

# Indonesian Air Defense Strategy in Maintaining Airspace Security of The Nusantara Capital City

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## Abstract

The air defense in the development of the Nusantara Capital City is one aspect that needs serious attention to support airspace security from various threats that could disrupt stability. The Indonesian Air Force has a strategic role in safeguarding the national airspace. However, in efforts to build air defense at the IKN, there are still various issues to address, hence a measured strategy is needed to realize the expected air defense system. This thesis research method used a qualitative paradigm with a descriptive approach. Technically, data was collected through interviews and literature or document studies as well as constructing relationships between the resulting data categories. The research findings indicate that the potential threats in the IKN airspace are very complex. Starting from the Air Defense Identification Zone (ADIZ) is not yet established in the IKN, which increases vulnerability to air threats, and there is still a high incidence of airspace violations in that area. The author analyzes the gap in Indonesia's air defense strategy capabilities through the DOTMLPF-P (Doctrine, Organization, Training, Material, Leadership and Education, Personnel, Facilities, Policy) indicators. Therefore, an integrated air defense system is needed with integration and combination of material elements, as follows multi-spectrum air defense radar, C2 (Command and Control) systems, fighter aircraft, air defense missiles, Indonesian warships with air defense capability, anti-missile systems, anti-drone and supported by air defense facilities and also non-material elements, as follows Doctrine, Organization, Training, Leadership and Education, Personnel and also Policy so that Indonesia can develop a strong and effective air defense strategy to maintain the security of IKN air space.

**Keywords:** *Air Defense Strategy, Nusantara Capital City, DOTMLPF-P.*



## A. INTRODUCTION

The discourse on the relocation of Indonesia's capital city has been around for a long time, even starting during the time of Indonesia's first president, President Soekarno. Soekarno chose Palangkaraya on July 17, 1957 as the capital city because it is located in the middle of the Indonesian archipelago and has many large areas. It was also Soekarno's way of showing that Indonesia had the ability to build a modern capital city. However, the concept was never realized. Instead, on June 22, 1964, President Soekarno established Jakarta as the capital of Indonesia. In the New Order era, during the leadership of President Soeharto in the 1990s, there was an idea to move the capital to Jonggol, but the discourse was not realized (Ayundari, 2022).

During the administration of President Susilo Bambang Yudhoyono, plans to relocate the capital city resurfaced as a response to Jakarta's congestion and flooding problems. However, during the administration of President Joko Widodo, the plan to relocate the national capital became more serious. On April 29, 2019, Jokowi made the

decision to move the national capital from Java Island and this was recorded in the 2020-2024 National Medium-Term Development Plan (RPJMN) (Ayundari, 2022).

President Joko Widodo stated that the relocation of the capital city to East Kalimantan Province is intended to address various problems facing Jakarta, which is particularly notorious for its overcrowding and flooding issues. Indonesia's legislature has approved the relocation of the capital city from Jakarta to Kalimantan, which will be called Nusantara. President Joko Widodo first revealed this plan in 2019, aiming to reduce Jakarta's significant environmental impact and even out wealth distribution. The relocation of the National Capital from Jakarta to IKN automatically impacts the shift in the location of Indonesia's center of gravity (CoG), which was originally on the island of Java shifting to the island of Kalimantan. As the center of government, economy and various other activities, the national capital is an important area that must be well guarded from various threats. This region is central in achieving the national goals set out in the 1945 Constitution.

According to Bakrie (2022) in the Indonesian National Army's Strategic Center of Gravity Seminar held by the Center for Strategic Studies of the TNI Headquarters, CoG may be similar to the characteristic capabilities of a State. These capabilities consist of freedom of action, physical strength, and will to fight. These characteristic capabilities are also related to several aspects, including critical capabilities or critical capability which is inherently a capability in which the CoG can function for a country (Suryanto, 2022).

