The Development of East Natuna Block for Defense’s Interest on the Borderline and Securing Indonesia Energy Reserves

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Abstract

East Natuna field deposits a tremendous amount of hydrocarbon reserve potential numbered 46 TCF. The reserve is highly potential to meet Indonesia's future energy demand and is also an asset for national development. On the other hand, there could be a possibility that others also seek these natural resources. Part of the Natuna sea, which holds an extraordinary amount of hydrocarbon, is included in China's nine-dashed line claim of the South China Sea, an area with prolonged conflict. Indonesia's interest in maintaining our sovereignty over resources management on our continental shelf in the Natuna sea, particularly in managing energy resources. To achieve this interest, support for excellent defense capabilities is necessary. This research puts the synergy of energy and defense under scrutiny, exercising the quantitative method while seeking the help of qualitative methodology. Developing oil and gas fields on the borderline requires defense capability support to minimize threats. On the other hand, expenditure for strengthening, operating, and maintaining defense capability is costly. Benefit-cost analysis showed that defense expenditure for Natuna Island is far below the government’s potential income from the development of the East Natuna field. This research concludes that Natuna island holds strategic values for politics, economy, and national defense. Energy resources in the Natuna Sea are assets for national development.

Key Words: Energy, Natuna Island, Defense, Sovereignty, National Interest.
INTRODUCTION

Indonesia is the largest archipelagic country in the world, with more than 17,000 islands stretching from west to east. Indonesia is unique because two-thirds of the area is the ocean, rich in natural resources and energy. One area that is Indonesia's energy barn is Natuna Regency, in the Riau Islands province. Natuna Regency was formed based on Law No. 52 of 1999, the third amendment to Law No. 34 of 2008. Natuna holds large oil and gas reserves. Currently, there are 16 oil and gas blocks in Natuna, five of which are already in production, and 11 others are still in the exploration stage (Safrezi, 2016). Until now, the total gas production in Natuna has reached 490.3 million cubic feet per day, and the entire oil and condensate production is 25,133 barrels per day (Widayati, 2016). Oil reserves in Natuna Regency reached 293.81 million barrels, while natural gas gained 56.3 trillion cubic feet. With an estimated maximum production of 1 trillion cubic feet per year, the reserves' life will reach 50-100 years (Perkasa, 2016). The most considerable resources are in the East Natuna block gas field and are the largest gas reserves in the Asia Pacific (Bappeda Natuna, 2016)

Natuna's position is in the waters of the Pacific Ocean, directly adjacent to the South China Sea. On the one hand, the South China Sea is a disputed area for several countries related to territorial claims or sovereign rights in resource management. The dispute began in 1947 when China made a map claiming most of the territory in the South China Sea. In 1953 China's official map contained nine nine-dash lines in the South China Sea as markers of China's claim to the area (Sugian, 2016). The nine-dash line claims 90 percent of the location of the South China Sea. The thing that China uses as the basis for the claim is the historical reason that the area claimed is a traditional fishing ground for Chinese fishers. Figure 1. shows China's nine-dashed line claim in the South China Sea. In the picture, it is clear that China's nine-dash line claims some of the EEZ area and the Indonesian continental shelf in the Natuna waters. It is estimated that around 30% of the Natuna waters fall into the claim.
The issue of the nine-dash line claim resurfaced in March 2015 when China included the Natuna Islands in their new passport design. The Indonesian government has protested against China through the Ministry of Foreign Affairs by sending a diplomatic note. In 2016, there were three incidents between Indonesia and China in the Natuna archipelago, between Chinese fishing vessels and the Indonesian Navy. Whenever the Natuna problem arises, China insists it has no sovereignty dispute with Indonesia. But after the third incident in June, China stated that Indonesia and China had overlapping claims in the South China Sea. Former Chief of Staff of the Indonesian Navy, Laks. (Purn) Ahmad Sucipto thinks that with China’s statement, Indonesia’s foreign policy stance on the South China Sea must be changed, and ownership and rights to the Natuna waters must be maintained. He said one of the instruments could be used to strengthen the army and military fleet there (Hasugian, 2016).

Historical records have shown that energy is a significant factor in conflicts between countries, such as the expansion of the Japanese empire in the 1930s to secure the supply of energy and resources from Southeast Asia. Another example is the Iraqi invasion of Kuwait in 1990, intending to prevent Kuwait from producing oil from the Rumaila field (Zandoli, 2014). Experts assume that China claims most of the South China Sea because of the potential for significant energy reserves. This assumption certainly cannot be ruled out, considering that China is a country with a growing industry. Hence, they need an ample supply of energy to ensure the industry continues to run and the economy continues to grow.

