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ABSTRACT

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Indonesia's liquefied natural gas (LNG) industry is entering a period of profound structural transformation. While major upstream developments—including the expansion of Tangguh LNG, revitalization of Badak LNG through new deepwater gas discoveries, and the planned Abadi LNG project in the Masela Block—are expected to strengthen future gas supply, rapidly growing domestic demand for electricity generation, industrial downstreaming, petrochemicals, fertilizer production, mineral processing, and the new capital city (IKN) is fundamentally reshaping the country's gas economy. This study examines how Indonesia's LNG industry may evolve toward 2035 using a qualitative Strategic Policy Assessment supported by scenario-based analysis. Rather than relying on deterministic production forecasts, the paper develops the Balanced Gas Economy Framework (BGEF), which conceptualizes LNG exports as the outcome of interactions among five strategic dimensions: upstream gas supply, liquefaction capacity, domestic gas demand, government allocation policy, and global LNG market conditions. Three alternative development scenarios—Conservative, Balanced, and Accelerated—are employed to evaluate plausible pathways under conditions of strategic uncertainty. The analysis shows that Indonesia's future LNG competitiveness will depend less on expanding production alone than on the effectiveness of gas allocation among competing national objectives. As domestic consumption continues to rise, the country's gas sector is transitioning from production maximization toward allocation optimization, where export competitiveness, energy security, industrial development, and decarbonization become complementary rather than competing priorities. The study concludes that sustained upstream investment, transparent allocation policies, integrated gas infrastructure, and alignment with the national energy transition are essential to maximizing the long-term economic and strategic value of Indonesia's natural gas resources. Beyond Indonesia, the proposed Balanced Gas Economy Framework provides a useful analytical perspective for other resource-rich economies seeking to balance LNG exports with domestic development and long-term energy security.

Keywords: Indonesia; liquefied natural gas (LNG); Balanced Gas Economy Framework; natural gas allocation; energy transition.

INTRODUCTION

Liquefied natural gas (LNG) has emerged as one of the defining commodities of the 21st-century energy transition. Originally developed to commercialize stranded natural gas resources, LNG now plays a broader strategic role in enhancing energy security, supporting decarbonization, diversifying international gas trade, and strengthening geopolitical resilience (International Energy Agency [IEA], 2024; Yergin, 2020). Recent disruptions—including the Russia–Ukraine conflict, tensions in the Middle East, and growing concerns over the security of energy supply—have reinforced LNG's importance as a flexible and globally tradable energy source (IEA, 2025; International Gas Union [IGU], 2024). Meanwhile, robust demand growth across Asia and major liquefaction investments in Qatar, the United States, Canada, and other producers are reshaping global LNG markets. By the early 2030s, the industry is expected to become more competitive, diversified, and closely integrated with the global energy transition (IEA, 2024; GIIGNL, 2024).

Indonesia occupies a distinctive position within this evolving landscape. As one of the pioneers of the global LNG industry, it helped establish modern LNG trade through the commissioning of the Arun and Badak LNG plants in the late 1970s. For more than three decades, LNG exports generated substantial foreign exchange earnings and positioned Indonesia among the world's leading suppliers, particularly to Japan, the Republic of

Korea, and Taiwan. Unlike many major LNG exporters, however, Indonesia has simultaneously experienced rapid domestic gas demand growth and declining production from mature gas fields. Consequently, its natural gas sector has evolved under structural conditions that differ significantly from those of other exporting countries (Ministry of Energy and Mineral Resources [MEMR], 2024).

Indonesia now stands at another critical juncture. Major upstream developments—including the expansion of Tangguh LNG, revitalization of the Badak LNG supply system through new deepwater discoveries, and the planned Abadi LNG project in the Masela Block—could substantially increase LNG production during the coming decade. Additional frontier discoveries in the Andaman Basin and the vast gas resources of East Natuna further strengthen the country's long-term production potential (SKK Migas, 2024).

At the same time, domestic gas demand is projected to grow rapidly. Natural gas will play an increasingly important role in electricity generation, petrochemical and fertilizer industries, mineral processing, emerging industrial estates, and the energy system of Indonesia's new capital city (IKN). As a result, future gas production will be required to satisfy multiple—and often competing—national priorities rather than simply expanding export capacity (Bappenas, 2025; PLN, 2025).

This transformation fundamentally changes the nature of Indonesia's LNG challenge. During the country's first LNG era, the principal objective was to monetize abundant gas resources through exports. Today, the central policy question is no longer how much LNG Indonesia can produce, but how available gas resources should be allocated among domestic energy security, industrial development, economic value creation, and international export commitments. Indonesia's gas sector is therefore evolving from a production-oriented system toward a resource allocation system, requiring analytical approaches that extend beyond conventional assessments of reserves, liquefaction capacity, or export volumes (Auty, 2001; Humphreys et al., 2007).

