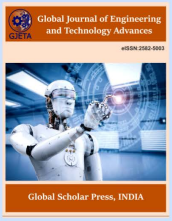
Global Journal of Engineering and Technology Advances
eISSN: 2582-5003
Cross Ref DOI: 10.30574/gjeta
Journal homepage: https://gjeta.com/



(Research Article)

Check for updates

Development of national resilience strategies in Indonesia's marine border areas, especially in the northern Natuna sea, Malacca strait, and Sulawesi sea

Didit Herdiawan * and Ahmadi Ahmadi

Indonesia Naval Technology College, STTAL Surabaya, Indonesia.

Global Journal of Engineering and Technology Advances, 2025, 24(03), 001-011

Publication history: Received on 20 July 2025; revised on 30 August 2025; accepted on 01 September 2025

Article DOI: https://doi.org/10.30574/gjeta.2025.24.3.0255

Abstract

As the largest archipelago in the world, Indonesia has a vast marine area with strategic potential and high vulnerability, especially in border areas. This research aims to analyze the condition of national resilience in Indonesia's marine border areas, identify threats and challenges, and formulate strategies to strengthen national resilience. The method used is qualitative-descriptive with literature study, policy document analysis, and case studies in the North Natuna Sea, Malacca Strait, and Sulawesi Sea. The results showed that threats to Indonesia's sea borders include unilateral claims by other countries, illegal fishing activities, and the weak welfare of coastal communities. The strategy to strengthen national resilience is carried out through Defense approaches, diplomacy, coastal economic development, as well as strengthening maritime culture and awareness of the state's Defense. In conclusion, strengthening national resilience in the marine border region requires synergy between agencies and active community participation to maintain the sovereignty and territorial integrity of the Republic of Indonesia.

Keywords: National resilience; Sea borders; Maritime security; Sovereignty; Indonesia

1. Introduction

Indonesia is the largest archipelago in the world, with more than 17,000 islands and ±108,000 km of coastline. About two-thirds of Indonesia's territory is sea, including the Exclusive Economic Zone (EEZ), which holds potential fisheries, energy, and mineral resources. This position makes Indonesia a strategic maritime country in the global geopolitical arena (Arifin et al., 2024).

However, Indonesia's marine border areas face various problems, such as territorial violations by foreign vessels, illegal fishing activities, smuggling, human trafficking, and unilateral claims from other countries. In addition, weak defense infrastructure, limited defense equipment, and suboptimal welfare of coastal communities add to the complexity of the problem (Dao et al., 2024).

* Corresponding author: Didit Herdiawan. Email: dosen7asro@gmail.com

Copyright © 2025 Author(s) retain the copyright of this article. This article is published under the terms of the Creative Commons Attribution License 4.0.



Figure 1 The Maps of the North Natuna Sea, the Strait of Malacca, and Sulawesi Sea

Figure 1. The Maps of the North Natuna Sea, Strait of Malacca, and Sulawesi Sea. The North Natuna Sea is part of Indonesia's Exclusive Economic Zone (EEZ) bordering the South China Sea. This area is one of the vulnerable points of national security. The main problem is the violation of sovereignty; China's unilateral claim of the Nine-Dash Line overlaps with Indonesia's EEZ. This is often manifested by the entry of foreign fishing boats escorted by the China Coast Guard. Illegal, Unreported, and Unregulated (IUU) Fishing: Foreign vessels often exploit fish resources illegally, reducing Indonesia's economic potential. Threat of militarization: Increased military activity in the South China Sea has the potential to escalate security in North Natuna. Suboptimal utilization of natural resources: Large oil and gas reserves in the Natuna D-Alpha Block have not been fully utilized due to security and investment factors. Social resilience: The population of border communities is still limited, so their role as sovereignty buffers has not been maximized (Gunawan et al., 2025).

The Malacca Strait is one of the world's busiest shipping lanes and a global strategic choke point. More than 90,000 vessels per year pass through this route. The main problem is that transnational crime, piracy, drug smuggling, human trafficking, and weapons smuggling still occur despite the declining trend of piracy. Maritime terrorism vulnerability in the form of heavy ship traffic has the potential to be utilized by terrorist groups for sabotage or attacks. Overlapping geopolitical interests, the Malacca Strait is a vital route for China, India, and other countries, making it vulnerable to international political pressure. Environmental degradation in the form of oil pollution and tanker waste endangers marine and coastal ecosystems. Security coordination in the form of Indonesia-Malaysia-Singapore trilateral cooperation (MALSINDO and Eyes in the Sky) often faces challenges in terms of sovereignty and technical field understanding (Irewati et al., 2024).