The assumption is supported by data on the amount of energy potential in the South China Sea issued by various institutions. the Energy Information Agency estimates the number of oil reserves in the South China Sea at 11 billion barrels and gas reserves at 190 trillion cubic feet. Energy Consultant Wood Mackenzie estimates there are 2.5 billion oil reserves. Indonesia’s defense white paper includes the scarcity of energy sources as a trigger for conflict. Until now, energy needs are still dependent on oil and gas, while the availability of oil and gas is running low because oil and gas is a type of non-renewable energy. This condition makes oil and gas a strategic resource contested between countries. The Natuna waters, included in China’s nine-dash line claim, are the location of the largest gas field in the Asia Pacific. In Figure 2, it is clear that China’s claims in the South China Sea are in places with potential hydrocarbon reserves in the form of oil and gas. The declaration covers almost all areas that have oil and gas reserves. This fact reinforces the assumption that the background of China’s claim to the South China Sea is the potential for energy reserves.
Indonesia's energy needs will be very high. The condition of energy security has a significant influence on the state of national security because energy security is part of economic resilience, which is one of the pillars of national security. The relationship between energy security and national security can be seen in the following figure:

![Figure 3. The relationship of energy security and national security](image-url)

The picture above shows that energy security is a sub-section of national security under the pillar of economic resilience. However, in essence, energy security does affect not only financial strength but also other pillars of national security, namely the stability of political ideology, socio-cultural resilience, technological resilience, and security defense resilience.

Until now, some of the energy needs are still met by oil, while gas utilization is only 20 percent of the total. On the other hand, Indonesia’s oil reserves continue to decline. The large gas reserves in Natuna are vital assets not only for the economy but also for the defense and security of Indonesia. The development of the Natuna region, especially the eastern part of Natuna, is a perfect option to meet domestic gas demand and is in line with Indonesia's vision of energy independence, as stated in PP 79/2014 on National Energy Policy. Without an increase in production, it is estimated that in 2021 Indonesia will become a net importer of gas. According to Agustiawan (2016), energy management has two goals. First, for welfare and
security-defense. As a commodity, energy is indispensable for economic activities and people's interests. On the other hand, defense and security operations are needed to maintain the smooth supply of energy, especially in border areas rich in energy resources.

Based on the 1982 United Nations Law of the Sea Convention, Indonesia has sovereign rights in Natuna to exploit and utilize the resources there. So on this basis, Indonesia must defend the Natuna waters and build a defense force. There is something that must be done. On the other hand, making a defense force in Natuna is intended as a deterrent effect so that resource utilization activities are not disturbed by other countries. Natuna not only has abundant energy resources, but geographically Natuna's position is very strategic. Since Natuna is the only Indonesian island on the path of Asian transportation routes, sea and air routes from Southeast Asia, South Asia, Arabia, and Africa. to Central Asia, East Asia, Pacific, and America or vice versa.

The operational development of defense forces requires high costs and energy supply. The Indonesian nation will suffer a considerable loss if the government makes the wrong decision regarding Natuna resources. Considering the various things mentioned above, for reasons of national defense and economic growth, the development of the Natuna block is interesting to study. This paper has a research question: How is the contribution of the development of the East Natuna block in strengthening energy security, as well as Indonesia's national development capital?

**METHOD**

**Research Design**

The primary approach in this research is a quantitative approach which is supported by a qualitative approach to sharpening the analysis of the problems studied. The integration of the characteristics of qualitative and quantitative methods aims to obtain a comprehensive and better understanding when compared to using only one method. Research designs like this allow researchers to collect data in all ways without being limited to one style. Research begins by focusing on a phenomenon that is the object of study or elaborating a theory by identifying indicators and variables in it and explaining the relationship between variables.

In carrying out research, there is a philosophical foundation called Creswell as a worldview, which is a fundamental tool that guides action in an examination. Four worldviews commonly underlie research: post-positivism, constructivism, transformative, and pragmatism. The worldview in research that combines
quantitative and qualitative approaches is pragmatism. The main characteristic is that the research emphasis lies on the research problem rather than the method used, thus enabling researchers to use various techniques to solve problems (Creswell, 2014). Social research should focus on the research problem and use a plural method to gain knowledge about the problem under study (Morgan, Patton, Tashakkori, Teddlie in Creswell, 2014).

The integration of quantitative and qualitative approaches was chosen because in researching the development of the East Natuna block for the benefit of border defense and securing Indonesia's energy reserves, researchers did not only process textual data but also numerically. Numerical data processing is to determine the economic value of the block, while textual data is to understand the history of the development of the East Natuna block and the condition of the defense forces there. By using worldview pragmatism, the emphasis of this research is on the problem being studied rather than the method used to solve the problem so that researchers will be more flexible in integrating various research approaches to obtain comprehensive research results.

**Object of Research**

The object of this research is the synergy between energy and defense. An example of the case raised is the potential contribution of the East Natuna block gas field in the Natuna Islands to maintain Indonesia's long-term gas supply and support the development of defense forces in the Natuna Islands. Defense development is aimed at anticipating various military and non-military threats, guarding borders as well as energy resources. Geographically, the East Natuna Block is directly adjacent to the South China Sea, which is an area of prolonged conflict. The Natuna Islands are not the only border areas rich in energy resource reserves. Other border areas with a wealth of energy resources are Ambala, Nunukan, and Masela. The East Natuna Block was chosen as the object of research because the amount of hydrocarbon gas reserves in the block is believed to be the largest in the Asia Pacific, and the a high potential threat from conflict in the South China Sea.

