indonesia's transition reflects a hybrid, state-led pathway characterized by managed coexistence of fossil fuel security and incremental decarbonization. Achieving a balanced transition requires coherent policy frameworks, infrastructure investment, and Pertamina functioning as a key implementing actor.

Presenting Author Biography

Dian Permata Sari is a business development professional with over 12 years of experience in the energy sector, with a strong background in both upstream oil and gas and business development. She currently serves as a Business Development professional at PT Pertamina (Persero), where she is involved in international market analysis, strategic partnerships, and upstream investment initiatives. This paper was co-authored with her colleagues in the Business Development function, Mr. Rama Hilman Utama and Ms. Luthfiah Putri Nur’aini.