Previous studies have examined important aspects of Indonesia's gas sector, including upstream investment, LNG project development, domestic gas pricing, infrastructure constraints, and national energy policy. Similarly, a large body of international literature has explored global LNG markets, energy security, and the role of natural gas in the energy transition. However, these issues are often analyzed separately. Limited attention has been given to how upstream gas development, liquefaction capacity, expanding domestic demand, government allocation policies, and changing international LNG markets interact to determine Indonesia's future LNG balance. As the country enters a new phase of gas development, understanding these interdependencies becomes increasingly important for both national policy and international energy markets.

This paper argues that Indonesia is entering a Balanced Gas Economy, a stage of natural gas development in which export competitiveness, domestic industrialization, energy security, and the energy transition become complementary rather than competing policy objectives. Under this framework, the success of the gas sector is measured not solely by LNG export volumes, but by its ability to maximize the overall economic and strategic value of natural gas through an efficient balance between domestic utilization and participation in international markets.

To examine this proposition, the paper develops an integrated analytical framework based on five interrelated dimensions: upstream gas supply, liquefaction capacity, domestic gas demand, government allocation policy, and global LNG market conditions. Using qualitative policy analysis and scenario-based assessment, the study evaluates Indonesia's principal LNG-producing regions—including Badak, Tangguh, Donggi-Senoro, and the planned Masela development—while also considering the long-term potential of the Andaman Basin and East Natuna. Rather than producing deterministic forecasts, the analysis explores alternative pathways through which Indonesia's LNG industry may evolve to 2035 under different policy and market conditions.

The paper makes four contributions. First, it offers an integrated assessment of Indonesia's LNG sector by combining upstream development, liquefaction capacity, domestic demand, and export competitiveness within a single analytical framework. Second, it introduces the concept of the Balanced Gas Economy as a framework for understanding natural gas management in resource-rich economies undergoing energy transition and

industrial transformation. Third, it applies a scenario-based approach that emphasizes strategic uncertainty rather than point forecasting. Finally, the analysis highlights policy priorities for upstream investment, domestic gas allocation, LNG infrastructure, and long-term energy strategy, with broader relevance for gas-producing economies navigating comparable structural transitions.

The remainder of the paper is organized as follows. Section 2 reviews the literature on global LNG markets, Indonesia's gas sector, and the energy transition. Section 3 presents the analytical framework and methodology. Section 4 analyses Indonesia's evolving LNG balance through alternative development scenarios to 2035. Section 5 discusses the broader implications for energy policy, industrial development, and resource governance, while Section 6 concludes by highlighting the strategic significance of Indonesia's transition toward a Balanced Gas Economy.

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

LNG in the Global Energy Transition

Over the past two decades, liquefied natural gas (LNG) has evolved from a niche mechanism for monetizing stranded gas reserves into one of the pillars of the global energy system. Its strategic importance has increased substantially as countries seek to reconcile three interrelated objectives: energy security, economic competitiveness, and decarbonization. Unlike pipeline gas, LNG offers destination flexibility, market diversification, and greater resilience against regional supply disruptions, making it an increasingly important component of global energy security (IEA, 2024; Yergin, 2020).

Recent geopolitical developments have reinforced this transformation. Russia's invasion of Ukraine fundamentally altered global gas trade, forcing Europe to replace pipeline imports with LNG and intensifying competition among importing countries in Asia. At the same time, major producers—including the United States, Qatar, Australia, and Canada—have accelerated investments in new liquefaction capacity, creating a more competitive and geographically diversified LNG market (IEA, 2025; International Gas Union [IGU], 2024; Shell, 2025).

Parallel to these geopolitical developments, the role of LNG in the energy transition has also evolved. Although natural gas remains a fossil fuel, many scholars regard it as a transitional energy source because of its lower carbon intensity than coal and oil, and its ability to provide flexible generation that complements variable renewable energy. Bridge et al. (2013) argue that energy transitions should be understood not simply as technological substitution but as broader transformations involving infrastructure, institutions, markets, and spatial organization. Similarly, Goldthau (2014) emphasizes that energy infrastructure has become an increasingly strategic asset whose governance shapes national resilience and international competitiveness. Consequently, LNG is increasingly viewed not merely as an internationally traded commodity but as a strategic instrument supporting power-system flexibility, industrial development, and long-term energy security.

At the same time, recent literature highlights growing uncertainty surrounding LNG's long-term role. While global demand is expected to remain robust through the 2030s, the pace of renewable energy deployment, carbon pricing, methane-emission regulations, and net-zero commitments may gradually reshape investment incentives. Future LNG competitiveness will therefore depend not only on geological resource endowments but also on production costs, carbon intensity, infrastructure availability, contractual flexibility, and geopolitical stability (IEA, 2024; Shell, 2025).