The Sulawesi Sea is Indonesia's border area with Malaysia and the Philippines. This region is the entry and exit point for various cross-border activities, both legal and illegal. The main problems in the Sulawesi Sea are maritime terrorism and kidnapping. Armed groups from the southern Philippines, such as the Abu Sayyaf Group, often kidnap fishing boats and merchant ships in the Sulawesi Sea. Cross-border smuggling in the form of Illegal trade in narcotics, firearms, and contraband is rife. Maritime border disputes, although some borders have been resolved (Indonesia-Philippines in 2014), there is still potential for conflict claims with Malaysia. Socio-cultural issues, such as the mobility of ethnic Bajau and Suluk who cross the border, are difficult to monitor and are often used for illegal activities. Defense infrastructure limitations, such as limited marine surveillance posts and patrol fleets compared to the vast waters and high cross-border mobility (Mayasari et al., 2025). Therefore, efforts to strengthen national resilience in marine border areas are very important. The concept of national resilience emphasizes the balance and resilience of the nation in facing challenges, threats, obstacles, and disturbances, both from within and outside the country (Marliani, 2024).

The problem formulations that can be presented in this paper are (1) What is the current condition of national resilience in Indonesia's marine border areas? (2) What are the main threats and challenges faced in maintaining marine sovereignty? (3) What strategies can be applied to strengthen national resilience in the marine border areas?

The Research Objectives of this study are (1) to describe the condition of national resilience in Indonesia's maritime border areas. (2) Identify the threat factors and challenges faced by Indonesia in the region. (3) Formulate a comprehensive national resilience strengthening strategy in Indonesia's marine border areas, especially in the North Natuna Sea, Malacca Strait, and Sulawesi Sea.

2. Materials and Methods

2.1. The Concept of National Resilience

National Resilience is a dynamic condition of the Indonesian nation that contains tenacity and resilience, which contains the ability to develop national power in facing and overcoming all threats, challenges, obstacles, and disturbances both coming from within and outside the country, to ensure the identity, integrity, survival, and struggle of the nation and state. In other words, National Resilience is the strategy of the Indonesian people to maintain state sovereignty, territorial integrity, and the safety of the entire nation based on Pancasila, the 1945 Constitution, the Archipelago Concept, and Unity in Diversity (Lemhannas RI, 2024).

2.2. Foundations of National Resilience

Indonesia's National Resilience has four main foundations:

- Idiil Foundation→ Pancasila as the basic philosophy and ideology of the state.
- Constitutional Foundation → UUD 1945 Constitution as the basic law of the country. Conceptual Foundation → Archipelago Concept as Indonesian geopolitics.
- Operational Foundation → GBHN/RPJPN/RPJMN and applicable national policies. (Lemhannas RI, 2024)

2.3. Principles of National Resilience

Some of the main principles that guide the building of national resilience:

- Welfare and Security Principle → The welfare of the people and the security of the state must be balanced.
- Comprehensive-Integral Principle → covers all aspects of national life.
- Inward-looking and Outward-looking Principle → pay attention to the nation's internal conditions as well as global developments.
- Family Principle → prioritizes deliberation, unity, and togetherness. (Lemhannas RI, 2024)

2.4. Aspects of National Resilience (Asta Gatra)

Indonesia's National Resilience is built on eight interrelated aspects of national life, called Asta Gatra, consisting of:

Tri Gatra

- Gatra Geography → Indonesia's strategic location between two continents and two oceans.
- Gatra of Natural Wealth → wealth of sea, forest, energy, minerals, etc.
- Demographic Gatra → large population, high productive age, but the distribution and quality of human resources still need to be improved.

Panca Gatra

- Ideological Gatra → Pancasila as the basis of national unity.
- Political Gatra → Democratic political system, political stability, international diplomacy.
- Economic Gatra → Economic independence, food security,energy, and competitiveness.
- Socio-Cultural Gatra → Unity in diversity, cultural values, moral resilience.
- Defense and Security Gatra → A professional Military and Police, and a universal people's Defense system. (Lemhannas RI, 2024)

2.5. Research Method

This research uses the Asta Gatra framework, including Tri Gatra (geography, demography, and natural resources) and Panca Gatra (ideology, politics, economy, socio-culture, and Defense and security). The study focuses on strategic areas such as the North Natuna Sea, Malacca Strait, and Sulawesi Sea, which are often prone to disputes and illegal activities.

