

Implementation of Total War Strategy in Indonesia's Space Diplomacy: Exerting the ASEAN Outlook on Indo-Pacific to Navigate the Region's Astropolitics

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ABSTRACT

The growing competition in outer space, especially between the US and China, impacts regional security and cooperation. As a key player in the Indo-Pacific, Indonesia must navigate this challenge to protect its national interests. This paper examines how Indonesia can implement its Total War Strategy in space diplomacy by leveraging the ASEAN Outlook on Indo-Pacific (AOIP). Using a qualitative approach, this study analyzes Indonesia's space activities, policies, and regional engagements through literature review and policy analysis. It identifies key gaps, including policy inconsistencies, reliance on foreign technology, and limited participation in global space governance. Findings suggest that integrating the Total War Strategy into Indonesia's space diplomacy can enhance security, strengthen regional cooperation, and position the country as a mediator in space politics. To achieve this, Indonesia must develop a structured space policy, invest in domestic capabilities, and engage more actively in multilateral forums. This research provides strategic recommendations for Indonesia to assert its influence in space affairs while contributing to regional stability in the Indo-Pacific.

INTRODUCTION

The ASEAN Outlook on the Indo-Pacific (AOIP), adopted by ASEAN leaders in 2019, serves as a guiding framework for regional cooperation, emphasizing inclusivity, transparency, and collective action in addressing shared challenges. By exerting the AOIP as a strategic tool, Indonesia can enhance its diplomatic engagement with other ASEAN member states and external partners, fostering a collaborative environment that promotes stability and prosperity in the Indo-Pacific region (ASEAN, 2019). As Major Powers – particularly the United States (US) and China– intensify their competition for dominance in space, the implications for regional security and cooperation become increasingly pronounced. The rivalry between these spacefaring nations has led to heightened concerns regarding space security, particularly with the development of advanced military capabilities that utilize space technologies. This competition raises the stakes for national security in the region, as countries like Indonesia must navigate the pressures of aligning with or countering the interests of these dominant powers. The ongoing advancements in space capabilities, including anti-satellite (ASAT) tests and the militarization of space, pose significant risks that necessitate a re-evaluation of existing security frameworks within the region (Sudirman & Nugraha, 2024). In response to these challenges, Indonesia has the opportunity to assert itself as a key player in regional space governance and security. The paper emphasizes the need for Indonesia to develop a comprehensive space diplomacy strategy that leverages its partnerships with ASEAN, in particular through the ASEAN Outlook on Indo-Pacific platform.

By actively participating in regional organizations and consolidating its national space efforts, Indonesia would be able to enhance its resilience against potential threats and contribute to a more stable and cooperative security environment in the Indo-Pacific. This proactive approach would not only serve to protect Indonesia's national interests but also positioned the country as a mediator in the broader geopolitical landscape, promoting dialogue and collaboration among nations grappling with the implications of space competition. This paper suggests that by integrating the Total War Strategy principles into AOIP's implementation within the space domain, Indonesia can effectively navigate the complexity of geopolitical and astropolitical dynamics in the region, and subsequently position itself as a proactive player in Space Diplomacy. By doing so, Indonesia can not only safeguard its national interests but also contribute to the collective security and development of the ASEAN community in an increasingly complex geopolitical environment.

Conceptual Framework

This research builds a framework from the concepts of the Total War Strategy and the AOIP, and explore how the two strategies can be adapted to the space domain, particularly in the context of Astropolitics:

1. Astropolitics: Can be defined as the study of the relationship between outer space terrain and technology and the development of political and military policy and strategy (Dolman, 2002). This definition is relevant and reflecting a realist perspective on international relations, viewing

space as an arena for power contestation among states, much like terrestrial geopolitics.

2. **Total War Strategy:** In Indonesia, the concept of Total War has deep historical roots that predate the country's independence. This strategy evolved from the nation's experiences fighting colonial powers and has become a cornerstone of Indonesia's defense doctrine (Rusyadi et al., 2022). As defined by Priyanto (2024), Total War represents strategic approach that transcends conventional military engagements, extending its impact to all facets of society, both military and civilian (Priyanto, 2024).
3. **ASEAN Outlook on Indo-Pacific (AOIP):** Represents ASEAN's collective vision for the Indo-Pacific region, was orchestrated as ASEAN's answer to the overlapping maneuvers coming from other countries to establish their dominance. Furthermore, AOIP was also intended to solidify ASEAN member state's centrality in governing the course of cooperation in the region (ASEAN, 2019).
4. **Middle-Power Theory:** Conceptualization of Middle Powers provides a framework for understanding Indonesia's unique role in regional dynamics. Middle Powers are states that use their relative diplomatic skills in the service of international peace and stability (Neack, 2017). This theory can help analyze how Indonesia leverages its position to mediate conflicts, promote regional stability, and implement the AOIP.

The framework would allow a nuanced understanding of how Indonesia navigates the intricate dynamics of space-related geopolitics in the context of Major Power competition within the Indo-Pacific sphere.

