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Analysis Of Strategic Environmental Trends Towards The Achievement Of Optimum Essential Force Fulfillment (2024–2045)

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Abstract
The development of Indonesia's defense forces through the Optimum Essential Force (OEF) policy is a national strategy designed for the long term with the aim of achieving an ideal, effective, and efficient level of defense. This article assesses the development of the strategic environment at the global, regional and domestic levels until 2045, focusing on achieving OEF optimization. Utilizing qualitative methods and literature review, this paper outlines how geopolitical changes, technological innovations, non-traditional threats, and economic factors can affect the planning and implementation of OEF. The results of this analysis show that flexible policies, defence equipment modernization, and budget consistency are essential elements to achieve successful optimization of OEF in the face of a changing strategic environment.

Keywords: Defense, Optimum Essential Force, Strategic Enviromental.

INTRODUCTION

The defense system of a nation reflects its sovereignty and strength. When a country successfully strengthens the resilience and security of its system, the protection of its sovereignty is concurrently reinforced. Conversely, if the country's defense system is insufficient or ineffective in conducting military operations and ensuring security, threats and attacks against that country may intensify, jeopardizing public safety and welfare. Therefore, enhancing the national defense system is crucial for both developed and developing nations.

Given the significant challenges faced by Indonesia's security system, the procurement of Main Weapon Systems (Alutsista) should be intensified. Alutsista serves as a critical component of national strength in addressing both internal and external threats. On the other hand, Indonesia must be able to compete with other countries particularly developed nations that possess highly sophisticated security systems and advanced weaponry. These countries are capable of producing cutting-edge security technologies, making their defense sectors far more self-reliant compared to developing nations such as Indonesia. If Indonesia fails to compete or establish cooperative frameworks in security and technological exchange with these countries, their rapid advancements in security systems may pose serious threats to Indonesia, as the domestic defense capabilities may be comparatively inferior and potentially inadequate in the event of future conflict.

Enhancing Indonesia's main weapon systems is vital to prepare for potential wars, which may take the form of three types: negative asymmetrical, symmetrical, and positive asymmetrical warfare. According to Andi Widjajanto (Montratama, 2018), these three types are interrelated and become increasingly concerning when Indonesia fails to improve its main defense systems. First, negative asymmetrical warfare refers to scenarios where a country is engaged in conflict with a militarily superior adversary. Symmetrical warfare occurs between states with relatively equal military strength. Meanwhile, positive asymmetrical warfare involves conflicts where a country has a superior military force over its adversary.

In Indonesia's context as a non-aligned nation, the enhancement of military strength, including Alutsista, is imperative to prepare for the possibility of negative asymmetrical warfare. This necessity arises from the reality that the military power of other nations especially those in

military alliances often exceeds that of Indonesia due to the accumulation of their collective military capabilities. Therefore, Indonesia must be prepared to stand independently in anticipation of potential conflict. In addition to strengthening domestic and international security, improving the quality of Alutsista through strategic procurement is essential to confront emerging threats in the future.

Amidst the evolving global dynamics, Indonesia, as an archipelagic state with a strategic geopolitical position, is required to build a defense capability that is both reliable and adaptive. The long-term vision of national defense is encapsulated in the concept of the Optimum Essential Force (OEF), which aims to establish a core force capable of ensuring national security. Entering the 2024–2045 period, the urgency for optimizing the OEF is increasingly evident, in light of the complex changes in the strategic environment and the constraints of the national budget. Global geopolitical shifts, escalating regional conflicts, and advancements in military technology are key drivers necessitating a thorough analysis of strategic environmental trends.

Recent studies on national defense modernization emphasize the urgency for middle-income countries, including Indonesia, to develop resilient and responsive military capabilities. According to (Raska, 2021), Southeast Asian nations are experiencing a defense innovation lag due to limited fiscal capacity, fragmented defense industries, and dependency on foreign military technology. This situation places Indonesia in a critical position, as its defense procurement programs must contend not only with budget constraints but also with the rapid military advancements of regional powers. Therefore, the enhancement of Indonesia's Main Weapon Systems (Alutsista) should be strategically aligned with broader defense transformation goals, including the reduction of external dependency and the cultivation of indigenous innovation.