**Data Collection Technique**

The data in this study are divided into two, namely numerical data and textual data. The data collection process can be done simultaneously (sequentially) or separately (concurrently). The researcher's way to obtain data in this research is by studying documents obtained from institutions responsible for oil and gas exploration cooperation, companies operating in the Natuna Islands, and defense-security institutions, as well as conducting interviews with several experts in the field of...
defense and energy. The interview model used is semi-structured interviewing with open-ended questions. Ritchie and Lewis (2003) explain that semi-structured interviewing is an interview that begins by asking the same questions to the informants, then elaborates to obtain knowledge/information following the expertise of the informants that are relevant to the research topic.

**Data Analysis Techniques**

The data analysis technique used in this research is a sequential transformative strategy. This analysis technique gives an equal portion to integrating quantitative and qualitative data. Numerical data will be processed to determine the project’s economics through a benefit-cost analysis. The results obtained will be used as the basis for a breakdown of how the development activities of the East Natuna block support national defense at the border. Textual data and interview results will be interpreted and guided by the theoretical framework used in the study.

**RESULTS AND DISCUSSION**

**Research data**

Research data were collected through literature study and interviews. The literature study was mainly carried out to obtain data on the planning for the development of the East Natuna block, to understand the management history, the obstacles in developing the field, and the current status of the field development plan. The literature study results were then confirmed by interviewing sources that directly handled the development of the East Natuna Block, namely Pertamina, SKK Migas, and KEN. To gain an understanding of the defense and security situation in the Natuna region, policies and planning for the development of defense forces in the Natuna Islands, as well as an estimate of the budget for this purpose, interviews were conducted within the Ministry of Defense at the Directorate of Defense Policy and Strategy, the Directorate of Defense Areas, and, the Directorate of Planning. Defense Development.

**East Natuna Block Profile**

Oil and gas exploration and exploitation activities in the Natuna Regency area began in the 1970s. In 2001, Natuna Regency was designated as an oil and gas producing area (Bappeda Natuna, 2016). Oil and gas exploitation and exploration activities in Natuna are located in the western and eastern regions. However, the
Development of oil and gas working areas in western Natuna is more advanced than in eastern Natuna. In contrast, the development of this work area is significant to increasing national oil and gas reserves to maintain the availability of long-term oil and gas supplies.

KEN (2016) identified problems in the development of the eastern Natuna region, namely:

1. The absence of infrastructure that integrates fields in the eastern Natuna region. Limited buyers of gas that will be produced by fields located in the eastern part of Natuna.

2. The East Natuna area development plan is not mutually integrated between the fields and blocks located in the area.

3. It takes a very high cost to develop the eastern part of Natuna.

4. High CO2 content in some structures

5. New markets that are still not available (just thinking about the connection to West Natuna)

**East Natuna Block Cooperation Contract**

Pertamina and ExxonMobil have collaborated for over two decades to develop the East Natuna block technically and commercially. However, to this day, the East Natuna block has not yet been developed. Based on the records of the Director General of Upstream Oil and Gas ESDM, since 2005, there has been no upstream activity carried out in the block. The East Natuna Block production sharing contract was signed on January 8, 1980, between Pertamina and ESSO (ExxonMobil), with a contract period of 30 years from the date the contract was approved. The contract will terminate automatically if six years after the contractor's effective date and Pertamina does not conduct an economic feasibility study or declare a commitment to develop the Navy structure. Pertamina and ESSO can request an extension of up to four years from the end of the sixth year of the contract to conduct a feasibility study (Pertamina and ESSO PSC contract documents, 1980).

ESSO is obliged to pay Pertamina a total of three million dollars for information held by Pertamina regarding the East Natuna block. As of thirty days after the first shipment of gas from this block, ESSO pays Pertamina a total of five million dollars. Once the daily production reaches 50 thousand barrels or the average gas sales for 120 days is 200 MMCF, ESSO must pay 15 million dollars to Pertamina. If the
production reaches 100 thousand barrels or the average gas sales for 120 days is
400 MMCF. ESSO must pay 30 million dollars to Pertamina (Pertamina and ESSO
PSC contract documents, 1980).

In 1995, the PSC contract was adjusted through a basic agreement for technical
reasons, namely the high CO2 content in the gas (more than 70%), making it
challenging to develop and market it. The contract will expire on January 9, 2005,
if the contractor does not deliver on its commitment to developing the Navy
structure. Based on the explanation of Priyono (2007), the agreed terms and
conditions for the adjustment of the PSC contract in 1995 were: the profit sharing
between the government and the contractor was 0: 100, from the PSC contract, the
government only got a share of the income tax of 35%, production bonuses and first
tranche sales according to the agreed amount.