THEORETICAL REVIEW

Total War Strategy in Diplomacy

The concept of Total War Strategy originally developed in a military context, emphasising the use of all national resources to achieve strategic objectives. In diplomacy, however, it was adapted as a comprehensive approach involving various sectors-including the economy, technology and international co-operation-to achieve national interests. According to Clausewitz (1832), war is the continuation of politics by other means, which in the context of space diplomacy means the utilisation of all instruments of national power to strengthen the country's position in the global arena.

Space Diplomacy and International Relations Theory

Space diplomacy can be analysed through the perspective of international relations theories, such as realism, liberalism and constructivism. Realism sees interstate competition in space exploration as a form of strategic power struggle. Liberalism emphasises the importance of multilateral cooperation in space exploration and utilisation. Meanwhile, constructivism focuses on how identities, norms and discourses shape a country's space policy. Indonesia, in this context, uses a regional co-operation-based space diplomacy approach through ASEAN and AOIP.

ASEAN Outlook on Indo-Pacific (AOIP) and Regional Cooperation

The AOIP is a strategic framework issued by ASEAN to strengthen regional cooperation in the Indo-Pacific region, emphasising four main pillars: security, economy, connectivity and sustainable development. In the context of space diplomacy, the AOIP provides a foundation for Indonesia to encourage regional collaboration in satellite technology development, space data-based disaster mitigation, and inclusive and international law-based space governance (ASEAN, 2019).

METHODOLOGY

This research employs a qualitative approach using a literature review method to analyze the implementation of the Total War Strategy in Indonesia's space diplomacy. The research relies on secondary data sources, including national policy documents, international agreements, government reports, academic journals, and publications from international organizations related to space governance and Indo-Pacific security.

Data Collection Techniques:

1. Document Analysis: Examining Indonesia's space policies, ASEAN regulations related to the AOIP, and strategic defense and space diplomacy documents from various countries.
2. Literature Review: Analyzing previous research on astropolitics, Indonesia's defense strategy, and the role of space diplomacy in global geopolitical dynamics.

Data Analysis Techniques:

1. Thematic Analysis: Identifying key patterns in Indonesia's space policies and defense strategies.
2. Comparative Policy Analysis: Comparing Indonesia's approach to space diplomacy with other countries in Indo-Pacific region.
3. Qualitative Interpretation: Assessing the relevance of the Total War Strategy in Indonesia's space diplomacy and its implications for global competition.

By employing this methodology, the study aims to reveal Indonesia's challenges and opportunities in developing an effective Space Diplomacy strategy amidst geopolitical escalation in Indo-Pacific region

RESULTS

Emergence of Space as a Critical Frontier

In the rapidly evolving landscape of international relations, the domain of space has emerged as a critical frontier for national security, economic development, and geopolitical influence. The emergence of space as a critical frontier marks a significant shift in global geopolitics and strategic thinking. As humanity's technological capabilities have advanced, outer space has transformed from a realm of scientific exploration to a domain of immense strategic, economic, and military importance.

The Space Age truly began with the Soviet Union's launch of Sputnik 1 in 1957, igniting the Space Race between US and USSR. This rivalry spurred rapid developments in space technology and capabilities, establishing the foundation for space to become a vital component of national power and international relations. Today, space-based assets play an essential role in communications, navigation, weather forecasting, and Earth observation, supporting numerous facets of contemporary life and economic activity (Alfathimy et al., 2021). The increasing strategic importance of space has led to its acknowledgment as a key domain for national security, alongside land, sea, air, and cyberspace. Major powers are investing in military space capabilities, such as anti-satellite weapons and space-based missile defense systems (Vernikos, 2008). This militarization of space raises alarms about the potential for conflict and highlights the necessity for new governance frameworks to ensure its peaceful utilization.

On the economic front, the space sector is witnessing rapid growth and commercialization. Private enterprises are now at the forefront of innovation in areas such as reusable launch vehicles and satellite constellations, creating new opportunities for space-based services and resource extraction. The idea of space mining for valuable resources, including rare earth elements, has also gained momentum, although it presents significant technological challenges (Weinzierl & Sarang, 2021).

As space becomes increasingly integral to national interests, it has emerged as a new arena for geopolitical competition and cooperation. Space diplomacy and international collaborations on projects like the International Space Station coexist with rivalries and concerns over space dominance. Notably, the Indo-Pacific region has seen intensified space competition among major powers like China, India, and Japan, which has implications for the security dynamics in the region (Sweijs & Ellison, 2024).

Astropolitics in Indo-Pacific: Extension of Major Powers' Rivalries into the Region's Space Realm

The term "Indo-Pacific" has become increasingly significant in recent years, generally encompassing the maritime regions of the Indian Ocean and the western and central Pacific Ocean, which includes the waters surrounding Southeast Asia and Australia. While there is no single, universally accepted definition of the Indo-Pacific, various interpretations exist that reflect differing views on its geographical boundaries, strategic relevance, and political consequences. One of the interpretations highlights the view that the Indo-Pacific region is not considered or referred to as a regional area formed by the integration of regional areas (such as Southeast Asia, or Asia, and Europe), but rather as a new issue in international politics (Pedrason, 2021). This region's strategic position, along with its abundant natural resources and vital maritime trade routes, contributes to its considerable geopolitical importance. Central to the challenges facing the Indo-Pacific is the current relationship between US and China, the world's oldest and newest major powers, respectively. This dynamic is influenced by China's rapidly expanding economic strength and

technological advancements, which are increasingly comparable to those of the US, positioning it to potentially become the largest global power (Huisken, 2022).