Resource Governance and Domestic Value Creation

A parallel body of literature examines how resource-rich countries govern natural gas as a strategic national asset. Rather than treating gas solely as an export commodity, governments increasingly seek to balance export

International experience illustrates diverse policy approaches. Qatar has prioritised LNG exports to maximise foreign exchange earnings, while Australia has supplemented its export-oriented industry with domestic gas reservation measures. Norway combines extensive exports with strong institutional governance and prudent revenue management, whereas Malaysia adopts a more balanced strategy by allocating gas to both exports and

This evolution reflects a broader shift in thinking. Traditional resource strategies emphasised export maximisation, whereas contemporary research highlights the economic benefits of domestic utilisation through electricity generation, petrochemicals, fertiliser production, manufacturing, and other downstream industries. Export competitiveness and domestic utilisation are therefore increasingly viewed as complementary rather than

For Indonesia, this debate has become especially important. While new gas discoveries may expand supply, domestic demand is growing rapidly because of industrial downstreaming, electricity generation, urban gas networks, and emerging demand centres such as the new capital city (IKN) (Nugroho et al., 2026). Consequently,

Research Gap and the Balanced Gas Economy Framework

Despite extensive studies on LNG markets, gas governance, energy security, and industrial development, existing research remains fragmented. Most studies focus on individual components of the gas value chain—upstream production, LNG exports, domestic demand, pricing, or industrial policy—without examining how

Moreover, many analyses implicitly assume that increasing gas production automatically translates into higher LNG exports. This assumption is becoming less valid in countries where domestic gas consumption is expanding

To address this gap, this paper proposes the Balanced Gas Economy Framework (BGEF). The framework argues that, in mature gas-producing economies, the principal policy challenge is no longer maximising production but optimising gas allocation among multiple national objectives: maintaining export competitiveness, strengthening energy security, supporting industrial development, facilitating the energy transition, and maximising long-term economic value.

Within the BGEF, LNG exports are treated not as a direct function of upstream production but as the outcome of interactions among five interrelated dimensions: (i) upstream natural gas supply, (ii) LNG liquefaction capacity, (iii) domestic gas demand, (iv) government allocation policy, and (v) global LNG market conditions.

Together, these dimensions determine Indonesia's future LNG balance and export potential through 2035. By shifting analytical attention from production forecasting to strategic resource allocation, the framework provides a more comprehensive perspective for evaluating LNG development in Indonesia and other resource-rich economies facing similar policy trade-offs.

METHODOLOGY

Research Design

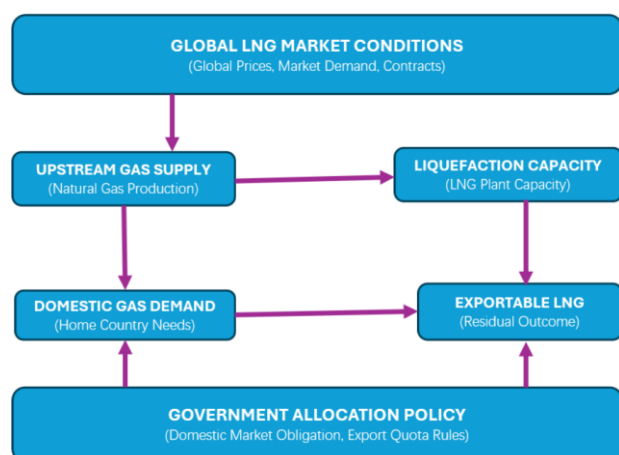
This study adopts a qualitative Strategic Policy Assessment (SPA) to evaluate Indonesia's LNG industry through 2035. Rather than relying on econometric forecasting or engineering simulation, it examines how upstream resource development, domestic gas demand, infrastructure, government policy, and global market dynamics interact to shape Indonesia's future LNG balance.

A qualitative approach is appropriate because many of the key determinants of Indonesia's LNG sector—including investment decisions, project schedules, domestic gas allocation, geopolitical developments, and industrial demand—remain highly uncertain. Under these conditions, scenario-based policy analysis provides a

Analytical Framework

The analysis is guided by the Balanced Gas Economy Framework (BGEF) introduced in the previous section. The framework conceptualizes exportable LNG as the residual outcome of interactions among five strategic dimensions: resource availability, domestic demand, infrastructure, policy and governance, and international market conditions (Figure 1). Unlike conventional studies that focus primarily on production or export capacity, the BGEF explicitly incorporates domestic utilization and policy choices as central determinants of LNG export potential. This integrated perspective captures the trade-offs among export earnings, domestic industrialization,