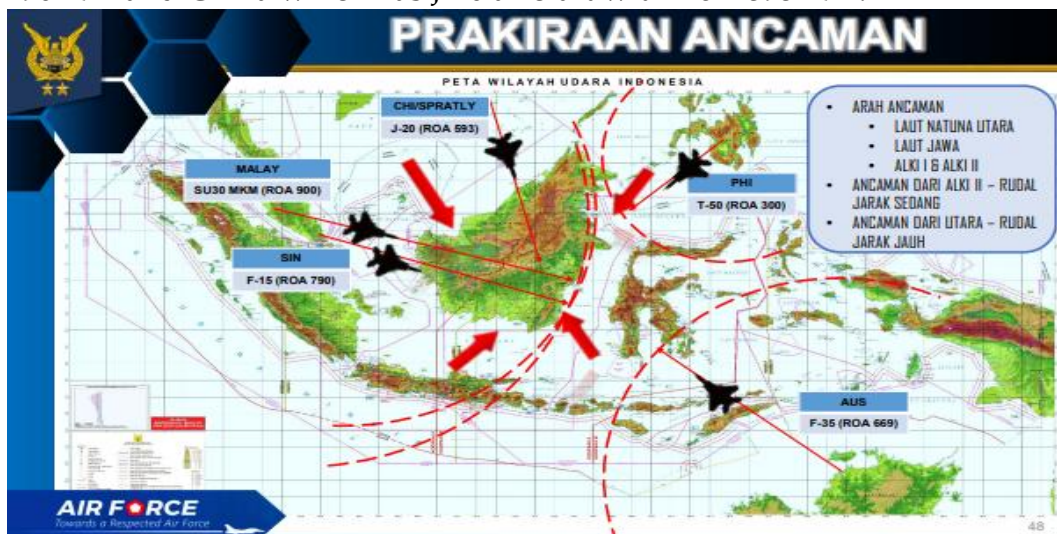
Potential threats to airspace sovereignty in IKN, namely, IKN is located between the Indonesian Archipelago Sea Route II (ALKI II) and adjacent to air, sea and land borders with the nearest country, has the potential to face threats in various aspects, such as ideology, politics, economics, socio-culture and defense (Mawardi, 2022). The strategic existence of ALKI II in Indonesian waters is one of the potential threats to the sovereignty of the Unitary State of the Republic of Indonesia (NKRI), such as the potential threat of violation of airspace sovereignty (Priyatna, 1972). Violation of airspace sovereignty occurs when a country's aircraft, both civilian and military, enters another country's airspace without prior permission from the country concerned. From the data collected in the ALKI II region, there were at least 10 unauthorized foreign aircraft flights (Black Flight) during 2022 and 2023.

Violations of the National jurisdiction airspace committed by foreign aircraft both civilian and military in the Kosek II airspace in 2019 to 2020 were dominated by foreign aircraft. Violations in 2019 by US military aircraft were 36 times with violations committed, namely not submitting official permits in accordance with procedures through a predetermined mechanism to cross ALKI, especially in ALKI II and ALKI III and 1 violation by civilian (commercial) foreign aircraft that were not equipped with complete licenses.

The fact of airspace violations in ALKI II by US military aircraft that have occurred on September 28, 2018, namely, there has been a violation of airspace by foreign military aircraft of the United States callsign ETHOS-01, type B-52 with the route Diego Garcia (FJDG) - Guam (PGUA). The results of checking the aircraft's flight

permits are that the aircraft does not have a flight permit through Indonesian airspace. The violation committed was entering the territorial airspace of ALKI I then crossing the north of the island of Java from west to east and then entering the ALKI II corridor to the north. However, because the US has not ratified the 1982 UNCLOS Convention, so when US aircraft carriers or aircraft cross Indonesian airspace above ALKI, they are guided by the Traditional Route for Navigation rules (Risdiarto, 2019).

The next potential threat is that the geographical location of IKN is within the Radius of Action (RoA) range of neighboring fighter aircraft such as Malaysia which has Sukhoi SU30 aircraft with RoA 900 Nm, Singapore which has F-16 aircraft with RoA 790 Nm and China which has J-20 aircraft with RoA 593 Nm.