The Indo-Pacific conception is essential for understanding the strategic challenges and opportunities encountered by the region in the 21st century for a variety of reasons: First, it the home of some of the world's largest and rapidly expanding economies, such as China, India, and Indonesia. Secondly, it functions as a vital shipping corridor that connects Asia, Europe, and the Middle East. Thirdly, the region is home to several key chokepoints, including the Straits of Malacca and the Straits of Lombok. Lastly, it has become a central arena for intensifying geopolitical rivalry between US and China. Initially, the Indo-Pacific concept was primarily focused on maritime geopolitics, given the region's vast oceanic expanse. However, as strategic competition intensified, it has extended and encompassed all domains of warfare and influence. The Indo-Pacific region's terrestrial geopolitical anxieties are being reflected in the space domain. China, India, Japan, and the US are prominent players in this arena, showcasing how their earthbound conflicts influence their space strategies, as showed in the following table:

Table 1. Space Activities among Major Powers in Indo-Pacific

Aspect	US	China	India	Japan
1. Key Developments	<ul style="list-style-type: none"> - Established US Space Forces Indo-Pacific in 2022 - Activated US Space Forces - Korea in 2022 - Plans to activate US Space Forces - Japan in 2024 (USSF, 2024) 	<ul style="list-style-type: none"> - Plans for 100 space missions in 2024 - Launched Spacesail Project to challenge Starlink - Expanded satellite fleet from 36 in 2010 to over 1,000 in 2024 (Sharmin, 2023) 	<ul style="list-style-type: none"> - Adopted Indian Space Policy in 2023 - Successful Chandrayaan-3 lunar landing in 2023 - 4% budget increase for Department of Space in 2024-2025 (Ojha, 2024) 	<ul style="list-style-type: none"> - Formulated space technology strategy in March 2024 - Established \$6 billion Space Strategy Fund - Successful SLIM lunar landing in 2024 (Kizuna, 2024)
2. Military Space Initiatives	<ul style="list-style-type: none"> - Tripled size of Space Forces Indo-Pacific - Established 24/7 space watch cell - Deployed SDA sensors to Japan (USSPACECOM, 2024) 	<ul style="list-style-type: none"> - Developed counterspace capabilities (kinetic-kill missiles, lasers, space robots) - Expanded military satellite capabilities (Forum, 2024) 	<ul style="list-style-type: none"> - Developed anti-satellite capabilities - Rejected UN resolution banning anti-satellite missile tests (Nadarajah, 2024) 	<ul style="list-style-type: none"> - Strengthened Space Operations Group of Japan Air Self-Defense Force - Established SDA system (Kizuna, 2024)
3. Satellite Capabilities	<p>Emphasis on integrating space capabilities with terrestrial operations (USSF, 2024)</p>	<ul style="list-style-type: none"> - 292 electro-optical and 43 radar satellites for imaging - Launched mega-constellation to rival Starlink (Goswani, 2024) 	<p>Increased satellite launches for various applications (Ojha, 2024)</p>	<ul style="list-style-type: none"> - Participating in Quasi-Zenith Satellite System (New Zealand Foreign Affairs & Trade, 2024)

4. International Cooperation	<ul style="list-style-type: none"> - Strengthening partnerships with allies in the region - Leading Quad alliance space initiatives (USSPACECOM, 2024) 	Increasing cooperation with Russia and other partners (Goswani, 2024).	<ul style="list-style-type: none"> - Participating in Quad alliance - Encouraging private sector participation (Nadarajah, 2024) 	<ul style="list-style-type: none"> - Deepening cooperation with US and other allies - Participating in Quad alliance (New Zealand Foreign Affairs & Trade, 2024)
5. Strategic Focus	<ul style="list-style-type: none"> - Maintaining technological edge - Promoting responsible behavior in space (USSPACECOM, 2024) 	<ul style="list-style-type: none"> - Challenging US dominance - Expanding global influence through space capabilities (Goswani, 2024) 	<ul style="list-style-type: none"> - Achieving self-reliance in space technology - Doubling domestic space market (Nadarajah, 2024) 	<ul style="list-style-type: none"> - Accelerating space business development - Enhancing national security through space (New Zealand Foreign Affairs & Trade, 2024)
6. Future Objectives	<ul style="list-style-type: none"> - Continued integration of space capabilities in Indo-Pacific strategy - Expanding military space presence in the region (USSPACECOM, 2024) 	<ul style="list-style-type: none"> - Establishing global satellite networks - Advancing lunar and deep space exploration (Goswani, 2024) 	<ul style="list-style-type: none"> - Expanding commercial space sector - Advancing deep space exploration capabilities (Nadarajah, 2024) 	<ul style="list-style-type: none"> - Becoming a key player in global space industry - Enhancing space-based security capabilities (New Zealand Foreign Affairs & Trade, 2024)