Figure 1. Analytical framework of the study



Source: Developed by the Author

The research proceeds in four stages. First, it reviews the historical evolution of Indonesia's LNG industry to establish the structural context of the gas sector and its transition from export-oriented development toward increasing domestic utilization. Second, it assesses future gas supply by examining production prospects at major LNG-producing regions—including Badak, Tangguh, Donggi-Senoro, and the planned Abadi LNG project—as well as emerging frontier areas such as the Andaman Basin and East Natuna. Third, it analyses projected domestic gas demand across key sectors, including electricity generation, fertilizer, petrochemicals, manufacturing, mineral processing, city gas networks, and the new capital city (IKN). Finally, supply and demand are integrated through three scenarios—Conservative, Base Case, and Accelerated Development—to explore alternative LNG balances under different assumptions regarding upstream investment, domestic demand

Data Sources and Limitations

The analysis draws on a wide range of official and international sources. Domestic data are obtained from Indonesia's Ministry of Energy and Mineral Resources (MEMR), SKK Migas, BPH Migas, Pertamina, and major upstream operators. International references include publications from the International Energy Agency (IEA), International Gas Union (IGU), GIIGNL, the Energy Institute, the U.S. Energy Information Administration (EIA), the World Bank, and the International Monetary Fund (IMF). These sources are complemented by recent academic literature on LNG markets, energy policy, industrial development, and resource economics.

This study provides a strategic policy assessment rather than a field-level engineering forecast. It does not employ reservoir simulation, detailed production or gas distribution modeling; instead, it evaluates plausible development pathways based on publicly available evidence and scenario analysis. Consequently, the scenarios should be interpreted as analytical explorations rather than predictions, as future outcomes will depend on exploration success, investment decisions, technological progress, market conditions, geopolitical developments, environmental regulations, and government policy. Although Indonesia is the principal case study, the Balanced Gas Economy Framework offers a broader analytical approach for other resource-rich economies seeking to balance LNG exports, domestic industrialization, and energy security during the global energy transition.

RESULTS

The Evolution of Indonesia's LNG Industry: From Export Leadership to Strategic Rebalancing

Indonesia's LNG industry has undergone three major phases over nearly five decades, reflecting changing resource endowments, global market dynamics, and domestic policy priorities. This historical evolution provides

The first phase (1977–2000) was characterized by export-led expansion. The commissioning of Arun LNG in Aceh and Badak LNG in East Kalimantan established Indonesia as a pioneer of the global LNG industry. Supported by abundant gas discoveries, long-term contracts with Japanese buyers, and rapidly growing Asian demand, Indonesia became the world's largest LNG exporter during much of this period. Government policy

The second phase (2000–2025) marked a period of structural transition. Declining production from mature fields supplying Arun and Badak gradually reduced LNG output, while new competitors—including Australia, Qatar, and the United States—significantly expanded global liquefaction capacity. Indonesia nevertheless retained an important position through the commissioning of Tangguh LNG in Papua and Donggi-Senoro LNG in Central Sulawesi. Tangguh, particularly after the completion of Train 3, became the country's largest LNG complex, while Arun ceased exports and was converted into an LNG receiving and regasification terminal (2014),

The third phase (2025–2035), which forms the focus of this study, represents a period of strategic rebalancing rather than simple production growth. New upstream developments—including East Kalimantan deepwater discoveries, continued expansion of Tangguh, and the planned Abadi LNG project in the Masela Block—provide opportunities to restore LNG production. At the same time, domestic gas demand is expanding rapidly because of electricity generation, industrial downstreaming, petrochemicals, fertilizer production, city gas networks, and the development of Indonesia's new capital city (IKN).

Consequently, Indonesia's principal policy challenge is no longer maximizing LNG exports but optimizing natural gas allocation among competing national objectives. Unlike earlier decades, when additional production translated directly into higher exports, future gas output will increasingly be shared between international markets and domestic economic development. Within the Balanced Gas Economy Framework (BGEF), LNG exports therefore become the outcome of strategic allocation decisions rather than production growth alone.

Table 1 summarizes the structural evolution of Indonesia's LNG industry.

Table 1. Evolution of Indonesia's LNG Industry

Development Phase	Period	Dominant Characteristics	Policy Objective
Export Expansion	1977–2000	Arun and Badak dominate Asian LNG trade	Maximize exports and foreign exchange
Structural Transition	2000–2025	Mature field decline; Tangguh and Donggi-Senoro commence production; increasing domestic utilization	Balance exports with domestic supply
Strategic Rebalancing	2025–2035	New upstream developments accompanied by rapidly rising domestic demand	Optimize gas allocation among exports, industry, energy security, and decarbonization

This evolution illustrates a fundamental transformation of Indonesia's gas economy. LNG is no longer evaluated solely by export performance but by its contribution to broader national objectives, including industrial competitiveness, energy security, and the low-carbon transition.

Future LNG Supply: Existing Assets, New Capacity, and Frontier Resources

Indonesia's LNG outlook through 2035 will depend on three complementary sources of supply: continued production from existing liquefaction plants, new capacity from the Abadi LNG project, and longer-term contributions from frontier gas provinces. Together, these sources provide a diversified production base that enhances resilience while reducing dependence on any single project.