The participating interest under the 1980 contract is 50:50 for Pertamina and ESSO.
In 1996, Pertamina’s ownership of 26% was transferred to Mobil Oil, then Exxon
Corporation International and Mobil Oil Corporation merged to become
ExxonMobil, resulting in 24% ownership being Pertamina and 76% ExxonMobil
(Priyono, 2007). The government stated that ExxonMobil’s contract in Natuna
expired in January 2005 (termination) because ExxonMobil did not propose a field
development program. ExxonMobil denies this because they have submitted a
commitment to developing the Navy structure (katadata.co.id).

**East Natuna Block Development Challenge**

Pertamina (2016) identified the challenges in developing the East Natuna Block,
namely:

1. CO2 separation technology is still expensive, so block development becomes
   uneconomical.

2. Only 28% of raw gas production can be marketed.

3. Requires a particular area to store CO2.

4. Drilling includes production wells and CO2 reinjection wells.

5. Special processing for the world’s most significant volume CO2 separation.

6. The location of the gas field is offshore and far from consumer markets.

Since planning the development of the East Natuna field, Pertamina has
collaborated with ExxonMobil as a potential partner. ExxonMobil’s success in
commercializing the LaBarge field in 1986 indicates that technological developments have allowed gas fields with high CO2 levels to be developed. ExxonMobil claims the processing technology for CO2 separation that they have developed, namely CFZTM, can separate CO2 and other contaminants in one step without using solvents or absorbents (Burgers et al. 2011). Based on this, ExxonMobil’s participation in the consortium is hoped to answer the technological challenges in developing the East Natuna gas field.

For the treatment of separated CO2, reinjection is not the only option, but there are other alternatives. The CO2 gas can be used in the EOR process to increase production in aging oil wells. The oil and gas industry in Indonesia is relatively well established, starting in the decade of the 1850s. Currently, there are many old oil wells in Indonesia whose production continues to decline. The use of CO2 - in EOR can increase production by about 8% - 11% (Burgers et al. 2011). The CO2 separated from the gas from the East Natuna block can be used for EOR purposes to maintain the amount of production in the oil fields.

Another thing of concern in the development of the East Natuna block is the unavailability of a market for the gas produced by this block. Geographically, the East Natuna block is located in the middle of the sea, far from areas with high gas demand, namely the islands of Java and Sumatra. For more details, see the picture on the side. For the domestic market, the distance from the east Natuna block to Jakarta is 1,340 km, to Batam as far as 880 km, and to Natuna Island as far as 225 km. while the market export potential, the closest distance to Malaysia is 450 Km.

To answer this challenge, KEN recommends the use of the East Natuna block gas primarily for domestic needs, especially as fuel for power plants in West Kalimantan and as raw material for the petrochemical industry. If gas production exceeds the projected domestic demand, the excess can be exported to Malaysia, Singapore, Thailand, and Vietnam, considered potential markets. Another thing that can be pursued so that the gas production of the East Natuna block can be optimally absorbed for domestic purposes is to spur the growth of the petrochemical industry around the Natuna Islands or West Kalimantan.

Next, the challenge in developing this block is the lack of infrastructure that integrates the East Natuna block with other blocks and the infrastructure to connect the East Natuna area with West Natuna. The East Natuna Block is located in the middle of the sea, and the construction of infrastructure to connect this block with the existing infrastructure will increase the investment value so that the development cost will be more expensive. However, this is necessary so that the gas production of the East Natuna block can be utilized optimally.
East Natuna Block Development Scenario

The development of the East Natuna block is integrated with the development of other blocks in the eastern part of the Natuna working area. In 2016, KEN compiled at least three scenarios for developing the East Natuna working area. The KEN scenario emphasizes the absorption of gas production from the East Natuna block for domestic purposes, namely for power plants in West Kalimantan, the petrochemical industry, and the fishing industry. This is in line with the plan to develop the Natuna Islands as one of the Special Economic Zones and is expected to be able to develop the potential of the fishing industry there, which has not been adequately exploited. Excess gas production will be channeled to supply gas to the island of Sumatra via Batam by utilizing the WNTS network, sent to Java, or exported as LNG. The WNTS network is a gas pipeline network of more than 600 km, with an average diameter of 28 inches. The network is used to transport gas from three working areas in the Natuna Islands, namely Block A, Block B, and Kakap, to Singapore. The plan is to develop the WNTS pipeline network by connecting to Batam Island (premier-oil.com).

The infrastructure development planned for the development of the eastern Natuna working area is the construction of an offshore platform, CO2 separation facilities including reinjection wells, LNG facilities, and construction of gas pipelines to flow production from the eastern Natuna work area to the WNTS gas pipeline in western Natuna.