The space race in this region is not merely about scientific exploration but is deeply intertwined with national security, economic interests, and global power dynamics, all of which are closely intertwined with the geopolitical dynamics on Earth. The competition among these powers is characterized by a race to develop advanced technologies, establish space-based infrastructure, and secure strategic advantages. This includes efforts in areas such as satellite constellations, lunar exploration, anti-satellite capabilities, and space-based military assets. This competition is reshaping the astropolitical landscape of the region, with significant implications for global power dynamics and the future of space exploration and utilization. The intensifying space competition in the Indo-Pacific has significant implications for regional security and global power dynamics. It has led to increased cooperation among like-minded nations, such as the Quad alliance (US, India, Japan, and Australia), which announced a Space Situational Awareness Initiative in 2024 (Leolabs, 2024). At the same time, it has raised concerns about the militarization of space and the potential for conflict to extend into this domain.

Indonesia's Space Activities and Diplomacy

Indonesia's space activities encompass a wide range of areas, demonstrating the country's commitment to developing its space capabilities. This roadmap outlines the country's strategic objectives to become a significant player in the global space industry by 2045, with key milestones (Nugraha et al., 2022):

1. **Satellite development:** Is one of the primary focus areas, that launches for various purposes, including communication, earth observation, military applications, scientific research, technology demonstration, education, and traffic monitoring. This diverse portfolio of satellite applications underscores Indonesia's recognition of the importance of space-based assets for national development and security.
2. **Rocket technology research and development:** Is another crucial aspect of Indonesia's space program. The country has been investing in indigenous rocket capabilities, with projects like the RX-450 and RX-550 sounding rockets showcasing progress in this field. These efforts aim to enhance Indonesia's space launch capabilities and reduce dependence on foreign launch services.
3. **Remote sensing and earth observation:** These technologies are being utilized for various applications, including natural resource management, disaster monitoring, and environmental protection. The National Research and Innovation Agency (BRIN) has been at the forefront of developing and operating earth observation satellites to meet these needs.
4. **Space science research:** The country is involved in various scientific missions and collaborations, contributing to the global body of knowledge in fields such as atmospheric science, space weather, and microgravity research.
5. **The development of national space laws and policies:** Has been crucial in providing a legal and regulatory framework for Indonesia's space activities. The enactment of the Space Act in 2013 was a significant milestone, establishing the legal basis for the country's space endeavors and aligning them with international space law principles.

Table 1. Key Milestones of Indonesia's Space Activities
(Supancana & Rahmadi, 2022)

Year	Milestone	Details
1962	Establishment of PRIMA (Initial Scientific and Military Rocket Project)	Formed on September 22, 1962, as a collaboration between the Indonesian Air Force (AURI) and Bandung Institute of Technology (ITB). Successfully developed and launched two Kartika-series rockets.
1963	Creation of LAPAN (National Institute of Aeronautics and Space)	Established on November 27, 1963, by Presidential Decree Number 236. Focused on aerospace technology development, including booster rockets, satellites, and unmanned aircraft.
1976	Launch of Palapa A1 Satellite	Indonesia's first communication satellite launched on July 8, 1976, from Kennedy Space Center, enabling domestic satellite communication across the archipelago.
2013	Enactment of the Indonesian Space Act (Law No. 21/2013)	Comprehensive legislation addressing technology transfer, intellectual property, and international cooperation. Harmonized national regulations with international space law.
2021	LAPAN merged into BRIN (National Research and Innovation Agency)	LAPAN integrated into BRIN as part of restructuring efforts to consolidate Indonesia's research and innovation capabilities, including space technology.
2022	Formation of INASA (Indonesian Space Agency)	Established under BRIN to handle international space affairs and policy, while research activities remained with other divisions of BRIN. Represents Indonesia in global space forums.

2025	Indonesian Space Association	Launched on January 21, 2025. The membership is a mix of government and private companies. Objective: to foster collaboration between industry players, professionals, and experts to build a vibrant aerospace ecosystem. Mission: to promote technological advancement, industrial development, and regulatory framework in the aerospace sector, ultimately strengthening Indonesia's strategic role in the global aerospace industry (the LEAP, 2025).
2045	Indonesia's 2045 Space Roadmap	Primarily driven by the National Research and Innovation Agency (BRIN), aims to establish Indonesia as a "spacefaring nation" by 2045, with a focus on utilizing space technology for various sectors like agriculture, marine, disaster management, and land monitoring, by developing a comprehensive space roadmap that includes research, development, and policy initiatives to achieve this goal; essentially aiming to join the "space club" of nations with advanced space capabilities by that date (BRIN, 2024)

Indonesia's diverse space activities, lay a solid foundation for engaging in international cooperation and dialogue in space governance. These activities have naturally led to the development of Indonesia's space diplomacy efforts. Space diplomacy has become an essential component of Indonesia's broader space strategy, as the country recognizes the growing strategic importance of space for national interests, international security, and global prosperity.