The research method is qualitative-descriptive, with data collection techniques in the form of:

- Law No. 43 of 2008 concerning the State Territory. State Gazette of the Republic of Indonesia Year 2008.
- Law No. 32 of 2014 concerning Maritime Affairs. State Gazette of the Republic of Indonesia Year 2014.

- Presidential Regulation No. 16/2017 on Indonesia's Ocean Policy. State Gazette of the Republic of Indonesia Year 2017.
- Analysis of government policy documents related to Indonesia's National Resilience and Maritime Security.
- Case studies of incidents of maritime boundary violations and illegal fishing practices in the North Natuna Sea and Maluku (Lemhannas RI, 2024).

When viewed from the National Resilience framework (Asta Gatra), the qualitative-descriptive method in the three marine border areas can be described as follows (Octavian, 2019):

- Geostrategic: Strategic location creates vulnerability to the struggle for global influence.
- Economic: The large potential of fisheries, oil, and gas has not been optimally utilized due to security factors.
- Politics & Law: There are still maritime boundary disputes and weak law enforcement at sea.
- Socio-Cultural: Border communities have not been fully empowered as the frontline guardians of sovereignty.
- Defense & Security: Surveillance capacity, naval fleet, and inter-agency coordination are still limited, while threats are increasingly complex.

3. Results and discussion

3.1. Condition of National Resilience in the Marine Border Region

In terms of Tri Gatra, Indonesia's geostrategic position is both an advantage and a vulnerability. The great potential of marine resources is faced with limited surveillance due to the vastness of the waters. In terms of Panca Gatra, political stability and maritime diplomacy are important assets, but legal implementation and the welfare of coastal communities are still weak (Lemhannas RI, 2024).

The following figure shows a Causal Loop Diagram (CLD) that maps the factors of national resilience in Indonesia's marine border areas. This diagram explains the cause-and-effect relationship between the factors of sovereignty, illegal activities, coastal community welfare, surveillance, maritime culture, maritime diplomacy, and overall national resilience.

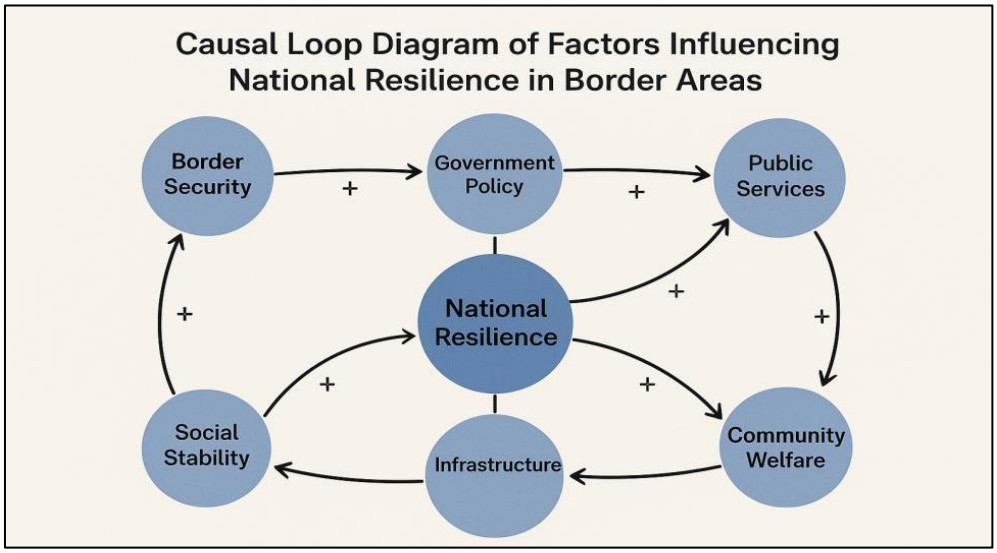


Figure 2 The Causal Loop Diagram of Factors Influencing National Resilience in Border Areas

The Causal Loop Diagram presented above illustrates the interconnected factors influencing national resilience in border areas. The diagram highlights a system of reinforcing feedback loops, where each factor positively influences others, creating a dynamic cycle that strengthens overall resilience.

3.1.1. National Resilience as the Core Variable

At the center of the diagram lies National Resilience, which represents the state's overall ability to maintain sovereignty, security, stability, and prosperity in border regions. This variable is not isolated but is constantly shaped by surrounding factors such as government policies, social stability, infrastructure, community welfare, and border security.