Existing LNG Backbone

Indonesia's three operating LNG plants—Badak, Tangguh, and Donggi-Senoro—will remain the backbone of national LNG production throughout the study period.

Badak LNG, commissioned in 1977, remains one of the world's longest-operating LNG complexes. Although production declined following depletion of the Mahakam and other mature fields, recent offshore discoveries—including Geng North, Merakes, Maha, and the Indonesian Deepwater Development (IDD)—have significantly improved its long-term outlook. These projects are expected to provide sufficient feed gas to sustain operations

Tangguh LNG is expected to remain Indonesia's largest LNG producer through 2035. Supported by several trains and substantial remaining reserves, Tangguh combines modern facilities with a relatively young resource base,

Donggi-Senoro LNG, while smaller in scale, plays an important role by diversifying Indonesia's production geographically. Supported by the Senoro and Matindok fields, the project supplies both domestic and export

Collectively, these facilities provide a strong production foundation. Their future performance will depend primarily on sustained upstream gas development rather than additional liquefaction investment.

Masela: The Next Growth Engine

Among Indonesia's future LNG projects, the Abadi LNG development in the Masela Block represents the single most important source of new liquefaction capacity before 2035.

Located in the Arafura Sea, Masela contains one of Indonesia's largest undeveloped gas resources. The revised development concept includes an onshore LNG facility with an estimated capacity of approximately 9.5 million

Masela has strategic significance extending well beyond additional LNG exports. The project is expected to offset declining production from mature fields, diversify Indonesia's production base toward eastern Indonesia, strengthen export capacity, and stimulate regional economic development. If implemented according to current schedules, Masela will become the principal driver of Indonesia's LNG growth during the early 2030s.

Nevertheless, the project's contribution remains subject to investment decisions, engineering complexity, financing arrangements, regulatory approvals, and construction schedules. Accordingly, Masela should be regarded as a high-impact but schedule-sensitive component of Indonesia's future LNG balance.

Frontier Gas Regions

Indonesia also possesses substantial frontier gas resources capable of supporting long-term LNG development beyond 2035.

The Andaman Basin has emerged as one of Southeast Asia's most promising exploration regions following a series of significant offshore discoveries. Although commercial production is unlikely within the study period, successful development could establish a new gas region supporting either future LNG exports or domestic markets.

East Natuna represents an even larger strategic resource. Despite its enormous gas reserves, commercialization remains constrained by exceptionally high carbon dioxide content, requiring large-scale CCUS technologies. While unlikely to contribute significantly before 2035, advances in carbon management technologies and evolving carbon pricing mechanisms could substantially improve its long-term economic viability.

These frontier resources should therefore be viewed as strategic options that strengthen Indonesia's long-term resource security rather than immediate sources of LNG supply.

National LNG Supply Outlook

The analysis suggests that Indonesia's future LNG production will emerge from the interaction of three complementary components: stable production from existing LNG plants, additional capacity from Masela, and longer-term opportunities from frontier gas provinces.

This diversified supply structure enhances the resilience of Indonesia's LNG industry by reducing dependence on individual fields while providing greater flexibility to accommodate both domestic demand and export commitments. Realizing this potential, however, will require sustained upstream investment, timely project implementation, supporting infrastructure, and a stable regulatory environment capable of maintaining investor confidence.

Table 2 summarizes the expected contribution of Indonesia's principal LNG-producing regions through 2035.

Table 2. Indonesia's Future LNG Supply Base

LNG Facility / Region	Status	Expected Contribution to 2035	Strategic Role
Badak LNG	Operating	Stable to moderately increasing	Revitalized through East Kalimantan deepwater gas
Tangguh LNG	Operating	Stable high production	Principal national LNG producer
Donggi-Senoro LNG	Operating	Stable	Regional diversification

Masela (Abadi LNG)	Development	Major production increase	Largest source of new LNG capacity
Andaman Basin	Exploration	Limited before 2035	Long-term growth option
East Natuna	Resource	Limited before 2035	Strategic reserve beyond 2035

Rather than relying on a single mega-project, Indonesia's future LNG competitiveness will depend on the combined performance of these complementary supply sources. This diversified production portfolio provides a stronger foundation for balancing export commitments with expanding domestic demand, consistent with the Balanced Gas Economy Framework developed in this study.

The Rising Domestic Pull: Competing Demand for Natural Gas

The future of Indonesia's LNG industry will depend not only on expanding gas supply but also on the rapid growth of domestic demand. Unlike the export-oriented era of the 1980s and 1990s, increasing gas production is no longer expected to translate directly into higher LNG exports. Instead, a growing share of incremental production will be absorbed by domestic consumers, making LNG exports the residual outcome of national gas allocation.