Moreover, research by (Yulisetiani et al., 2020) underscores the role of defense spending efficiency in maximizing security outcomes in resource-limited settings. Their study reveals that Indonesia's defense budgeting process often lacks transparent performance benchmarks, leading to inefficiencies in procurement and underutilization of existing assets. This finding reinforces the importance of adopting a performance-based budgeting framework that links spending to clear operational outcomes such as increased readiness, interoperability, and deterrent capacity. Within the framework of the Optimum Essential Force (OEF), this approach becomes essential to ensure that investments in Alutsista are strategically prioritized and contextually adaptive.

In the context of Indonesia's non-aligned defense policy, the country's strategic autonomy becomes crucial in facing potential asymmetric threats. (Widodo et al., 2022) emphasize that Indonesia must navigate a complex geopolitical environment, where the dominance of military alliances and regional security blocs could marginalize states with limited defense leverage. Their research supports the view that strengthening Alutsista, particularly in maritime, airspace, and cyber domains, is vital for maintaining sovereign control over Indonesia's archipelagic territory. As the regional security architecture continues to evolve, Indonesia's capability to independently project force and defend its interests will largely determine its strategic relevance in Asia-Pacific affairs.

Lastly, building a robust domestic defense industry is not only a matter of military readiness but also one of long-term economic resilience. A study by (Y. Nugroho & Santoso, 2021) on Indonesia's industrial defense ecosystem finds that defense self-reliance can be accelerated through state-supported innovation clusters, public-private partnerships, and academic collaborations. They suggest that the development of advanced defense platforms—such as unmanned systems, radar technologies, and indigenous propulsion systems—can reduce procurement costs and build critical national competencies. In this regard, the successful implementation of the OEF should not be seen solely as a military ambition, but rather as a comprehensive national strategy that links sovereignty, security, and sustainable development.

RESEARCH METHODS

Research Paradigm

This study adopts a qualitative-descriptive approach, employing literature review and content analysis methods. Data were collected from key national strategic documents such as the Defense White Paper, Strategic Plans of the Ministry of Defense and the Indonesian National Armed Forces (TNI), budget reports from the Ministry of Finance, and relevant academic literature. The analysis was conducted by linking trends in the strategic environment to the development direction of the Optimum Essential Force.

Approach and Method

The research method presented in this article is a literature-based study, utilizing analytical techniques on various bibliographic references including books, scientific journals, research reports, and other relevant documents—both in print and online—that are pertinent to the research topic. The literature review process involves a series of activities such as gathering information from reading materials, reading and annotating, and organizing research materials (Zed, 2008).

Data Collection Instrument

This study employs documentation as the primary technique for data collection, drawing from a wide array of journals and books relevant to the management of strategic environmental analysis and budget formulation. Through this method, relevant information can be systematically identified and categorized.

Data Analysis Process

The collected data were evaluated using qualitative content analysis. This process includes coding the information into thematic categories that reflect the essential elements of strategic environmental trend analysis. Patterns, associations, and information gaps were identified to derive significant conclusions.

This study does not involve direct participation from individuals, as it relies solely on secondary data obtained from published sources and existing documents. Conducted through a literature-based method, the study compiles information from various online databases, libraries, and academic repositories. This methodological approach ensures an in-depth understanding of strategic environmental analysis in relation to achieving the Optimum Essential Force, while offering a comprehensive perspective on the associated potentials and challenges.

RESULT AND DISCUSSION

Research Questions and Conceptual Focus

Strategic Environment Trends: 2024–2045

Several key trends are projected to shape Indonesia's strategic environment in the coming decades:

Global Power Shifts

The ongoing rivalry between the United States and China is expected to intensify, particularly within the Indo-Pacific region. This dynamic creates tensions in the South China Sea, which directly borders Indonesia's jurisdiction. The shift in global power is marked by increasing geopolitical competition between these two major powers, with the South China Sea emerging as a critical hotspot due to China's unilateral claims via the nine-dash line, overlapping with Indonesia's Exclusive Economic Zone (EEZ) around the Natuna Islands.