3.1.2. Government Policy

Effective and well-implemented government policies act as a driving force for resilience. Policies concerning Defense, security, economic development, and public administration directly enhance border security and the delivery of essential public services. Strong policy frameworks provide direction for infrastructure development and community welfare programs, which in turn feed back into strengthening resilience.

3.1.3. Public Services

Public services, such as education, healthcare, and administrative support, play a crucial role in sustaining the well-being of border communities. Improved services contribute to higher community welfare, ensuring that border populations feel included in national development. Enhanced public services reduce social disparities, discourage cross-border migration, and strengthen loyalty to the state.

3.1.4. Community Welfare

The level of welfare within border communities directly reflects the state's commitment to equitable development. Higher welfare leads to increased productivity, stronger civic responsibility, and reduced vulnerability to external threats. Communities with higher welfare levels also encourage investment in local infrastructure, which further strengthens resilience.

3.1.5. Infrastructure Development

Infrastructure, including transportation, communication, and energy systems, serves as a backbone for security and economic activities. Strong infrastructure not only supports national Defense operations in border areas but also boosts local economies by enabling trade and mobility. In this way, infrastructure development fosters social stability.

3.1.6. Social Stability

A stable social environment in border regions reduces conflict, fosters trust among communities, and minimizes the likelihood of separatist movements or border disputes. Social stability also ensures that border communities cooperate with security forces, thereby contributing to stronger border security.

3.1.7. Border Security

Effective border security is both a product of and a contributor to resilience. Strong security prevents illegal activities such as smuggling, human trafficking, and territorial violations. It also strengthens the legitimacy of government presence in border regions.

Regions. In turn, effective border security informs and reinforces government policy, completing the feedback loop.

The diagram underscores the reinforcing nature of these variables. Improvements in one factor, for example, infrastructure, initiate a chain reaction that enhances social stability, border security, and ultimately, national resilience. Conversely, weaknesses in any one area can

undermine the entire system. Therefore, a comprehensive and integrated approach to border area development is essential for strengthening national resilience.

The three strategic maritime border areas of the North Natuna Sea, Malacca Strait, and Sulawesi Sea have their own characteristics and challenges. They play an important role in Defense, security, maritime economy, international diplomacy, and regional stability.

3.2. Strategic Review of National Defense Conditions in the North Natuna Sea

The North Natuna Sea is located in Indonesia's EEZ directly adjacent to the South China Sea. This region is a key focus due to China's unilateral claim of the Nine-Dash Line, which overlaps with Indonesia's EEZ around Natuna.

- **Threats to sovereignty:** The intensity of the influx of foreign fishing vessels (illegal fishing) escorted by Chinese coast guard vessels represents a real threat to maritime sovereignty.
- **Defense aspects:** The Indonesian Navy and Air Force have increased patrols and built a military base in Greater Natuna.
- **Economic aspects:** The North Natuna Sea has fisheries potential of up to 1.3 million tons per year as well as oil and gas reserves (Natuna D-Alpha Block). However, this potential has not been optimally utilized due to security factors.
- **Social resilience:** The presence of local residents as "guardians of civil sovereignty" is still limited in number, so the government conducts transmigration programs and economic empowerment of fishermen.

3.3. Strategic Review of National Resilience Conditions in the Malacca Strait

The Malacca Strait is the world's busiest international shipping lane, connecting the Indian Ocean with the South China Sea. More than 90,000 ships per year traverse the channel, carrying energy and commodities for global trade.

- **Security threats:** The Malacca Strait is prone to transnational crimes such as piracy, drug smuggling, human trafficking, and weapons smuggling. Although piracy rates are declining, the potential threat remains high.
- **Geopolitical aspects:** The Malacca Strait involves Indonesia, Malaysia, and Singapore trilateral cooperation in maritime security (MALSINDO and Eyes in the Sky).
- **Economic aspect:** The Malacca Strait is the "lifeline" of the world economy, so its existence puts Indonesia in a strategic position, as well as making it prone to global political pressure.
- **Environmental security:** The threat of oil pollution from large-scale tankers endangers coastal ecosystems and resources.

3.4. Strategic Review of National Resilience Conditions in the Sulawesi Sea

The Sulawesi Sea is Indonesia's border region with the Philippines and Malaysia. The area is known to be prone to border conflicts and non-state armed group activity.

