

ANALYSIS OF RENEWABLE ENERGY POTENTIAL IN THE IMPLEMENTATION OF NZE 2060 TO SUPPORT DEFENCE IN INDONESIA

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ABSTRACT

This paper discusses changes in environmental quality caused by the increase in the earth's temperature which is increasing every year. The impact of rising earth temperature includes environmental damage, economic losses, and social losses. Therefore, several countries have discussed renewable energy as a solution to withstand the increase in earth's temperature, one of which is through the concept of NZE (Net Zero Energy) which aims to reduce dependence on fossil energy sources. The implementation of NZE in Indonesia in 2060 is expected to support the national Net Zero Emission (NZE) 2060 program, which is a continuation of the follow-up to the Paris Agreement. In addition, the author also relates government support in order to maximize the potential of Renewable Energy in the Application of NZE can also support the defense of the Indonesian state. The research method used is a qualitative method in the form of an objective narrative literature review.

Keywords: Net Zero Emission; Energy Sources; Earth Temperature

INTRODUCTION

Changes in environmental quality are currently a very worrying problem for the sustainability of the world's ecosystems and other living things in the world, this condition is caused by the increase in the earth's temperature which always increases every year (Masson-Delmotte et al., 2021). According to the World Economic Forum, 2020 is the second year with the highest temperature increase since the pre-industrial period in the 1880-1990 period. Meanwhile, the impact of rising temperatures will result in several conditions, such as environmental damage, economic losses, and social losses. Temperatures that continue to increase have resulted in 2011-2020 as the hottest decade ever recorded in history. Based on the results of research conducted by Riza Pratama (2019), shows that there are 10 cities with a large enough decline in land and threatened to sink occupied by the city of Tianjin, China as the first rank then there are several other big cities such as Shanghai in China, Ho Chi Minh and Hanoi in Vietnam, Kobe in Japan to Houston in the United States. As for conditions in Indonesia, two cities are included in the category of 10 cities in the world that are threatened with rapid sinking, namely Semarang Jakarta (Pratama, 2019).

In recent years several countries have been busy discussing renewable energy, the discussion originated from a meeting at the 21st Conference of the Parties (COP) in Paris in 2015 by several member countries of the United Nations (UN) which gave birth to the Paris Agreement. The essence of the discussion is an agreement together to support the containment of the increase in the earth's temperature. Several efforts have now been made to realize containment of the increase in earth's temperature, one of which is to encourage the use of renewable energy (Mangunjaya, 2015).

NZE (Net Zero Energy) is a concept that refers to a building or area that produces enough energy to fulfill its own energy needs and can even produce more energy that can be fed into the public grid. The implementation of NZE in Indonesia by 2060 aims to reduce dependence on dwindling fossil energy sources and contribute to improved energy efficiency and quality. To support the implementation of NZE, an analysis of renewable energy potential needs to be conducted to determine which types of renewable energy sources have the most potential in an

area. According to Nurdiansyah (2020), the energy transition is a long process that must be carried out by countries in the world to reduce carbon emissions that can cause climate change (Nurdiansyah et al., 2020). The agreement in the energy transition aims to go to the same point, namely the increasing use of clean energy. In a seminar held by ITB on September 2, 2022, the Head of the Postgraduate Study Program in Nuclear Science and Engineering, Sidik Permana said that the Government of Indonesia has currently designed a national program, namely the Net Zero Emission (NZE) 2060 program. This program is a continuation of the follow-up to the Paris Agreement, with 164 countries participating and followed by the signing and ratification process by participating countries, while Indonesia itself is one of the countries that attended and signed and committed to supporting the greenhouse gas (GHG) effect program by adopting new and renewable energy (EBT). In the NZE program, the contribution of NRE will be dominant and at the same time fossil energy will gradually decrease before 2060 and the contribution of nuclear energy becomes one part of NRE.

National Defense is a defense in the form of military and Non-military or commonly said to be Non-Military. In this article, the author relates government support in order to maximize the potential of Renewable Energy in the Application of NZE can also support the defense of the Indonesian state.

RESEARCH METHOD

Researchers in this study used a qualitative method in the form of an objective literature review narrative as a reference in conducting a literature review or through a literature study. The stages in this research began with collecting information, data, and literature, analyzing information, and writing reviews. The information, data, and literature sought by researchers are by the theme to be studied, namely related to the NZE Program and its relation to National Defence in Indonesia. In searching for and obtaining data sources and supporting information, researchers utilized information from books, journals, and electronic media. After obtaining sources and information that complement each other, researchers test the truth of the information and sources that have been obtained or called the historical criticism method. After criticizing the method, then the interpretation is carried out (Cozby et al., 2012).