Onshore scenario

In scenario 1, all oil and gas activities are concentrated on Natuna island. Processing facilities will be built at Ranai, including an onshore LNG facility. Prior to distribution, all production of oil and gas blocks in the eastern Natuna working area is distributed to Ranai. Especially for the production of the East Natuna block, before being distributed to Ranai, the CO2 separation is carried out in the offshore facility to be built in the East Natuna block. The products that have been collected in Ranai are then distributed. Part of it is channeled to West Kalimantan as fuel for power plants, and part of it is sold through two mechanisms: first, through existing pipelines in western Natuna, and secondly, it is shipped for export.

Scenario 2 is almost the same as scenario 1. The difference is that before being distributed to Ranai Island, it is sent to an offshore processing facility in the East Natuna block. After being processed at an offshore facility in the East Natuna block, the gas is routed to Ranai to be processed into LNG and distributed. The main objective of this scenario is to reduce the cost of building infrastructure blocks in the East Natuna working area.
Offshore scenario

The difference in scenario three from the other two scenarios is that the LNG facility is located offshore in the East Natuna block. The production results are processed and processed into LNG at an offshore facility in the East Natuna block. LNG can be shipped directly from this facility or flown to Ranai for later distribution.

The East Natuna Block is believed to be the largest gas field in the Asia Pacific region. Apart from the high CO2 content of gas in this block, with an estimated gas reserve of 46 TCF and hydrocarbons in the form of oil of 500 MMBOE, this block is quite promising for development. Assuming Indonesia’s oil price in the 2017 State Budget is US$ 45 per barrel, gas price is US$ 9.5 / MMBTU, and an exchange rate of 1 US$ = Rp. 13,300, then a rough estimate of the economic value of this block is Rp. 6.990 trillion. Although economically and technologically, the development of the East Natuna block is a high risk, the successful development of the LaBarge field is proof that technologically the development of the East Natuna block is possible. Referring to a rough estimate of the economic value of the block, the East Natuna block is feasible to be developed.

The Urgency of the Development of the East Natuna Block

The East Natuna Block is the largest gas field in Indonesia and is located in the border area, precisely on the continental shelf of Natuna waters. Techno-economically, the East Natuna block is still very risky to be developed, but this is not solely a consideration in developing the East Natuna block. Another perspective that needs to be considered is that the development of the East Natuna block is a form of state sovereignty in the border area and evidence of the state’s presence in the foremost region.

The Natuna Islands are at the forefront of the Indonesian border region and have large reserves of natural resources, both energy resources, marine resources, and tourism potential. These potentials give the Natuna Islands an essential meaning in terms of politics, economy, and defense, so that cultivating and utilizing natural resources there is not only seen from an economic and technological point of view, including the development of the East Natuna block.

Believed to be the largest gas block in the Asia Pacific, which is located on the border of the country, the development of the East Natuna block should not only be based on economic and technological studies but also on the strategic significance of the Natuna Islands for Indonesia and the multiplier effect that will be obtained. Based on economic calculations on pages 87 and 88, state revenues from the development of the East Natuna block are relatively small. However, there are intangible things
from the development of the block, such as increasing economic activity in the Natuna Islands region, strengthening defense, and messages conveyed to the international community that the Indonesian government pays attention to the outer islands.

Historical records show that the need for energy has been the background of conflicts between countries. The scarcity or condition of the energy crisis can lead to armed conflict. Examples are the Japanese invasion to secure the supply of energy and natural resources from Southeast Asia in the 1930s and the Iraqi invasion of Kuwait in 1990 to secure oil reserves in the Rumaila field. States act because of the growing importance of energy in national security and the increasing costs of obtaining the resource. Indonesia cannot turn a blind eye to the possibility of energy resource reserves in the East Natuna Block being targeted by other countries. From the picture on page 6, it is clear that China's nine dashed-line claims in the South China Sea cover almost all of the oil and gas fields in the area.

To maintain its economic growth, China requires significant energy sources, especially oil. Domestic production can no longer meet energy needs, so these needs are met from sources outside China. Geographically, China's closest areas with large hydrocarbon reserves are the South China Sea and the East China Sea. Controlling oil in this area is a strategic matter to minimize disruption to China's oil and gas supply in the future. China has the military resources and capabilities to do just that. In 2010, the Chinese government claimed a veto over oil and gas activities in the waters of the South China Sea. The East Natuna Block is included in China’s nine-dashed line claim in the South China Sea, so the development of the East Natuna block in the Indonesian continental shelf is a state practice of Indonesia’s sovereign right to manage and utilize the potential of natural resources on the continental shelf, as regulated by UNCLOS 1982. The development of the block can also be interpreted as a way for the government to protect Indonesia's sovereignty and sovereign rights from all forms of interference and threats.