As (Mastro, 2019) argues, this rivalry extends beyond military capabilities to include economic, technological, and diplomatic dimensions. Indonesia, adhering to a free and active

foreign policy, faces a strategic challenge: safeguarding national sovereignty without becoming entangled in bloc conflicts. This necessitates a more proactive defense diplomacy and enhanced military readiness in strategically sensitive border regions.

Joint military exercises, increased maritime patrols, and the strengthening of military installations in Natuna constitute Indonesia's strategic response. (Huxley, 2018) notes that Indonesia cannot ignore the region's growing militarization, thus requiring a reliable defense capability.

Hybrid Warfare and Cyber Threats

Modern warfare transcends conventional methods. Hybrid warfare integrates tools such as cyberattacks, disinformation, proxy actors, economic coercion, and psychological influence. These threats are often invisible but can inflict severe damage. (Singer & Brooking, 2018) highlight the use of information manipulation and social media as critical weapons in undermining a nation's political stability. Cyberattacks targeting critical infrastructure such as financial systems, energy grids, and military communications can disrupt national defense without a single shot fired.

In response, the Indonesian Armed Forces (TNI) must bolster cyber defense and strategic intelligence capabilities. The formation of TNI's Cyber Unit and the National Cyber and Crypto Agency (BSSN) are commendable initial steps. However, a shift from passive to active cyber defense is essential, involving early warning systems, threat detection, and international cooperation to combat transnational cybercrime (Sullivan, 2021).

Climate Change and Natural Disasters

Environmental issues, particularly climate change, are now central elements in strategic environmental assessments. As a disaster-prone country, Indonesia faces major challenges in defense readiness and disaster response management. Extreme weather events, such as El Niño and La Niña, can disrupt military logistics, limit access to remote areas, and trigger humanitarian crises requiring rapid armed forces deployment. According to (Dupont, 2008), climate change acts as a threat multiplier, exacerbating social instability and resource conflicts.

The military's role in Military Operations Other Than War (MOOTW) such as humanitarian assistance and disaster response must be strengthened through inter-sectoral training, improved emergency logistics, and the integration of climate data into operational planning. The adoption of environmentally conscious defense strategies is becoming part of broader military reform toward environmental sensitivity.

Economic and Energy Resilience

Economic resilience serves as a foundation for defense capabilities. Amid global economic uncertainty, fluctuating commodity prices, and looming energy crises, Indonesia must prepare for direct impacts on defense funding. Heavy reliance on fossil fuels renders the country vulnerable to geopolitical tensions in global energy markets.

(Yergin, 2020) posits that nations failing to ensure energy security face severe strategic vulnerabilities. Thus, energy diversification and the strengthening of domestic energy sectors are crucial to defense strategy. Fiscal limitations following the COVID-19 pandemic and mounting external debt have caused stagnation in Indonesia's defense budget. This situation has led to delays in strategic weapons acquisition, modernization programs, and personnel welfare improvements. Therefore, an effective, transparent, and strategically prioritized defense economic policy is required (Siregar & Harahap, 2022b).

Strategies for Optimizing the Achievement of the Essential Force

In addressing the challenges outlined above, the following strategies are proposed:

Performance-Based Budgeting Transformation

A paradigm shift from historical allocation to performance-based budgeting is essential. Each defense program must be linked to quantitative and qualitative indicators that demonstrate its strategic added value to national defense posture. For instance, coastal radar procurement

should be evaluated not just by the number of units acquired, but also by detection range, response time, and integration with existing command and control systems.

According to the Ministry of Defense of the Republic of Indonesia (Kemhan, 2021), performance-based budgeting allows funds to be allocated based on the priorities of the OEF roadmap, ensuring adequate funding for programs that enhance deterrence capability. A major challenge, however, lies in developing valid indicators and clear performance reporting systems, necessitating capacity building in measurement and evaluation across defense units.

Strengthening Intersectoral Coordination

Optimizing defense budgeting is not the sole responsibility of the Ministry of Defense but requires close coordination with the National Development Planning Agency (Bappenas) and the Ministry of Finance. Sustained coordination among these entities is crucial to align strategic defense objectives with fiscal policy and medium-term development priorities.