The discussion that will be outlined related to the NZE Programme in this research is about how the readiness and implementation in Indonesia and how the NZE program relates to strengthening the defense of the Indonesian State. Furthermore, the researcher will elaborate on the support of the Government of Indonesia in the planning and implementation of the NZE Programme, in addition, the researcher will explain the challenges that will be faced in facilitating and supporting the NZE Programme, so that the program is not only beneficial for the earth but also one aspect in strengthening national defense.

RESULTS AND DISCUSSION

Renewable Energy in NZE Implementation

The NZE program is a program of activities that requires industrialized and developed countries to support and cooperate to achieve net zero emissions by 2060. The NZE program aims to encourage new regulations in various countries in the provision of electrical energy. According to Rahma (2018), conventional power plants that have been using coal such as Steam Power Plants (PLTU) are the main focus for new policy arrangements that are adjusted to the NZE program, this is made the main focus because PLTU produces CO₂ emissions and its operation still prioritizes the electricity system in several countries, where Indonesia is one of the countries in it (Rahman, 2018).

The current policy direction of Indonesia's electricity system refers to the Paris Climate Agreement, where the role of the Government of Indonesia is to encourage and innovate in the availability of national electrical energy. The innovations that will be developed should also consider aspects that also support the NZE program, where the innovations will also support the reduction of environmental pollution. The government to date has attempted to take various steps

and policies to align the national energy supply in supporting the NZE program (Widyaningsih, 2018).

The government has made efforts and issued regulations that support the use of renewable energy as stipulated in Presidential Regulation No. 112 of 2022 concerning the Acceleration of Renewable Energy Development for Electricity Supply, but there are not many derivative regulations issued by the Regional Head to support Central Government policies.

In a book issued by the Fiscal Policy Agency, the Ministry of Finance (2018) states that new and renewable energy plays a very important role in increasing energy security and decarbonizing the global economy. The government has established a National Energy Policy (KEN) regulated in Government Regulation (PP) Number 79 of 2014 which is one form of implementation of renewable energy support. The government targets that by 2025 the use of new and renewable energy will reach 23% and 31% by 2050 (Kementrian Keuangan, 2018).

Renewable Energy Potential to Support Defence in Indonesia

According to news sourced from Detik.com on 27 February 2023, the Indonesian government plans to transition to new and renewable energy. The policy will also be supported by Minister of Energy and Mineral Resources (ESDM) Arifin Tasrif in a coordination meeting with Commission VII of the House of Representatives. According to him, the government will strive to optimize the use of new and renewable energy such as solar, wind, and water energy to reduce dependence on fossil fuels.

On the other hand, the government will also increase the defense budget in 2023. Based on news published by Kompas.com on 27 February 2023, the defense budget in 2023 reached IDR 143.4 trillion, an 11.8% increase from the previous year. This budget will be used to improve Indonesia's defense capabilities, including improving military readiness and procuring defense equipment.

In the context of energy policy, Arief (Arief et al., 2020) stated that the government's plan to accelerate the transition to new and renewable energy is in line with the theory of energy policy that prioritizes sustainability and energy efficiency. This policy is also in line with Indonesia's commitment to reduce greenhouse gas emissions and fulfill the emission reduction target under the Paris Agreement. However, to achieve these goals, strong support from various parties is needed, including the industrial sector and the community. In addition, policies and regulations that support the development of new and renewable energy are also needed, including fiscal incentives and the elimination of fossil fuel subsidies.

Net Zero Emission (NZE) and Indonesian defense are two interrelated topics, as seen: (Dewantoro, 2022)

1. In order to maintain national security and resilience, Indonesia's defense must also consider the environment as an important factor in its defense strategy. NZE can help reduce negative impacts on the environment and climate which in turn can help improve national resilience and environmental defense.
2. As a country rich in natural resources, Indonesia can use NZE as a way to utilize renewable natural resources such as solar and wind energy. This can help reduce dependence on fossil fuels that are prone to price fluctuations and can also improve national energy security.
3. Climate change impacts on national security: Climate change can impact national security and stability, as natural disasters can damage critical infrastructure and disrupt social and political stability. NZE can help reduce greenhouse gas emissions and slow climate change, which in turn can help reduce the risks associated with climate change impacts on national security (House, 2021).

In order to strengthen national defense, NZE can be part of a broader strategy to strengthen Indonesia's national resilience. Through the use of renewable natural resources and participation in global climate diplomacy, Indonesia can strengthen its international profile and strengthen relations with other countries that are also committed to the NZE goals (Susmoro, 2019).