**Figure 1. Potential Airspace Threats in IKN**

Source: Exposure of Asops Kasau on Oct 25, 2023

The non-existent Air Defense Identification Zone (ADIZ) in IKN also increases vulnerability to air threats. ADIZ is an Air Defense Identification Zone, which is airspace above land or waters where in the airspace identification, tracking, and monitoring of objects approaching Indonesia's sovereign territory are carried out to maintain national security. Currently, IKN does not have adequate defense infrastructure, especially to deal with potential threats from the air. To overcome this problem, it is necessary to evaluate and adjust the air defense system and strategy in IKN in order to protect the airspace from potential threats that may arise. One strategy that can be used is to integrate effective and efficient defense technology, strategies and policies to deal with various threats in the defense sector, including the implementation of the ADIZ system.

Therefore, in order to maintain the security of IKN airspace, a holistic and efficient air defense strategy is needed. The Air Force must have an Integrated Air Defense Systems (IADS) through the modernization of sensors, shooters and command and control (C2) which is balanced with the transformation of the air defense system so as to be able to realize unity of command of all assets, both defense equipment and organizations to be able to play a more optimal role in realizing a

national air defense system that is able to overcome every form of threat and disturbance that threatens the security of Indonesia's national airspace.

The defense in depth theory is used to obtain an effective defense depth based on the capacity of the main air defense weapon system. Referring to Zalia & Iskandar, (2017) the Air Defence Operations strategy that is defense in depth aims to increase effectiveness and efficiency in operations, the strategy divides airspace into several air defense sectors based on control capabilities and geographical conditions. Furthermore, as explained Wijaya, (2022) the air defense sector of a country is divided into several layered defense zones (defense in depth), among others: Area air defense using strike fighter elements used to protect airspace of more than 100 km. Terminal air defense using medium-range missiles is used as the primary means of destruction to protect airspace between 18 km and 100 km and point air defense using low-speed ambush aircraft and air defense artillery is used to protect airspace that is 18 km or less.

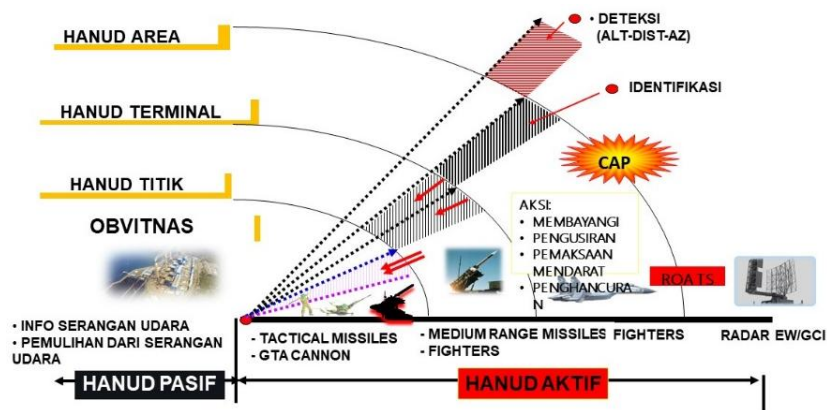


Figure 2. National Air Defense Degree Pattern

Source: (Wijaya, 2022)

Furthermore, DOTMLPF-P Theory is used to improve the planning, development, and execution of military operations more efficiently and effectively. In an effort to plan, develop and execute and improve the efficiency and effectiveness of military operations. DOTMLPF-P stands for (Doctrine, Organisation, Training, Material, Leadership and Training, Personnel, Facilities, Policy). This framework is used to address military capability shortfalls by combining material solutions such as the acquisition of new defense equipment and non-material solutions such as doctrine, organization, training, leadership and education and personnel (Mayville, 2016).

In the variable of Indonesia's air defense strategy in other regions, research that is used as a reference includes Indonesia's air defense strategy, namely, the case of the North Natuna Sea dispute conducted by Manek (2023), Indonesia's defense strategy in facing military and non-military threats through the perspective of defense economics conducted by Sutrasna (2023), Indonesia's national defense strategy in facing artificial threats conducted by Rahmatika (2022), strategies to improve Indonesia's air power conducted by Pertiwi & Sari (2022) and strategies for managing and defending the air border areas of the Republic of Indonesia: challenges in political, juridical and operational aspects conducted by (Makaariim, 2009). Some of the

differences between current research and previous research in this aspect include that previous research did not specifically study the Archipelago's Capital City, so that current research complements and updates research that has been carried out previously.