Indonesia's space diplomacy aims to secure its national interests in the increasingly important domain of outer space while contributing to regional stability and cooperation in the Indo-Pacific (Wibowo, 2023), with key aspects:

1. **Multilateral Engagement:** Indonesia actively participates in international space platforms, such as the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) and United Nations Office for Outer Space Affairs (UNOOSA). Indonesia has been an active member of UNCOPUOS since 1973, participating in sessions and various activities to stay updated on global space science and technology developments, and collaborates with UNOOSA which mandated to help all countries, especially developing nations, access and leverage the benefits of space to accelerate sustainable development.
2. **Regional Cooperation:** Indonesia participates in regional space cooperation initiatives, such as the Asia-Pacific Space Cooperation Organization (APSCO) and the Asia-Pacific Regional Space Agency Forum (APRSAF), and also through ASEAN-led mechanisms. These engagements allow Indonesia to collaborate with other spacefaring nations and share knowledge and resources.
3. **Bilateral Partnerships:** Indonesia has pursued bilateral space cooperation with several countries, including Japan, China, and India. These partnerships often involve technical discussions, joint research projects, and technology transfer agreements.
4. Through those inter-governmental platforms, Indonesia promotes the use of outer space for peaceful purposes and advocates for responsible behaviour in space, while having the legal foundation supports from the Indonesian Space Act in 2013, Indonesia's space diplomacy demonstrates the country's commitment to responsible space practices

Table 2. Indonesia's Space Diplomacy

Aspect	Description	Activities
1. Multilateral	Indonesia's engagement in global space forums and initiatives	<ul style="list-style-type: none"> - Active member of UNCOPUOS since 1973 - Supports UNOOSA's Space2030 Agenda implementation - Co-organized UN/Indonesia Conference on Space Technology Applications to Climate Change (2013) - Participates in KiboCUBE Programme, deploying Surya Satellite-1 (SS-1) in 2023 - Regional Support Office for UN-SPIDER
2. Regional	Participation in Asia-Pacific and ASEAN space cooperation initiatives	<ul style="list-style-type: none"> - Signatory to Asia-Pacific Space Cooperation Organization (APSCO) agreement in 2005 - Active participant in Asia-Pacific Regional Space Agency Forum (APRSAF) - Hosted APRSAF-29 in Jakarta, September 2023 - Participation in ASEAN Committee on Science, Technology, and Innovation (COSTI) - Member of ASEAN Sub-Committee on Space Technology and Applications (SCOSA) - Engagement in ASEAN Plan of Action on Science, Technology, and Innovation (APASTI) 2016-2025 - Involved in discussions for potential establishment of an ASEAN Space Agency (as of 2023) - Participation in Elang Thainesia, a biennial joint Air Force exercise with Thailand, with plans to expand into space and cyber defense cooperation (2024)
3. Bilateral	Space cooperation agreements with individual countries	<ul style="list-style-type: none"> - Agreement with China on peaceful uses of outer space (October 2, 2013) - Collaboration with Japan through JAXA and KiboCUBE programme (2023) - Cooperation with India on Biak Telemetry, Tracking and Command Facilities (Implementation Agreements signed in March 2024) - Discussions with the US on space situational awareness and defense cooperation (2023) - Engagement with European countries through EU Copernicus program (2022)

Indonesia's space diplomacy is a multifaceted approach that builds upon its diverse space activities to secure national interests and contribute to regional stability in the Indo-Pacific. Through various activities ranging from hosting international conferences to participating in joint space programs, Indonesia actively shapes its role in the global space community while aligning its space endeavors with national development goals and regional cooperation objectives.

Previous studies on Indonesia's space activities identify several challenges that collectively highlight the multifaceted nature of Indonesia's

space activities and diplomacy, necessitating strategic approaches to overcome obstacles and enhance its role in the global space community, inter alia:

1. Policy inconsistencies: The fluctuations in political leadership and policies have historically impacted the continuity and sustainability of Indonesia's space programs. Changes in administration can lead to shifts in focus and funding, resulting in an inconsistent development trajectory for space initiatives (Nugraha et al., 2022).
2. Dependence on foreign technology: Limits Indonesia's autonomy. Despite advancements in its space capabilities, Indonesia still relies on foreign technology and services for certain aspects of its space activities. This reliance can restrict its negotiating power in international forums and hinder the development of indigenous capabilities (Permatasari, 2022).
3. Limited participation in international frameworks: While Indonesia is a signatory to various international space agreements, its participation has often been limited. This restricts its ability to fully engage in collaborative efforts and benefit from shared resources, knowledge, and best practices in the global space community (Nugraha & Putro, 2023).
4. Need for a comprehensive legal framework: Although the Space Act of 2013 provides a legal foundation for space activities, further development of national laws and regulations that align with international standards is necessary. This would enhance Indonesia's ability to govern its space activities effectively and engage in diplomatic efforts.
5. Resource constraints: Limited financial and human resources can hinder the development of advanced space technologies and the ability to participate in international collaborations. This lack of resources impacts Indonesia's competitiveness in the global space arena (Nugraha et al., 2022).
6. Challenges in space governance: Indonesia faces difficulties in contributing to and shaping governance frameworks that address critical issues such as space debris, satellite management, and equitable access to space resources. Effective governance is essential for sustainable space activities (Haryadi, 2024; and OECD, 2024).
7. Complication from environmental and disaster response issues: While remote sensing technologies can aid in disaster monitoring and environmental protection, Indonesia must navigate the complexities of integrating these technologies into effective national policies and international cooperation efforts. This integration is crucial for maximizing the benefits of space technology in addressing pressing environmental challenges (USAID, 2014; and UNOOSA, 2024).