- **Security threats:** Terrorist and separatist groups from the Southern Philippines (Abu Sayyaf Group) often commit kidnappings in these waters. In addition, smuggling of illegal goods and human trafficking are also major problems.
- **Border disputes:** The Sulawesi Sea was once the site of an Indonesia-Malaysia dispute over the islands of Sipadan and Ligitan (won by Malaysia by the ICJ in 2002). While the Indonesia-Philippines maritime boundary was only finalized in 2014, there is still potential overlap with Malaysia.
- **Economic aspects:** The Sulawesi Sea has large fisheries wealth and potential energy resources in the Sulu Sea and Celebes Sea. However, exploitation is often out of balance with state control.
- **Socio-cultural aspects:** The cross-border mobility of ethnic Suluk and Bajau communities poses challenges for citizenship management and territorial security.

3.5. National Resilience Analysis

Using the Astagrata National Resilience approach (geography, natural resources, ideology, politics, economy, socio-culture, Defense and security), the condition of national resilience in the three marine border areas can be summarized in Table 1 below:

Table 1 Analysis of National Resilience Conditions in Indonesia's Sea Borders

Aspects of National Resilience	National Resilience in the Indonesian Sea Border (North Natuna Sea, Malacca Strait, Sulawesi Sea)
Geography & Natural Resources	Strategic location and rich resources, but vulnerable to dispossession
Ideology & Politics	There are challenges to the sovereignty of NKRI, both from other countries and non-state groups.
Economy	The large potential of fisheries, oil and gas, and trade routes is often not optimally utilized due to security factors.

Socio-culture	Local communities play an important role as a buffer for national resilience, but are still weak in terms of economy and education.
Defense-security	Need to increase military capacity, maritime patrols, regional cooperation, and Defense diplomacy to reduce conflict escalation

In Table 1, it can be explained that the condition of national security in the North Natuna Sea, Malacca Strait, and Sulawesi Sea shows that Indonesia faces multidimensional threats, ranging from violations of sovereignty, border conflicts, transnational crimes, and exploitation of natural resources. However, the strategic position of the region is also an opportunity for Indonesia to strengthen maritime diplomacy, regional cooperation, and strengthen a multi-layered Defense strategy.

Efforts that need to be prioritized are strengthening the presence of the state through the Navy at the sea border, increasing the economic empowerment of fishermen and border communities, optimizing international cooperation in securing sea lanes, and building strategic maritime infrastructure in Natuna, Batam, and North Sulawesi. Thus, national resilience in Indonesia's marine border areas can be maintained comprehensively, integrally, and sustainably (Puspitawati et al., 2923).

3.6. Threats and Challenges

3.6.1. Threats and Challenges in the North Natuna Sea.

The North Natuna Sea is part of Indonesia's Exclusive Economic Zone (EEZ) bordering the South China Sea. The area is rich in energy resources and fisheries, but is directly confronted by China's unilateral claims through the Nine-Dash Line (Putra, 2023).

North Natuna Sea threats include: (1) Violation of sovereignty by foreign fishing vessels escorted by the Chinese coast guard. (2) Illegal, Unreported, and Unregulated (IUU) Fishing that reduces national economic potential. (3) Potential militarization of the South China Sea that could extend to North Natuna. (4) Threat of grey-zone conflict in the form of maritime intimidation.

Challenges in the North Natuna Sea include: (1) Limited Defense infrastructure and the number of patrol fleets compared to the size of the sea area. (2) Unoptimal oil and gas exploration (Natuna D-Alpha Block) due to security issues. (3) Limited capacity of local fishermen in maintaining presence in border areas. (4) Proactive maritime diplomacy is needed to counter China's hegemony in the region.

3.6.2. Threats and Challenges in the Malacca Strait

The Malacca Strait is one of the world's strategic choke points, connecting the Indian Ocean and the South China Sea. It is travelled by more than 90,000 ships per year, including oil and LNG tankers (Sebastian et al., 2015).

Threats to the Malacca Strait include: (1) Piracy and armed robbery, which remain a threat although declining. (2) Transnational smuggling, drugs, weapons, human trafficking, and illegal goods. (3) Threats of maritime terrorism that capitalize on heavy ship traffic. (4) Marine environmental pollution due to oil spills from tankers.

Malacca Strait challenges include: (1) The Complexity of security co-operation between Indonesia, Malaysia, and Singapore. (2) Limitations of the Vessel Traffic Service (VTS) marine traffic monitoring system. (3) Potential political and economic pressures from global powers that depend on the Malacca Strait. (4) Maintaining a balance between national sovereignty and international obligations over world trade routes.