This structural shift reflects Indonesia's broader economic transformation. Industrial downstreaming, electricity demand growth, urbanisation, and regional development have created multiple sources of gas demand that increasingly compete with exports. Consequently, gas allocation has become a strategic policy issue rather than a purely commercial decision.

Electricity as the Primary Driver

Electricity generation is expected to remain the largest source of incremental gas demand through 2035. As Indonesia expands renewable energy, gas-fired combined-cycle power plants (CCGTs) will play an increasingly important role in maintaining grid reliability because they provide operational flexibility unavailable from coal-fired generation. Natural gas therefore serves not only as a cleaner fossil fuel but also as an enabling technology for

The development of Indonesia's new capital city (IKN) further reinforces this trend. During its initial development stages, natural gas is expected to provide reliable baseload and balancing capacity before renewable energy systems and electricity interconnections reach full maturity. Gas demand from the power sector is

Industrial Transformation and Domestic Value Creation

Industry constitutes the second major source of future gas demand. Indonesia's industrial strategy increasingly emphasises downstream processing and domestic value addition rather than exports of raw commodities,

Traditional consumers—including fertiliser and petrochemical industries—will remain major users because natural gas functions both as an industrial feedstock and as process energy. At the same time, expanding manufacturing and mineral-processing industries are expected to increase gas consumption through captive power generation, industrial heating, hydrogen production, and chemical feedstocks.

From an economic perspective, these domestic applications frequently generate greater long-term value than direct LNG exports by supporting employment, industrial upgrading, technological learning, import substitution, and broader economic diversification. Consequently, the opportunity cost of LNG exports must increasingly be

Emerging Demand Centres

Beyond electricity and heavy industry, several emerging sectors are expected to contribute to steadily rising gas consumption.

Expansion of city gas networks will gradually increase residential and commercial demand, while new industrial estates across Kalimantan, Sulawesi, and eastern Indonesia will require reliable gas supplies for both. Although individually smaller than the power or industrial sectors, these emerging consumers collectively reinforce the long-term upward trajectory of domestic gas demand.

Implications for LNG Allocation

The interaction between expanding domestic demand and new upstream production fundamentally reshapes Indonesia's LNG outlook. Historically, production growth translated almost directly into export growth because domestic utilisation remained relatively limited. Over the next decade, however, much of the additional production from projects such as Masela and East Kalimantan deepwater developments is likely to be allocated to domestic markets.

Within the Balanced Gas Economy Framework, this implies that future LNG competitiveness will depend not simply on expanding production but on allocating gas efficiently across competing national priorities. Maintaining export revenues, strengthening energy security, supporting industrial development, and facilitating decarbonisation are increasingly complementary objectives that must be managed simultaneously through coherent allocation policies.

Table 3. Indicative Growth of Domestic Gas Demand to 2035

Sector	Expected Growth	Strategic Importance
Electricity generation	Very high	Energy security and renewable integration
Petrochemicals	High	Industrial downstreaming
Fertiliser	Moderate	Food security
Mineral processing	Moderate-high	Critical minerals development
Manufacturing	Moderate	Economic diversification
City gas networks	Moderate	Urban energy transition
IKN and new growth centres	High	Regional development

Table 4. Indicative LNG Liquefaction Capacity and Expected Utilization

Plant	Installed Capacity (mtpa)	Estimated Utilization 2025	Expected Utilization 2035	Main Feed Gas Sources
Badak	~22.5 (Installed)	Partial	Higher (with deepwater gas)	Mahakam, Merakes, Geng North, IDD
Tangguh	~11.4	High	High	Vorwata, Ubadari, surrounding fields
Donggi-Senoro	~2.0	Moderate-High	Stable	Senoro, Matindok
Masela	~9.5 (planned)	–	High (if commissioned)	Abadi Field

Overall, the analysis indicates that domestic demand will continue expanding regardless of the precise trajectory of LNG production. Consequently, Indonesia's future competitiveness in LNG markets will depend as much on effective resource allocation as on successful upstream development.

Indonesia's LNG Balance toward 2035: Scenario Assessment

Because Indonesia's LNG future depends on uncertain developments in upstream investment, domestic demand, infrastructure, and international markets, this study adopts a scenario approach rather than deterministic forecasting. Consistent with the Balanced Gas Economy Framework, three plausible development pathways are assessed to illustrate how different combinations of supply, demand, and policy may shape Indonesia's LNG balance through 2035.

Conservative Development

The Conservative Scenario assumes delays in major upstream projects, particularly the Abadi LNG development, together with continued decline in mature gas fields and limited exploration success. Domestic demand continues to expand steadily, increasing competition for available gas supplies.

Under these conditions, Indonesia remains an LNG exporter, but export volumes gradually decline as larger shares of production are diverted to domestic electricity generation and industrial development. Existing LNG plants continue operating below their installed capacity because of feed-gas constraints. The policy priority in this scenario is to maintain domestic energy security while preserving a minimum level of export competitiveness.