The Indonesia 2045 Space Roadmap: Opportunities to Strengthen Indonesia's Space Diplomacy

The Indonesia 2045 Space Roadmap, also known as the "Peta Jalan Keantariksaan Indonesia 2045" or "2045 Space Map", is a long-term strategic

plan being developed by BRIN to guide the country's space activities and strengthen its aerospace and space industries leading up to 2045, with key aspects: Satellite Development; Spaceport Development; Economic Growth; Technological Advancement; and International Partnerships (BRIN, 2024).

The 2045 Space Roadmap aligns with Indonesia's broader vision of becoming an advanced nation by its centennial year in 2045. However, the plan faces challenges such as budget constraints and the need for significant investment in infrastructure and human capital development. It is important to note that as of February 2025, detailed information about the specific contents and implementation of the 2045 Space Roadmap is limited. The roadmap appears to be in development, with BRIN playing a key role in its formulation and eventual implementation. The 2045 Space Roadmap presents significant opportunities to strengthen Indonesia's space diplomacy, aligning the country's space ambitions with its broader diplomatic and economic goals. The roadmap's emphasis on international partnerships, provides a platform for Indonesia to strengthen its position within ASEAN or other regional/multilateral platforms. This collaboration showcases Indonesia's ability to engage with major space powers and potentially positions it as a regional leader in Southeast Asia's space sector.

The focus on technological advancement, particularly in satellite development and launch capabilities, opens avenues for knowledge exchange and technology transfer through international collaborations. These partnerships, not only would enhance Indonesia's space capabilities but also serve as tools for economic diplomacy, attracting foreign investment and creating opportunities for cooperation in high-tech industries.

Indonesia's participation in multilateral space organizations like APSCO and APRSAF as outlined earlier, allows for broader engagement in space diplomacy and strengthens its voice in international space governance. This multilateral approach, combined with the roadmap's emphasis on the peaceful use of outer space, aligns with Indonesia's diplomatic stance and can be leveraged in international forums to promote responsible space behaviour. Furthermore, the roadmap's integration of space technology into various sectors such as agriculture and disaster management provides opportunities for diplomacy focused on sustainable development and environmental protection. This would allow Indonesia to demonstrate its commitment to using space technology for societal benefits, potentially enhancing its soft power and international reputation.

Indonesia's Total War Strategy

The concept of Total War Strategy has evolved significantly throughout history, with its roots tracing back to the 19th century and reaching its peak during the World Wars of the 20th century, and its concept has been significantly shaped by various theorists throughout history, each contributing to the understanding of warfare and its implications.

The evolution of Total War reflects changing historical circumstances and the increasing scale of conflicts. While it serves as an ideal type for

understanding warfare, scholars emphasize the importance of recognizing its practical limitations and variations across different contexts. The historical evolution of Total War reveals its roots in earlier conflicts, where the lines between military and civilian roles began to blur. This understanding is crucial for analyzing modern warfare, where Total War may manifest differently, particularly in asymmetric conflicts and those involving non-state actors (Imlay, 2007). Indonesia's Total War Strategy (Strategi Perang Semesta) is fundamentally grounded in the nation's historical struggle against colonialism and its defense doctrine. This concept emerged from the necessity to respond to urgent challenges posed by colonial powers attempting to dominate the archipelago. Faced with limited resources, Indonesians engaged in both diplomatic efforts and armed resistance, frequently employing guerrilla tactics and mobilizing every available resource (Nurbantoro et al., 2021).

After gaining independence, Indonesia officially incorporated the Total War Strategy into its national defense doctrine (Reza, 2017). Article 30 of the 1945 Indonesian Constitution establishes a national defense and security framework that encompasses the entire population, positioning the military as the primary force and civilians as a supportive reserve. Over time, the strategy has expanded to encompass all dimensions of national power, including military, economic, and diplomatic resources. It underscores the active participation of all citizens in defense efforts, reflecting the principles of Indonesia's state ideology, Pancasila (The 1945 Constitution).

This strategy is not limited to conventional military engagements but involves the mobilization of all national resources—military, economic, diplomatic, technological, and civilian sectors—to ensure national security and sovereignty. The strategy emphasizes national resilience (*ketahanan nasional*) by integrating military forces, government institutions, and civil society into a comprehensive defense system (Priyanto, 2024). Compelled by the need to involve all components of society in national defense, especially in the context of Indonesia's limited military technology, the increasingly complex and diverse threats faced by Indonesia, President Prabowo Subianto reintroduced the Total War Strategy into his vision and approach (Subianto, 2019). Such approach would ensure that national security is not solely the responsibility of the armed forces but also involves active participation from multiple sectors, including economic development, technological advancements, and diplomatic engagements. The Total War Strategy emphasizes the involvement of all components of society, which can be mirrored in space endeavors by fostering collaboration between government entities, private sectors, academia, and civil society. Through a broader engagement of stakeholders, Indonesia would be able to maximize its capabilities in space exploration and utilization, turning perceived limitations into opportunities for innovation and resilience.