3.6.3. Threats and Challenges in the Sulawesi Sea

The Sulawesi Sea is located on the Indonesia-Malaysia-Philippines border. The region is vulnerable due to its proximity to the Southern Philippines, where non-state armed groups are based (Sulistiani & Mutaal, 2024).

Sulawesi Sea threats include: (1) Maritime terrorism and kidnappings by armed groups (e.g., Abu Sayyaf Group). (2) Cross-border smuggling, including narcotics, weapons, and illegal goods. (3) Maritime border disputes (e.g., post

Sipadan-Ligitan case and potential overlapping EEZ claims). (4) Cross-border ethnic mobility (Suluk and Bajau), which can be misused for illegal activities.

Sulawesi Sea challenges include: (1) Limited maritime surveillance in a vast and small-island area. (2) Trilateral cooperation with Malaysia and the Philippines (Trilateral Cooperative Arrangement/TCA) still faces implementation obstacles. (3) Management of fisheries and energy potential in the Sulawesi Sea has not been maximized. (4) Fostering border communities to become a resilient socio-cultural "buffer state".

3.6.4. Strategic Analysis of Threats and Challenges

Using the Astagrata National Resilience approach (geography, natural resources, ideology, politics, economy, socio-culture, Defense and security), the strategic analysis of Threats and Challenges in the three marine border areas can be summarized in Table 2 below:

Table 2 Analysis of Threats and Challenges in Indonesia's Marine Borders

Aspects of National Resilience	**Threats and Challenges in Indonesia's Marine Borders (North Natuna Sea, Malacca Strait, Sulawesi Sea)**
Geography & Natural Resources	Strategic location and natural resources lead to a struggle for influence
Ideology & Politics	Threats to sovereignty, overlapping claims, and foreign penetration can weaken the integrity of NKRI.
Economy	Exploitation of natural resources has not been balanced with security; threats of IUU fishing and oil and gas theft are still high.
Socio-culture	Border communities are still weak in terms of education, economy, and involvement in maintaining sovereignty.
Defense-security	The capacity of maritime patrols, military bases, and radar systems is still limited compared to the size of the region and the intensity of threats.

Based on Table 2, the threats and challenges to national resilience in the North Natuna Sea, Malacca Strait, and Sulawesi Sea show that Indonesia faces multidimensional problems: sovereignty violations, border conflicts, transnational criminality, maritime terrorism, and marine environmental degradation. The main challenge is to establish a strong state presence at the maritime borders through: Modernization of sea fleet, air and maritime surveillance systems, Economic and social empowerment of coastal communities, increased regional and international cooperation in securing sea lanes, Strengthening defense and maritime diplomacy in multilateral fora. With a comprehensive, integral, and sustainable approach, Indonesia can turn the insecurity at the sea border into a strategic opportunity to strengthen Indonesia's position as the World Maritime Axis.

3.6.5. Strategy for Strengthening National Resilience

Indonesia, as an archipelagic state, has a vital interest in maintaining the security and sovereignty of the sea area, especially in border areas that are loaded with geopolitical, economic,and security interests (Zulkifli & Musa, 2022). The North Natuna Sea, Malacca Strait, and Sulawesi Sea are three strategic areas that are also prone to various threats, both from other countries, non-state armed groups, and transnational crimes. To deal with these threats, a comprehensive strategy to strengthen national resilience is needed, covering the dimensions of geography, economy, politics, social, culture, Defense, and security.

Strategy for Strengthening National Resilience, Specifically in the North Natuna Sea

The North Natuna Sea is the NKRI's frontline in the South China Sea, rich in fisheries and oil and gas resources, but directly facing China's unilateral claims.

Strengthening strategies that can be implemented:

- Defense and Security

- Construction of an integrated military base in Greater Natuna (Navy, Air Force, etc).
- Modernization of sea and air patrol fleets to increase deterrence.
- Enhanced maritime surveillance operations through radar and satellites.

Economy and Infrastructure

- Acceleration of oil and gas exploration in the Natuna D-Alpha Block with security protection.
- Strengthening the fishing industry and empowering local fishermen as the frontline.
- Strategic port development to support logistics and exports.

Maritime Diplomacy

- Enhance the role of regional diplomacy in ASEAN regarding the South China Sea dispute.
- Build strategic alliances with maritime nations to maintain freedom of navigation.