The development of the East Natuna block is an affirmation of the state's presence in the outermost areas and a manifestation of the government's commitment to positioning the outermost island as a front porch, not a backyard. The development of the East Natuna block will benefit the local community. Jobs will be available, and infrastructure development will be carried out in line with the interests of the development of the block. In turn, economic activity is expected to increase so that people’s living standards will improve along with increasing income. The development of the block is expected to trigger the growth of other industries in Natuna, such as the heavy equipment maintenance industry, the fishing industry, and the tourism industry. It is even possible for the Natuna Islands to become a
Data Discussion

The Strategic Meaning of the Natuna Islands for Indonesia

The Natuna Islands have an essential meaning in maintaining the territorial integrity of the Republic of Indonesia. Directly adjacent to an area that is prone to conflict and contains a large number of natural resources, from a political, economic, and defense point of view, the Natuna Islands are of strategic value. As an archipelagic country, the basis for determining territorial boundaries, continental shelf boundaries, and Indonesia's EEZ is the position of the outermost islands. The Natuna Islands are the outermost islands in northern Indonesia, so the determination of territorial boundaries, continental shelves, and EEZs with neighboring countries such as Singapore, Malaysia, the Philippines, and Vietnam is based on the position of the outermost islands in the island group in the Natuna Islands.

Based on Article 77 of UNCLOS 1982, the coastal state has sovereign rights over the natural resources found on the seabed and subsoil, including oil and gas and hard minerals. This right is the exclusive right of the coastal state, in the sense that if the state does not explore or exploit natural resources on the continental shelf, then no other country can do so without the permission of the coastal state. In the EEZ, the coastal state has sovereign and exclusive rights to utilize natural resources for economic purposes and to produce energy from water, ocean waves, and wind. Coastal states also have the right to research and conserve the marine environment within their EEZ. This is stated in Article 56 of UNCLOS 1982.

These exclusive rights are closely related to a country’s economic interests and scientific research. Marine and germplasm research conducted in the waters of the Natuna Islands will contribute significantly to the development of Indonesian science. Natuna waters are fishery pockets whose potential has not been fully exploited. Indonesia has the right to exploit the potential of these natural resources up to the continental shelf and EEZ. On the other hand, the hydrocarbon reserves contained in the Natuna waters are substantial. Natural resources in the Natuna Islands are the capital of Indonesia's development.
Development of the East Natuna Block for Indonesia's Energy Security

Energy security in Indonesia is based on the 4A 1S concept. The term is translated into availability (availability), accessibility (access to available energy sources), affordability (users' purchasing power for available energy), acceptability (acceptance of a type of energy), and sustainability (sustainable). These indicators are then used as the basis for measuring the condition of a country's energy security.

Availability indicators measure energy availability within a certain period, both short-term and long-term energy availability. The need for energy increases in line with projected economic growth, especially for fossil energy types in the form of oil, gas, and coal. Based on the IEA estimates quoted by Batubara et al. (2014), the average world gas demand increases by 1.6% per year. In 2013 world gas demand was 3.4 TCM and is expected to increase to 5 TCM in 2035, with the highest demand coming from China (6.6%) and Asia (4.4%). As for Indonesia itself, it is estimated that gas demand during the period 2014-2025 will increase by 4.7% to 5.2% per year (BPPT, 2016).

Four sectors are the primary consumers of gas in Indonesia: industry, transportation, power generation, commercial, and household. Sequentially, the most significant growth in natural gas utilization was in the commercial sector at 6.1% per year, followed by the transportation sector (5.9%), industry (5.2%), power generation (3.9%), and households (0.9%). Meanwhile, the industrial sector uses natural gas the most, which accounts for 43% of the total gas utilization. This figure is predicted to increase to 65% in 2050 (BPPT, 2016). The Ministry of Energy and Mineral Resources (2014) noted that since 2003 the average demand for gas has increased by 9% per year, and since 2013 the volume of gas to meet domestic needs has been greater than exports.

East Natuna Gas as National Development Capital

Referring to the concept of national power from Morgenthau, ownership of natural resources is one of the capital to ensure a country's sustainability (existence). It determines the country's position on the world political stage. Morgenthau specifically stated that energy resources are vital natural resources for a country. Ownership of energy resources affects the bargaining position in international politics because energy resources are significant for industry and defense. Ownership of energy resources supported by military preparedness will increase a country's bargaining position, thus helping to achieve the country's interests on the
Development is a vital national goal. Development is aimed at the greatest prosperity of the people. Development is carried out in all fields, namely economic development, human resource development, defense development, and socio-cultural development. The principal capital of development is Indonesia’s wealth of natural resources, as mandated by Article 33, paragraph 3 of the 1945 Constitution. Development often begins with economic development aimed at reducing poverty levels. Mc Kinsey estimates that by 2030 Indonesia will become the seventh economic power in the world, surpassing Germany and the UK. To achieve this, of course, it is necessary to support the guarantee of energy availability which is the backbone of the economy.