ASEAN Outlook on Indo-Pacific: Indonesia's Hedging Strategy in the Region

The Indo-Pacific region has become a focal point for major power competition, leading to the emergence of two distinct blocs vying for global power and influence. Caught between these blocs are unaligned countries and

the Global South, which are most affected by this rivalry and are attempting to assert their own influence to counterbalance the great and major powers' pursuit of self-interest (Sahgal, 2023).

The intensifying geopolitical tensions, especially between the US and China, have prompted the US and its Indo-Pacific allies to favor minilateral coalitions over ASEAN institutions for achieving strategic goals. This shift presents challenges to ASEAN, and consequently putting pressure on ASEAN's centrality in regional affairs (Ha, 2022). In response to overlapping maneuvers from other countries seeking to establish dominance, ASEAN introduced the AOIP in 2019 as its collective vision for the region, aiming to reinforce ASEAN's centrality in regional cooperation. It emphasizes inclusivity, transparency, and cooperation across various domains, including maritime cooperation, connectivity, and sustainable development (ASEAN, 2019). To date, ASEAN has managed to secure the acceptance of all key players in the Indo-Pacific region towards the AOIP, as reflected by the joint statements made with ASEAN, acknowledging the AOIP's inclusivity and supporting its objective to promote peace, cooperation, and a rule-based architecture in the region.

A defense strategy that is commonly applied by countries in the Southeast Asian region when confronted with the rivalry of great powers is Hedging Strategy (Octaviano et al., 2020). In Indo-Pacific, Indonesia also adopts the Hedging Strategy when faced with current regional and global security. Defense strategy within the framework of Indonesia's hedging strategy is a way to achieve three main agendas, namely: Confidence Building Measures (CBM), strengthening defense capability, and the development of the local defense industry (Gindarsah, 2016). Simultaneously, the AOIP serves as a key tool for Indonesia's hedging strategy and managing Major Powers rivalries in the region. In a similar vein to Indonesia's Total War Strategy, the AOIP emerged out of necessity, addressing the challenges posed by the influence of Great Powers within Southeast Asia. Just as the Total War Strategy was developed to unify the nation against external threats, the AOIP aims to preserve ASEAN's centrality and unity in the face of escalating geopolitical tensions. By implementing AOIP, Indonesia and its ASEAN partners seek to collectively assert their agency and direction in a rapidly changing regional landscape, ensuring that they can navigate the complexities of international relations while reinforcing their strategic autonomy. This alignment of strategic frameworks demonstrates a historical continuity in Indonesia's approach to defense and diplomacy, adapting the lessons of the past to contemporary challenges in space and regional security.

DISCUSSION

Leveraging Total War Strategy and ASEAN Outlook on Indo-Pacific in the Implementation of Indonesia's Space Diplomacy

Over the decades, the Indo-Pacific region has flourished as the center of economic and political global growth, causing geostrategic shifts and tensions by US-led western bloc vis-à-vis China. By leveraging ASEAN's centrality and ability to engage the key players in the Indo-Pacific region, Indonesia pushed for the birth of AOIP as a vital instrument for ASEAN's regional defense strategy.

Through a more coordinated and collaborative approach, ASEAN countries can not only address the security challenges they face but also shape the regional security landscape in accordance with their interests and values (Duarte et al., 2023).

As intended, the AOIP should be exhaustively utilized as the platform to engage key players in the regions, and also to obtain political investment and economic gain from the engagements via the well-established ASEAN-led mechanisms as outlined by AOIP. These ASEAN-led mechanisms include ASEAN Regional Forum (ARF), ASEAN Defense Ministers' Meeting (ADMM) and ADMM-Plus, as well as East Asia Summit (EAS). On the outer space-front, ASEAN has been progressively engaged in space-related activities primarily through the Sub-Committee on Space Technology and Applications (SCOSA) to facilitate collaboration among ASEAN member states in space technology and its applications, aiming to address regional challenges such as disaster management, environmental monitoring, and sustainable development (ASEAN, 2025).

Nevertheless, despite these efforts, ASEAN lacks a unified space agency, which limits its capacity to implement large-scale regional space initiatives. The absence of a centralized body leads to fragmented efforts and potential overlaps in national space programs. Subsequently, establishment of an ASEAN Space Agency has been identified as an option to harmonize ASEAN's endeavors in space domain to enhance the grouping's collective bargaining power in international space affairs and promote technological advancement among member states (Nugraha & Putro, 2023). Indonesia's space diplomacy, anchored in Total War Strategy and applied within the framework of AOIP, would reflect a proactive stance against the limitations imposed by historical, geopolitical, and technological challenges, reaffirming the country's intent to play a significant role in the regional and global space arena.