3.6.6. Strategy for Strengthening National Resilience, Specifically in the Malacca Strait

The Malacca Strait is an international shipping lane that is vital for global trade, but prone to transnational crime, piracy, and environmental pollution.

Strengthening strategies that can be implemented:

- Shipping lane security
- Increased Indonesia-Malaysia-Singapore coordinated patrols through MALSINDO and Eyes in the Sky.
- Optimization of Vessel Traffic System (VTS) for ship traffic monitoring.
- Transnational Crime Prevention
- Strengthening joint operations of the Indonesian Navy, Marine Police, and Customs.
- Enhanced regional intelligence cooperation to combat drug smuggling, human trafficking, and maritime terrorism.
- Economic and Environmental Resilience
- Strengthening regulations to prevent marine pollution from tankers.
- Development of strategic ports in Dumai, Belawan, and Batam to maximize economic benefits from international trade routes.

3.6.7. Strategy for Strengthening National Resilience, Specifically in the Sulawesi Sea

The Sulawesi Sea is directly adjacent to Malaysia and the Philippines, which are often characterized by transnational crime, smuggling, and the threat of maritime terrorism.

Strengthening strategies that can be implemented:

- Defense and Security
- Strengthening the Indonesia-Malaysia-Philippines trilateral operation (Trilateral Maritime Patrol/TCA).
- Deployment of additional military bases in Tarakan, Nunukan, and Bitung.
- Utilization of drone and satellite-based marine surveillance technology.
- Socio-cultural and Economic
- Empowerment of the Bajau and Suluk ethnic communities to be more integrated into the national system.
- Improving the welfare of coastal communities through a modern fishing industry.
- Development of border economic zones to prevent illegal activities.
- Diplomacy and Border Settlement
- Diplomatic settlement of maritime boundaries with Malaysia and the Philippines.
- Increasing Indonesia's role in regional security cooperation mechanisms in Southeast Asia.
- Integrated National Strategy

In addition to region-specific strategies, Indonesia needs to implement an integrated national strategy to strengthen maritime resilience, as shown in Table 3 below:

Table 3 Integrated National Strategy in Indonesia's Marine Border Areas

Strategy Aspect	**Integrated National Strategy (North Natuna Sea, Malacca Strait, Sulawesi Sea)**
Defense Force Modernization	Increasing the number of combatant vessels, fast patrol vessels, and maritime surveillance aircraft. Construction of the Integrated Maritime Surveillance System at all sea borders.
Strengthening the Maritime Economy	Optimising the potential of fisheries and marine energy as the basis of the border economy. Encourage the development of Integrated Marine and Fisheries Centres (SKPT) at the border.
Diplomacy and International Cooperation	Strengthen maritime confidence-building measures with neighbouring countries. Take a leadership role in maintaining the stability of the South China Sea and the Malacca Strait.
Border Community Empowerment	Making fishing communities the frontliners of state sovereignty. Improving education, health, and infrastructure access in border areas.

4. Conclusion

National resilience in Indonesia's maritime border regions faces complex threats, both external and internal. Strategic position and resource wealth are both assets and vulnerabilities. Strategies to strengthen national resilience need to be comprehensive, covering dimensions of Defense, diplomacy, coastal economic development, and strengthening maritime culture. Synergy between the government, security forces, and the community is key to maintaining Indonesia's maritime sovereignty.

The strategy to strengthen national resilience in Indonesia's maritime border areas must be comprehensive and multidimensional, covering Defense, diplomacy, economic, socio-cultural, and environmental aspects.

- North Natuna Sea → focus on military strengthening, maritime diplomacy, and oil and gas exploration.
- Malacca Strait → focus on securing trade routes, preventing transnational crime, and protecting the environment.
- Sulawesi Sea → focuses on countering maritime terrorism, resolving boundaries, and empowering border communities.
- By integrating all these strategies, Indonesia can strengthen its national resilience and solidify its position as the World Maritime Axis.

Compliance with ethical standards

Acknowledgments

The resources required to conduct this research were provided by Indonesia Naval Technology College, STTAL Indonesia, for which the authors are extremely grateful. The journal editorial board and anonymous reviewers are also acknowledged by the authors for their numerous insightful remarks, which have greatly enhanced this work.