Energy availability is a national interest that must be fulfilled to realize Indonesia’s prediction of becoming one of the world’s economic powers in 2030. In a narrow sense, national interest is defined as the basic things of a state to survive, and in a broader sense, it is defined as the strength of a state. The national interest is achieved through policy instruments. The policy of managing energy reserves, which are strategic natural resources, dramatically determines the achievement of national interests in energy availability to ensure the passage of national development. On the other hand, the success of a country in managing its natural resources, especially energy resources, will increase its bargaining power on the international political stage.

By the inward-looking principle adopted by the Indonesian people, the achievement of national interests is prioritized from the utilization and management of national power, one of which is energy resources. In line with this, energy is no longer seen as an economic commodity but as national development capital. If energy resources are managed solely based on economic profit and loss, in a more extensive scope, it will hinder development. Therefore, the management of energy resources, especially fossil energy, must consider things outside of economic calculations, which can be a driving force for national development.

Contribution of the Development of the East Natuna Block to Defense Development in the Natuna Islands

National defense is all efforts to defend the sovereignty, territorial integrity, and safety of the entire nation from threats and disturbances to the integrity of the nation and state. The development of defense forces in a country cannot be separated from the development of the strategic environment and the increasing
threat escalation, both military threats, non-military threats, and hybrid threats. The defense of border areas is an effort to realize the existence of a country marked by the protection of sovereignty, population, and territory from various threats.

Strength development in the Natuna Islands aims to anticipate the escalation of military and non-military threats. The military threat to be wary of is the overlapping claims of countries in the South China Sea that have the potential to become a military conflict. The non-military threat is the theft of natural wealth in Natuna waters, both marine natural wealth and energy resources. The state border in the Natuna Islands is a sea border that is very vulnerable to various conflicts because of the many interests of the state at sea, especially economic interests related to exploration and utilizing natural resource wealth. The importance of developing defense forces in the Natuna Islands is to maintain territorial integrity while at the same time protecting the natural resources contained there, especially hydrocarbon reserves.

From the defense aspect, the availability of energy dramatically affects the country's defense capability. The study of energy security begins with a policy study on meeting the supply of fuel for military fuel needs. In a narrow sense, energy security is defined as a guarantee of the availability of energy as fuel for defense equipment so that in conditions of crisis, the military can continue to carry out their duties of securing the country from attacks or assisting in overcoming natural disasters. To minimize defense and security disturbances, especially in border areas, the energy needs of defense equipment must be met so that patrols can be carried out regularly and consistently. Operational defense equipment requires high costs and a large volume of energy. The availability of energy directly affects the country's ability to maintain security and defense forces.

The development of the East Natuna block can contribute to the development of defense in the Natuna Islands, both in the form of funds and energy availability. The development of defense forces in the Natuna Islands requires enormous costs, both in terms of procurement as well as maintenance and operations. Data from the Ministry of Defense shows that the estimated funding requirement for constructing the Natuna Islands military base reaches 3.7 trillion or equivalent to US$ 280 million. This requirement does not include operating costs. Based on the economic calculations on pages 87 and 88, the amount needed to build a defense force in the Natuna Islands is much smaller than the government’s potential revenue if the East Natuna block develops. Funding to build the base can be taken from government revenue based on economic calculations, namely income in the form of taxes. Another funding option is income devoted to a defense based on modified economic calculations. Funds for defense are drawn from after-tax income while maintaining a minimum IRR of 12.5%.
Risk Estimation of Indonesia’s Losses if the East Natuna Block Development Policy is Not Appropriate

The estimation of the risk of loss that Indonesia will bear if the policy of developing the East Natuna block is not correct is not only measured by economic risk but also from other dimensions of risk, namely political risk and defense security risk. There are two ways to analyze risk, namely quantitative analysis, and qualitative analysis. Quantitative analysis is used for things that can be calculated mathematically, while qualitative analysis is used for things that cannot be calculated mathematically. Qualitative analysis is usually carried out to set priorities in risk management planning.

The risk that can be calculated mathematically is the economic risk in the form of loss of potential government revenue from the development of the block, which ranges from US$ 10.29 billion – US$ 15.62 billion. Then, regional development and economic development in the Natuna Islands are hampered. Based on its position, the Natuna Islands have the potential to become the center of the economy in northern Indonesia, as a center for shipping, trade, marine industry, heavy equipment maintenance industry, and oil and gas industry. The development of this area means potential revenue for the government. However, if not developed, then the potential income will be lost. In order for this potential to be maximally developed, it is necessary to encourage the development of the region.