Balanced Development (Reference Scenario)

The Balanced Scenario represents the most plausible pathway under current policy and investment trends. Tangguh maintains stable production, Badak secures additional feed gas from East Kalimantan deepwater developments, Donggi-Senoro continues operating at current levels, and Masela begins commercial production during the early 2030s.

At the same time, expanding domestic demand is accommodated through coordinated upstream investment, infrastructure development, and transparent gas allocation policies. Rather than maximising either exports or domestic utilisation, Indonesia achieves a dynamic equilibrium in which LNG exports continue generating foreign exchange. In contrast, domestic gas supports industrialisation, electricity generation, and regional development.

This scenario best reflects the concept of a Balanced Gas Economy, where export competitiveness, energy security, and domestic value creation reinforce rather than undermine one another.

Accelerated Development

The Accelerated Scenario assumes timely implementation of major projects, favourable investment conditions, successful commercialisation of recent discoveries, and continued improvements in gas infrastructure.

Under these assumptions, production from existing LNG plants is complemented by Masela and additional

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Comparative Assessment

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am developments, allowing Indonesia to sustain robust LNG exports while simultaneously meeting expanding

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The three scenarios demonstrate that Indonesia's LNG future depends less on the absolute size of its gas resources than on the effectiveness with which those resources are developed and allocated. Several strategic uncertainties will determine the country's future LNG balance:

- timely implementation of Masela and other upstream projects;
- successful development of East Kalimantan deepwater resources;
- growth of domestic electricity and industrial demand;
- government gas allocation policies;
- technological progress, particularly CCUS for high-CO₂ resources such as East Natuna.

Across all scenarios, one conclusion remains consistent: domestic gas utilisation will continue expanding throughout the study period. Consequently, LNG exports increasingly become the outcome of strategic allocation rather than production growth alone. This finding reinforces the central proposition of the Balanced Gas Economy Framework that future policy should optimise resource allocation among exports, industrial development, energy security, and decarbonisation instead of pursuing any single objective in isolation.

Table 5 Summary of Alternative LNG Development Scenarios

Dimension	Conservative	Balanced	Accelerated
Existing LNG plants	Gradual decline	Stable	Stable to increasing
Masela	Delayed	Operational (early 2030s)	On schedule
East Kalimantan deepwater	Partial contribution	Major contribution	Full contribution
Domestic gas demand	High	High	Very high
LNG exports	Gradual decline	Stable	Moderate increase
Energy security	Moderate	High	High
Industrial development	Moderate	High	Very high
Overall outcome	Managed transition	Balanced Gas Economy	Second LNG growth phase

The scenario assessment suggests that Indonesia's long-term LNG competitiveness will depend not only on expanding gas production but also on implementing a coherent allocation strategy that balances export revenues with domestic industrial development and energy security. The transition from production maximisation to allocation optimisation therefore represents the defining characteristic of Indonesia's evolving gas economy.

DISCUSSION

From Production Maximization to Allocation Optimization

The Balanced Gas Economy Framework (BGEF) captures this transition by treating LNG exports as the residual outcome of strategic allocation rather than the automatic consequence of production growth. This perspective

extends conventional LNG analyses, which generally emphasize either upstream resource development or international market dynamics while giving less attention to domestic allocation decisions.

Policy Implications for Indonesia

The analysis has several important implications for Indonesian energy policy.

First, upstream investment remains indispensable. Projects such as Masela and the East Kalimantan deepwater

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Third, infrastructure development deserves equal priority with upstream production. Expanding pipeline systems, LNG receiving terminals, storage facilities, and inter-island gas transportation will improve market integration

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Implications for Resource-Rich Economies

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Although Indonesia provides the empirical focus of this study, the findings have broader relevance for many resource-rich economies undergoing similar structural transitions.

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Countries such as Malaysia, Australia, Mozambique, Tanzania, and several emerging LNG producers face

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The Balanced Gas Economy Framework offers a general analytical perspective for evaluating these competing priorities. Rather than assuming that higher production automatically generates higher exports, the framework emphasizes that export performance depends on the interaction among resource availability, infrastructure, domestic demand, allocation policies, and international market conditions. This systems perspective may therefore provide a useful foundation for comparative analyses across resource-rich economies.

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Contribution to the Literature

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This study contributes to the literature in three principal ways.

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First, it integrates several strands of research—LNG markets, natural gas governance, industrial policy, energy security, and the energy transition—within a single analytical framework. Previous studies have typically examined these topics separately, whereas the BGEF highlights their interdependence.

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Second, the study shifts the analytical focus from production forecasting to resource allocation. Conventional assessments often estimate future LNG exports primarily from upstream production potential. The present analysis demonstrates that, in mature gas-producing economies, domestic demand and government allocation policies increasingly determine export outcomes.