References

[1] Arifin, R., Hanita, M., & Runturambi, A. J. S. (2024). Maritime border formalities, facilitation and security nexus: Reconstructing immigration clearance in Indonesia. Marine Policy, 163, 106101. DOI: https://doi.org/10.1016/j.marpol.2024.106101

[2] Dao, Y., Yusnaldi, K., Suwarno, P., & Widodo, P. (2024). The Concept of the Archipelagic State in Addressing Maritime Security Threats. DOI: https://doi.org/10.55927/fjss.v3i4.12109

[3] Government of Indonesia. (2008). Law No. 43 of 2008 concerning the State Territory. State Gazette of the Republic of Indonesia 2008. DOI: https://peraturan.bpk.go.id/Details/39738/uu-no-43-tahun-2008

[4] Government of Indonesia. (2014). Law No. 32 of 2014 concerning Maritime Affairs. State Gazette of the Republic of Indonesia 2014. DOI: https://www.kemhan.go.id/ppid/wp-content/uploads/sites/2/2016/11/UU-32-Tahun-2014.pdf

[5] Government of Indonesia. (2017). Presidential Regulation No. 16 of 2017 concerning Indonesian Maritime Policy. State Gazette of the Republic of Indonesia 2017. DOI: https://peraturan.bpk.go.id/Details/62168/perpres-no-16-tahun-2017

[6] Gunawan, Y., Ansar, M. A., & Dzakiyyah, S. A. (2025). Navigating the Waters of Conflict: Indonesia and Malaysia's Maritime Boundary Dispute in the Sulawesi Sea and Malacca Straits. Jambura Law Review, 7(1), 152-175. DOI: https://doi.org/10.33756/jlr.v7i1.24367

[7] Irewati, A., Widjaja, S., & Syafi'i, I. (2024). Resilience and Preparedness Among Coastal Communities on the Natuna Islands. In Climate Crisis, Social Responses and Sustainability: Socio-ecological Study on Global Perspectives (pp. 423-456). Cham: Springer Nature Switzerland. DOI:10.1007/978-3-031-58261-5_19

[8] Lemhannas RI, B. S. K., CAHYONO, H., SH, M., PERSEORANGAN, K. K. I., & RI, L. K. N. (2024). Lembaga Ketahanan Nasional Republik Indonesia. http://lib.lemhannas.go.id/public/media/catalog/0010-112200000000105/swf/7552/PPRA%2064%20-%2092.pdf

[9] Mayasari, E., Ali, Y., & Risdhianto, A. (2025). Bilateral Relations Between Indonesia and Malaysia in Handling Illegal Fishing and Maritime Border Areas. Journal of Social Research, 4(8), 2127-2132. DOI: https://doi.org/10.55324/josr.v4i8.2721

[10] Marliani, M. (2024). Enhancing Maritime Security: Challenges and Strategies in Indonesia's Natuna Sea. DOI:10.31629/jmps.v1i1.6996

[11] Octavian, A. (2019). Indonesian Navy, Global Maritime Fulcrum, and ASEAN. Seskoal Press. DOI: https://asean.org/book/indonesian-navy-global-maritime-fulcrum-and-asean/

[12] Puspitawati, D., Prakoso, L. Y., Kusumaningrum, A., & Harahab, N. (2023). Reconstruction of state territorial management to optimize national resilience in Indonesia. Legality: Jurnal Ilmiah Hukum, 31(1), 21-41. DOI:10.22219/ljih.v31i1.23636

[13] Putra, B. A. (2023). Rise of constabulary maritime agencies in Southeast Asia: Vietnam's Paragunboat diplomacy in the north Natuna seas. Social Sciences, 12(4), 241. DOI: https://doi.org/10.3390/socsci12040241

[14] Sebastian, L. C., Supriyanto, R. A., & Arsana, I. M. A. (2015). Beyond the archipelagic outlook: The law of the sea, maritime security and the great powers. In Indonesia's ascent: Power, leadership, and the regional order (pp. 308-334). London: Palgrave Macmillan UK. DOI:10.1057/9781137397416_15

[15] Sulistiani, A., & Mutaal, M. R. U. (2024). STRATEGIC-BASED REGIONAL DEVELOPMENT IN BORDER AREA FOR NATIONAL DEFENSE: INSIGHT FROM NATUNA REGENCY AMID THE SOUTH CHINA SEA DISPUTE. Jurnal Ilmu Pemerintahan Widya Praja, 50(2), 118-131.

[16] Zulkifli, N., & Musa, M. A. (2022). The Importance of the US-Malaysia Maritime Security Cooperation (2010-2021). Asian Journal of Law and Governance, 4(2), 1-27. DOI: https://doi.org/10.47405/mjssh.v7i2.1306