Risks that cannot be calculated mathematically, such as the magnitude of the threat to the area being claimed by foreigners, are due to the absence of state practice that confirms Indonesia’s ownership and sovereign rights over the area. The existence of a nine-dashed line claim by China increases the urgency of developing this field. The defense risk that may arise is the vulnerability of defense at the border with the South China Sea due to operational cost support or inadequate energy availability. Then the risk of waning the sense of nationalism of the people in the Natuna Islands will directly impact the defense’s weakening there. The vulnerability of defense at the border, both military and non-military, can potentially increase the threat to the territorial integrity of the Republic of Indonesia.
CONCLUSION

Indonesia has at least three interests in the South China Sea, namely: survival interests in the form of sovereignty and sovereign rights; main attractions in the form of ensuring maritime security, the safety of navigation, from threats of violence and law violations, transnational crimes, and environmental protection; and interests of territorial integrity, regional stability, and economy. This paper has conclusions: First, Indonesia is predicted to become the 7th economic power in the world by 2030, surpassing Germany and the UK. To achieve this, it is necessary to guarantee the availability of energy which is the backbone of the economy. The development of the East Natuna block will increase the guarantee of Indonesia’s gas availability in the future. Based on the projected gas demand and availability until 2040, the gas deficit will continue to grow starting in 2020, from 700 MMSCFD that year to around 5000 MMSCFD in 2040. The gas production of the East Natuna block can reduce the gas deficit by 20%. Second, the development of the East Natuna block is a national development capital. The East Natuna block gas production is used for domestic purposes. Part of the gas production in East Natuna is planned for power generation in West Kalimantan and as raw material for the fertilizer and petrochemical industries. The guarantee of the availability of electrical energy will positively impact the people in West Kalimantan, namely by improving the quality of education, improving the quality of health, and entering investment expected to increase local economic activity. So that, in turn, people’s living standards will improve. The development of the East Natuna block will trigger the growth of other industries in the area, such as the petrochemical industry, industry, fisheries, heavy equipment maintenance service industry, and others.

Third, the East Natuna Block is economically feasible to develop with a minimum IRR of 12.5%. The economic calculation for scenario 1 results in an IRR of 13.05 percent, government revenues of US$ 14.29 billion, and contractor profits of US$ 8.04 billion. The economic analysis of scenario 2 results in an IRR of 14.63%, government revenues of US$ 10.29 billion, and contractor profits of US$ 12.05 billion. Financial calculations include defense share, and scenario 1 produces an IRR of 12.58%, total government revenue of US$ 15.62 billion, divided into US$ 14.29 billion from taxes and US$ 1.33. billion for defense, and contractor profits of US$ 6.72 billion. Fourth, the contractor in the development of the East Natuna block is Pertamina, Indonesia’s largest oil and gas SOE, so part of the contractor’s profits will return to the state through Pertamina. In turn, it will increase state revenue from the development activities of the East Natuna block. Fifth, the development of strength in the Natuna Islands aims to anticipate the escalation of military and non-military threats. The military threat to be wary of is the overlapping claims of countries in the South China Sea that have the potential to
become a military conflict. The non-military threat is the theft of natural wealth in Natuna waters, both marine natural wealth and energy resources. The development of the East Natuna block can contribute to the development of defense in the Natuna Islands, both in the form of funds and energy availability. The construction of defense forces in the Natuna Islands requires high costs.

Sixth, if the funds to build defense needs are taken from government revenues in the form of taxes, then the funds needed to build military bases are only 2.72% of the government’s lowest income scenario, which is US$ 10.29 billion. Operational and maintenance funds will be budgeted annually based on the needs of the TNI Headquarters and each dimension. If taken from the defense share income scenario, the need for military base construction is 21% of the most minor defense share income scenario. Seventh, energy availability is a national interest that must be fulfilled. Countries that can optimize their domestic energy potential will not be too affected if global geopolitical dynamics are unfavorable, such as a war or an embargo. Optimizing domestic energy sources to meet Indonesia's energy needs will make Indonesia an energy-independent and sovereign country so that Indonesia's energy security condition will be good. Eighth, Indonesia's success in managing resources at the border, especially energy resources, will increase Indonesia's power and bargaining position on the international political stage. Activities carried out in the outermost regions send a message to the international community that Indonesia pays attention to every inch of its territory. Hopefully, this action will minimize territorial claims and border conflicts with neighboring countries. The management of the East Natuna oil and gas field is a form of state practice on Indonesia's sovereignty to manage and utilize natural resources in the EEZ area and continental shelf, including energy resources.

Ninth, the management of the oil and gas fields in eastern Natuna, which are designated as capital for national development and the development of defense forces in the Natuna Islands, is following the inward-looking principle adopted by Indonesia. Namely, the achievement of national interests is prioritized from the utilization and management of national power, in line with Article 33 of the 1945 Constitution. The development of defense forces is directed at increasing the country's defense capabilities in facing increasingly complex and diverse threats, based on the universal defense doctrine, which empowers all national resources and infrastructure for defense efforts. Tenth, the risk of loss that Indonesia will bear if the policy of developing the East Natuna Block is not right is not only economical but also a political risk and national defense. The economic risk is the loss of potential government revenue, which ranges from US$ 10.29 billion to US$ 15.62 billion, and delays in regional and economic development in the Natuna Islands. The political risk is in the form of the threat of the territory being claimed by
foreigners because of the absence of state practice that confirms Indonesia's ownership and sovereign rights over the area.

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