While research that examines the strategy of moving the capital city, some previous research that is used as a reference includes the strategy of moving the National Capital City (IKN) from the perspective of maritime defense conducted by (Hasan & Haeran, 2023), the use of UAVs to support the archipelago's IKN air defense as a center of gravity conducted by Sulo et al. (2022). Some of the previous research tends to examine the strategy of moving the capital city in terms of maritime defense, using UAVs to support air defense, while in this research the study will focus on Indonesia's air defense strategy in maintaining the security of the capital's air space so that it will complement and enrich previous research.

Airspace security is an integral part of national sovereignty and state stability. The novelty of this research is related to Indonesia's integrated air defense strategy to deal with various potential threats and the complexity of the challenges faced by the Indonesian nation to maintain the security of IKN airspace. Where the urgency of research is urgent because it is related to national security to protect IKN from external threats.

## **B. METHOD**

The research carried out uses qualitative methods with the intention of understanding and exploring the phenomenon of the current threat conditions and Indonesia's air defense strategy, so that a solution to the problem being investigated will be obtained by describing the phenomenon of the state of the subject/object of research of a person, institution, society and so on at the present time based on visible facts or as they are (Sugiyono, 2017). Data collection was obtained through in-depth interviews with informants including: Operations Assistant of Kosek IKN, Head of Kosek IKN Sector Post and Commander of Koopsudnas Information and Cyber Communication Unit. Secondary data was also obtained from documentation studies during the given research period. Data validation uses extended observation and member checking, then descriptive analysis of the data obtained is carried out, by constructing relationships between the resulting data categories, especially with regard to Indonesia's air defense strategy in maintaining the security of IKN airspace.

## **C. RESULTS AND DISCUSSION**

Indonesia's air defense strategy in maintaining the security of IKN airspace uses a smart defense-based Integrated Air Defence System that integrates sensors, C2 systems and shooters to deal with increasingly advanced and complex air threats. This needs to be well understood because IKN is a CoG that is the center of attention in terms of national security. Indonesia's air defense strategy in maintaining the security of IKN airspace is based on several interrelated and supporting indicators using

DOTMLPF-P indicators, namely: Doctrine, Organisation, Training, Materiel, Leadership and Education, Personnel, Facilities and Policy (Rowan, 2009).

### **Potential Security Threats in IKN**

The relocation of Indonesia's capital city to the East Kalimantan region is a major step taken in an effort to achieve national goals. From a defense perspective, this relocation has significant implications for the TNI in carrying out its duties to guard and protect the National Capital as the CoG of the new government. Andreas W. Daum emphasizes the urgency of defending the national capital, given its vital role in various functions such as state administration and cultural preservation (Triana, 2022). The capital city's existence as a center of power makes it a strategic target in military conflicts.

Therefore, in several wars that occurred, the national capital was used as an important target that needed to be conquered if it wanted to be the winner in a battle. For this reason, it is appropriate for the capital city to be fortified with strong national defense so that it can face the complexity of threats in the form of military, non-military and hybrid threats.

The Director General of Defence and Security of Bappenas in his presentation on Defence Planning in IKN estimates that there are several threats that interfere with the development of IKN in East Kalimantan (Bappenas, 2023), namely:

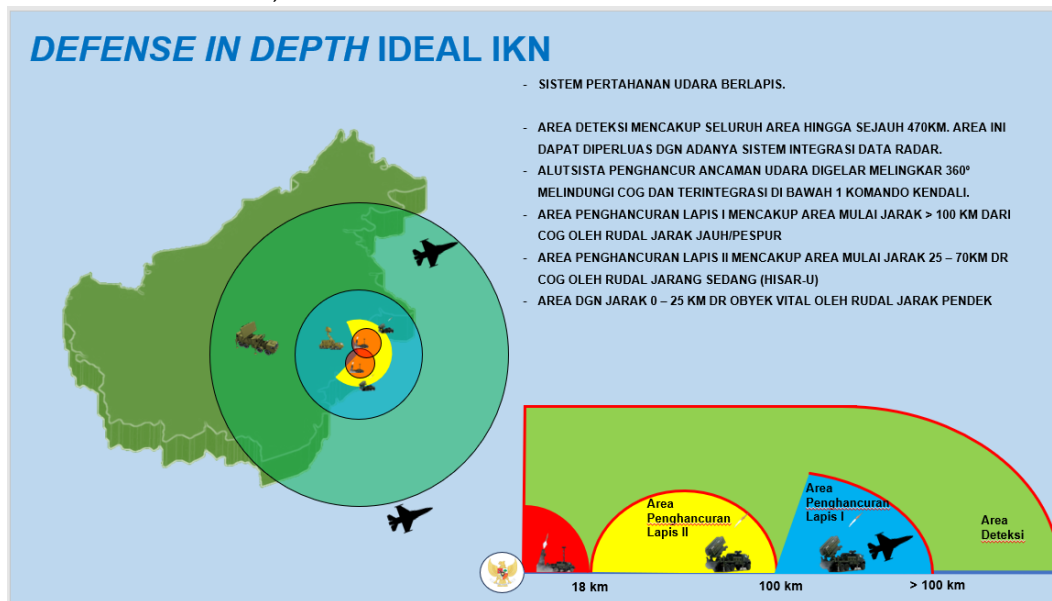
- a. Military Threats are often characterized by the direct use of military force and have a significant impact on a country's national security. The involvement of military elements can cause major damage to a country's national resources and infrastructure as well as various other adverse impacts. Intelligence, Surveillance, and Reconnaissance (ISR) activities over another country's surface and territorial violations include direct military threats. Furthermore, threats from above the surface with fighter aircraft, missiles, drones/PTTA, rockets/manpads, space debris and celestial bodies such as meteors that can threaten the safety of the Indonesian people.
- b. Non-military threats are non-physical threats, such as: acts of terror, natural disasters, social conflicts, shipping and aviation accidents and so on. This threat has a multidimensional impact on various aspects of life so that it needs to be well understood and anticipated so as not to cause a systemic impact on the course of national development.
- c. Hybrid Threats are a type of threat that combines various elements, including the use of biological, chemical, radioactive and nuclear weapons. The highly complex and often hard-to-detect nature of these threats requires a holistic and coordinated approach to address them.

Seeing the complexity of the existing threats requires efforts that are not only based on military dimension defense capabilities, but also non-military dimension defense capabilities as a form of an integrated defense system. Therefore, it is necessary to improve individual capabilities and expertise, as well as institutional governance and organizational systems to achieve the expected organizational goals.

This condition is important to understand because building a universal defense system requires maximum management of various resources, including the involvement of related parties such as the TNI / Polri, Ministries / Government Agencies and the community so that the country has a strong defense in facing various threats that exist in order to maintain the integrity of the Republic of Indonesia.

### Air Defence Strategy in Maintaining IKN Airspace Security

Air Defence at IKN currently implements a layered defense strategy (defense in depth). This system is designed to protect IKN's airspace, which is divided into three air defense sectors, as illustrated below:



**Figure 3. Defense In Depth at IKN**

Source: (Processed by Researcher, 2024)

Sistem pertahanan udara yang melindungi ruang udara IKN terbagi menjadi tiga sektor wilayah pertahanan sebagai berikut:

- Point air defense. Point air defense deployed within a radius of less than 18 km, this air defense involves low-speed ambush aircraft and air defense artillery, including tactical/short-range missiles, air defense cannons, anti drone systems and passive air defense.
- Terminal air defense. Terminal air defense is deployed within a radius of 18-100 km, the air defense components deployed include low-speed ambush aircraft, medium-range missiles, ambush fighters and KRI warships equipped with air defense capabilities. In addition, military and civilian coordination is carried out at airports that have civil aviation radars and are tasked with coordinating all flight activities and anticipating incoming threats to support air defense system.
- Area air defense. Area air defense is held within a radius of more than 100 km, the air defense system carried out is to carry out early detection by early warning (EW) radar guided by ground control intercept (GCI), involving attack fighters, airborne radar and KRI with air defense capabilities and involving

military civil coordination (MCC) held at airports that have civil aviation radars and aim to coordinate all flight activities in order to support air defense system.