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Third, the paper introduces the Balanced Gas Economy Framework as a policy-oriented conceptual model for evaluating LNG development under conditions of competing domestic and international priorities. Although developed using Indonesia as the principal case study, the framework is sufficiently flexible to support comparative research on other LNG-producing economies facing similar challenges.

CONCLUSION

Indonesia's LNG industry is entering a new phase of development that differs fundamentally from the export-led era that established the country as one of the world's leading LNG suppliers. While new upstream projects—including the Abadi LNG project in the Masela Block, East Kalimantan deepwater developments, and continued production from Tangguh LNG—offer opportunities to sustain or expand LNG output, future export performance will increasingly be shaped by the rapid growth of domestic gas demand. As natural gas assumes a larger role in electricity generation, industrial downstreaming, petrochemicals, fertilizer production, manufacturing, and the development of Indonesia's new capital city (IKN), the country's gas economy is evolving from one centred on export expansion to one focused on strategic resource allocation.

Against this backdrop, this paper argues that the principal challenge facing Indonesia is no longer maximizing natural gas production but optimizing the allocation of available gas resources among multiple national objectives. The analysis demonstrates that future LNG exports should not be viewed simply as a function of upstream production or liquefaction capacity. Rather, they emerge from the interaction of five interconnected factors: upstream gas supply, liquefaction infrastructure, domestic gas demand, government allocation policy, and global LNG market conditions. This perspective reflects the increasing complexity of managing natural gas in an environment where export commitments coexist with rising domestic energy and industrial requirements.

To capture these interactions, this study introduces the Balanced Gas Economy Framework (BGEF) as an integrated analytical framework for evaluating the future of Indonesia's LNG industry. Unlike conventional approaches that primarily assess production potential or export capacity, the BGEF conceptualizes LNG exports as the residual outcome of strategic allocation decisions. By linking upstream development with domestic utilization, policy choices, and international market dynamics, the framework provides a more comprehensive basis for understanding how resource-rich economies can maximize the long-term value of their natural gas endowments.

The scenario assessment further demonstrates that Indonesia's future LNG competitiveness will depend less on the absolute size of its gas resources than on the effectiveness of project implementation and resource governance. In the Conservative Scenario, delays in major upstream developments constrain both exports and domestic supply. In contrast, the Balanced Development Scenario illustrates how coordinated upstream investment, infrastructure expansion, and transparent allocation policies can sustain LNG exports while simultaneously supporting industrial development and energy security. Under the Accelerated Development Scenario, favourable investment conditions and timely project execution strengthen Indonesia's position as one of Asia's leading LNG suppliers, even though the country is unlikely to regain its historical status as the world's largest exporter in an increasingly competitive global market.

These findings carry several important policy implications. First, accelerating upstream investment remains essential for meeting both export commitments and rapidly expanding domestic demand. Second, government allocation policies should become more transparent, predictable, and integrated across the gas value chain to balance competing demands from the power sector, industry, and export markets. Third, infrastructure development—including pipelines, LNG receiving terminals, storage facilities, and inter-island gas transportation—will be critical to improving market integration and supply flexibility. Finally, natural gas policy should be aligned with Indonesia's broader energy transition strategy, recognising gas as a complementary fuel that supports the integration of renewable energy, enhances power system reliability, and contributes to a gradual reduction in carbon emissions.

Beyond Indonesia, the Balanced Gas Economy Framework offers a broader analytical perspective for other resource-rich economies facing similar challenges. Many LNG-producing countries are simultaneously pursuing export growth, industrialization, energy security, and decarbonization. Under these conditions, future competitiveness depends not only on increasing production but also on allocating natural gas efficiently among competing domestic and international priorities. The framework therefore provides a useful conceptual foundation for comparative analyses of LNG governance in both established and emerging gas-producing economies.

Like all strategic policy assessments, this study has limitations. It does not employ detailed reservoir simulation, engineering optimisation, or econometric forecasting, and its scenarios should therefore be interpreted as plausible development pathways rather than predictions. Future research could extend the Balanced Gas Economy Framework through quantitative energy-system modelling, computable general equilibrium (CGE) analysis, or integrated optimisation models to estimate the economic and environmental consequences of alternative gas allocation strategies. Comparative applications across major LNG-exporting countries would also help assess the broader applicability of the framework.

In conclusion, Indonesia's future as an LNG producer will not be determined solely by the discovery of new gas resources or the construction of additional liquefaction capacity. Its long-term success will depend on the country's ability to manage natural gas as a strategic national asset that simultaneously supports export competitiveness, industrial transformation, energy security, and the transition to a lower-carbon economy. The transition from production maximization to allocation optimization therefore represents the defining characteristic of Indonesia's evolving gas economy and the central message of this study.

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