President Soekarno once reiterated that Indonesia must master Nuclear and Space to become a great nation. In that light, collaboration in the field of space capabilities for accessing and using outer space should be prioritized in Indonesia's national agenda, noting the existing gaps that has been making Indonesia being outpaced by many Asian countries, making Space Exploration let alone Space War seems to be momentarily quite far-fetched for Indonesia. John J. Klein (2020), argued in order to protect their national interests in outer space, Middle Power country / Less Capable Space Force should exert: International rules and regulations to support access to and use of space; Diplomatic initiatives to establish a code of conduct in space; Participation in alliances to bolster national power; and Cooperative relationship with a Great Power country. In that light, several recommendations were drawn on how Indonesia as a Middle Power could leverage on the Total War Strategy and AOIP to strengthen its Space Diplomacy:

1. Develop a Comprehensive National Space Strategy: Indonesia should prioritize the formulation of a structured and comprehensive national space policy that aligns with its Total War Strategy approach. This policy should include clear objectives for enhancing domestic capabilities in

satellite technology, space exploration, and space security. It should also address the integration of civil, commercial, and military space activities.

2. **Enhance Collaboration within ASEAN:** Indonesia must actively engage with ASEAN member states to promote collaborative space initiatives that address shared challenges, leverage collective resources, and enhance regional security. This includes sharing best practices in space technology and developing joint space missions that reflect the principles of AOIP.
3. **Invest in Indigenous Space Capabilities:** To reduce reliance on foreign technology, Indonesia should increase investment in its indigenous space industry. This can be achieved through partnerships with local universities and research institutions to foster innovation and development in satellite technology, launch systems, and related fields.
4. **Strengthen Multilateral Engagement:** Indonesia should actively participate in multilateral forums focused on space governance, such as the Committee on the Peaceful Uses of Outer Space (COPUOS) and the Asian-Pacific Space Cooperation Organization (APSCO). Through these platforms, Indonesia can advocate for equitable access to space resources and rules governing space activities that resonate with its national interests.
5. **Promote a Code of Conduct for Space Activities:** Indonesia, as a middle power, can take the lead in advocating for an international code of conduct governing space activities. This will help mitigate the risks of space debris, enhance cooperation among nations, and establish norms for responsible behavior in space.
6. **Engage in Diplomatic Initiatives with Major Powers:** To hedge against geopolitical uncertainties, Indonesia should pursue diplomatic initiatives with both the US and China, aiming for agreements that protect its national interests while promoting peaceful cooperation in outer space.
7. **Emphasize Education and Training:** Investing in education and training programs for the next generation of scientists and engineers in Indonesia is crucial. Scholarships and training programs focused on space science and technology can be established to build a skilled workforce capable of driving Indonesia's space ambitions.
8. **Public Awareness and Support:** Raising public awareness about the importance of space as a frontier for national development, security, and international cooperation is vital. Engaging the public through campaigns and educational programs can foster national support for space initiatives and encourage future generations to pursue careers in this field.

By implementing these recommendations, Indonesia might significantly enhance its position in the global space arena, assert its influence in regional cooperation, and contribute positively to the collective security framework of the Indo-Pacific region, all while adapting to the evolving dynamics of astropolitics.

CONCLUSIONS AND RECOMMENDATIONS

Indonesia's implementation of the Total War Strategy in space diplomacy, leveraging the ASEAN Outlook on Indo-Pacific (AOIP), presents a comprehensive approach to addressing the complex astropolitical landscape of the Indo-Pacific region. This strategy aims to strengthen Indonesia's position in the evolving space domain while contributing to regional stability and cooperation. By actively engaging in regional collaborations and reinforcing its partnerships within ASEAN, Indonesia can enhance its diplomatic efforts and foster a cohesive response to shared challenges in space. The AOIP serves as a vital framework for Indonesia to facilitate constructive dialogues and establish collective mechanisms for security, economic growth, and technological advancements in space applications, such as disaster management and environmental monitoring. Furthermore, Indonesia's focus on developing its national capabilities in space technology is crucial for achieving self-sufficiency and reducing reliance on foreign support. By investing in domestic research and fostering innovation within its space sector, Indonesia can bolster its status as a middle power in the region, capable of contributing meaningfully to global space governance. In conclusion, Indonesia's strategic approach towards space diplomacy, grounded in the Total War Strategy and the principles laid out in the AOIP, is essential for navigating the complexities of international relations within the Indo-Pacific. By reinforcing its national space initiatives and enhancing regional cooperation, Indonesia not only safeguards its interests but also promotes a stable, secure, and collaborative environment for all countries in the region. This proactive stance will position Indonesia as a key player in space activities, capable of mediating between competing interests and fostering a collective vision for the future of outer space exploration and utilization.

FURTHER STUDY

Further studies could assess the effectiveness of the Total War Strategy in Indonesia's space diplomacy and the influence of the AOIP on space policy, particularly in regional cooperation and security. In addition, research could explore Indonesia's role as a middle power in global space governance and strategies to increase national capacity through research investment and technological innovation. By strengthening policies and cooperation, Indonesia can play a more significant role in creating a stable and inclusive space order in the Indo-Pacific.

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