Efforts to build air defense, especially in maintaining the security of IKN airspace, are based on the vastness of national airspace and national jurisdiction. The national air defense system must be able to ward off threats up to the airspace of national jurisdiction. In this context, the analysis as an effort to synthesize the theoretical studies with empirical findings refers to the DOTMLPF-P indicators, namely:

a. Doctrine

Doctrine has a huge influence and crucial role in air defense strategy. Based on the results of the analysis, the doctrine aspect in building an air defense strategy to maintain the security of IKN airspace can be seen in several ways, namely: doctrine is the main guide in formulating strategies, determining objectives, and providing operational guidelines for military personnel in charge of air defense, flexible doctrine keeps the guidelines responsive, relevant, and effective in the face of the dynamics of the strategic environment and growing technological advances, Furthermore, doctrine that applies the concept of NCW (Network Centric Warfare) increases the integration of air defense systems by utilizing information and communication technology to improve real-time air detection, surveillance and control capabilities, then doctrine emphasizes the importance of cooperation between TNI AU components and with other armed forces in maintaining the security of Indonesia's airspace and also alignment with national policies and strategies. The compatibility of air defense doctrine with Indonesia's national policy and strategy is key in ensuring that all defense efforts are well coordinated and deliver maximum results in protecting the sovereignty and security of Indonesia's airspace.

b. Organization

Organization has an important contribution in building a strong and effective air defense strategy to protect national security, especially the capital city as the CoG of Indonesia, as follows: The organization is the place to formulate air defense policy, develop doctrine, manage resources effectively, and provide training and development for air defense personnel. An efficient and adaptive organizational structure is essential in dealing with air threats. Furthermore, the organization is a means to coordinate the various ministries/government agencies involved in air defense. The organization is also the place to leverage structured information and communication technologies and enhance real-time airborne detection, surveillance and control capabilities.

c. Training

Training is a critical component in Indonesia's air defense strategy to maintain the security of IKN airspace. Based on the results of the analysis, aspects of training in building an air defense strategy to maintain the security of IKN airspace include: training prepares personnel to deal with complex and diverse combat situations and enables them to recognise, evaluate and respond to

threats quickly and effectively. Through training, personnel's technical skills are enhanced to become skilled in performing air defense tasks, such as equipment operation and air navigation. In addition, training also facilitates the establishment and development of strong teamwork among air defense personnel, which is essential in effectively countering air threats. Furthermore, the training supports the application of NCW Technology and Concepts to enhance effectiveness and readiness in dealing with increasingly complex air threats. Furthermore, training also improves personnel morale and confidence in performing air defense tasks. By having the necessary skills and knowledge, personnel become more skilled, more confident and more effective in carrying out air defense operations.

d. Materiel

Materiel or defense equipment in Indonesia's air defense strategy, especially in the context of maintaining the security of IKN airspace, is indispensable. The materiel aspect has an important share in several things, namely: the availability, quality and sophistication of defense equipment are the main factors in determining the extent to which air defense can protect the country's territory from air threats. Air defense materiel provides combat capabilities to maintain national air sovereignty, such as fighter aircraft, Hanud missiles, Hanud radars and other air defense systems. Furthermore, the existence of advanced, modern and robust defense materiel ensures national security through strong deterrence and effective defense capacity in regional peace and stability and puts the country in a superior position to respond to any form of threat. In addition, defense materiel with dynamic mobility and flexibility enables an effective air defense strategy that is responsive to changing situations. The ability to be quickly moved and deployed at strategic locations is an important aspect of a strong air defense. Furthermore, defense materiel that is integrated and has interoperability between different types of equipment, operating synergistically, increases the efficiency and effectiveness of the response to threats.

e. Leadership and Education

The quality of leadership and education has a great influence in a strong air defense strategy. The leadership and education aspect is one of the main pillars in Indonesia's air defense strategy to maintain the security of IKN airspace. This can be seen in several ways, including: quality leadership and good education become a strong foundation for operational success in maintaining national air security. Visionary leadership is capable of crafting a clear vision and strategic direction, while comprehensive education enhances understanding of air defense technology, tactics and strategy. Furthermore, leadership that pays attention to personnel welfare, including aspects of physical and mental health, work balance and job security will create a work environment that supports mission success. In addition, leadership that pays attention to investment in comprehensive and continuing education prepares personnel with knowledge,

skills and methods of critical and innovative thinking. Furthermore, effective and proactive leadership ensures the smooth and effective execution of air defense operations through clear direction, support of technological needs, and motivation. And supported by quality education prepares personnel to participate in air defense operations and exercises well.