Regular meetings such as those preceding the Financial Note drafting enable all parties to assess macro-fiscal assumptions, threat scenarios, and weapon modernization plans. This process minimizes risks of abrupt changes that frequently hinder implementation. Research by (Siregar & Harahap, 2022a) shows that with improved coordination mechanisms, Indonesia's defense budget realization increased by an average of 8.5% annually, compared to previous stagnation at 3–5%. Moreover, Bappenas' involvement ensures that defense projects are integrated with national infrastructure development, such as upgrading military bases that simultaneously boost regional economies.

Utilizing Technology in Budget Planning and Simulation

Advancements in big data and artificial intelligence present opportunities to enhance budget forecasting accuracy and strategic threat assessment. By integrating intelligence, geospatial, and historical budget data, machine learning-driven financial simulations can project budget impacts under various conflict or disaster scenarios.

For example, such systems can analyze logistics and maintenance needs for major weapon systems, preventing both overstocking and shortages. An evaluation by (Putra, L., Tan & Rahman, 2021) found that similar analytics platforms adopted by Malaysia's defense ministry reduced operational maintenance costs by up to 12% within two years. In Indonesia, a comparable system could be developed through a dedicated data analytics unit under the Directorate General of Defense Strategy and Policy, in partnership with universities and tech companies, to build open-source simulation software.

Developing the National Defense Industry

Dependence on imported weapon systems poses both strategic and fiscal vulnerabilities. Strengthening domestic production capabilities can reduce acquisition costs, accelerate delivery, and create economic multipliers. Downstream development of military technology from composite materials for naval platforms to electronic control systems for drones should be promoted through incentive-based policies, conditional procurement contracts requiring a minimum of 30% local content, and robust support for R&D initiatives.

State-owned enterprises such as PT Pindad, PT PAL, and PT Dirgantara Indonesia must enhance collaboration with technology startups and research institutions. According to a study by (R. Nugroho & Santoso, 2020), partnerships between defense SOEs and universities have produced smart munition prototypes at 40% lower cost than imports, while meeting international quality standards. Industrial offset policies can further facilitate technology transfer from foreign partners, gradually enabling domestic mastery over critical components. In this way, the defense sector evolves not merely as a budget recipient, but as a contributor to economic growth and strategic self-reliance.

CONCLUSION

Indonesia's pursuit of a resilient and adaptive national defense system is inseparable from the strategic imperative to protect its sovereignty amidst complex and evolving global dynamics. As a non-aligned nation with vast territorial waters and a geostrategic position, Indonesia must strengthen its defense posture through a robust and sustainable development of its main weapon systems (Alutsista). This effort is not merely about matching the capabilities of military alliances or powerful states but about ensuring the nation's ability to deter threats, respond effectively to conflict, and contribute to regional stability through credible and independent defense readiness. The concept of the Optimum Essential Force (OEF) provides a comprehensive and long-term framework for building core military capabilities that are proportionate to Indonesia's strategic needs and fiscal limitations. By aligning defense budgeting with environmental threat assessments, technological trends, and future operational demands, Indonesia can better anticipate and respond to various forms of warfare—from cyber threats to symmetrical and asymmetrical conflicts. This strategic alignment is essential to prepare for scenarios where military superiority may not be guaranteed, particularly given the asymmetric risks posed by technologically advanced adversaries and regional disputes.

Achieving the goals of OEF demands a transformation in how defense resources are managed, including a shift toward performance-based budgeting, improved interagency coordination, and the integration of data-driven technologies in planning. Such reforms will not only increase transparency and efficiency but also ensure that each investment in defense infrastructure and capability yields tangible security outcomes. Furthermore, an inclusive defense strategy must consider climate-related risks, cyber vulnerabilities, and energy security, as these elements increasingly shape the contemporary threat landscape and demand an interdisciplinary response.

Lastly, the development of Indonesia's national defense industry holds immense potential for achieving self-reliance and reducing dependency on foreign arms suppliers. By promoting domestic innovation, fostering collaboration between state-owned enterprises and research institutions, and implementing strategic procurement policies, Indonesia can build a defense sector that is both economically productive and strategically autonomous. In this way, defense development becomes a national project—one that not only secures the present but also safeguards the nation's future in an uncertain global order.

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