f. Personnel

The personnel aspect is very important to Indonesia's air defense strategy in maintaining the security of IKN airspace for several reasons, namely: personnel are the executors in maintaining the security of IKN airspace, they are responsible for carrying out various operational tasks, ranging from aerial observation to interception of enemy aircraft. The overall readiness and effectiveness of an air defense strategy depends heavily on the quality, skills, leadership and commitment of personnel. Then personnel are not only the users of technology, but also a critical element in applying NCW technology and concepts in air defense operations. Well-trained personnel will increase the effectiveness of using technology, maintaining air defense systems, and using communication technology to share information. Readiness and adaptation of personnel to technological developments and evolving military tactics are key in maintaining the country's air security. Well-trained personnel who have the ability to work together and coordinate in teams are a necessity in dealing with various scenarios that may occur in air defense. And most importantly, the integrity, loyalty and responsibility of personnel towards their duties are important factors in maintaining the country's air security.

g. Facilities

The facilities aspect of air defense strategy is needed to support the achievement of the expected objectives. In general, facilities have a strategic role, including: good and well-maintained facilities will support smooth and effective air defense operations. Modern facilities equipped with advanced technology support the application of the NCW concept in air defense. Facilities that support the NCW concept connect various air, land and sea weapon platforms, and enable real-time information exchange. In addition, modern, adequate and logistically fulfilled facilities enable the efficient conduct of air defense operations and exercises, increasing readiness and capability in dealing with various air threats. For this reason, various supporting facilities must be properly maintained through maintenance. Efficient and regular maintenance of facilities is essential to ensure their operational readiness and safeguard the investments that have been made.

h. Policy

The policy aspect of air defense strategy is an important matter that needs to be understood properly because it concerns the continuity in the security of IKN airspace. Referring to the description, policy has a broad influence, including: government policy, both at the national and international levels, has a significant influence and a crucial role in a strong and effective air defense

strategy. Government policies will support the implemented air defense strategy. Then government policies related to budget allocations that support air defense strategies greatly affect the Air Force's ability to develop, maintain and improve air defense systems. In addition, government policies related to the acquisition of defense equipment are also an important part of the air defense strategy. Furthermore, government policies in terms of international defense cooperation affect the exchange of intelligence information, joint exercises, and military cooperation between friendly countries. And last but not least, government policies related to the regulation of defense industry involvement affect the development of military technology, arms trade and the protection of air defense infrastructure. Government involvement and support in the domestic defense industry will encourage innovation and development of new technologies relevant to air defense.

#### **D. CONCLUSION**

This study finds that Indonesia's air defense strategy for securing the airspace of the new capital (IKN) remains relevant but requires significant strengthening across multiple domains. The current air defense doctrine is applicable; however, updates are necessary to align with technological advancements and to ensure effective implementation of joint air defense operations involving the TNI and related ministries. The existing tiered organizational structure also needs refinement through the establishment of a cross-sector coordination body capable of responding quickly to dynamic air threats.

Air defense training programs are well implemented but must be enhanced through regular exercises and supported with modern training systems such as simulators and virtual reality platforms. Leadership development and military education are functioning effectively, yet there is still no institution dedicated to cultivating rapid and accurate decision-making during crises. Personnel numbers are generally sufficient, although there remains a shortage of specialized experts, particularly in cyber operations. Supporting facilities must be strengthened by modernizing air bases and establishing strategic C2 facilities in IKN. Government policy already supports the air defense strategy, but additional budgetary commitment is essential to ensure sustainable air defense capability in the region.

The research confirms that both the *defense in depth* theory and DOTMLPF-P framework are highly relevant and applicable to Indonesia's air defense posture. Implementing these approaches enables layered detection, coordinated response, and a more adaptive and resilient defense system in safeguarding IKN's airspace.

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