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Energy Management Strategy For State Defense Toward The Energy Crisis

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Abstract

Energy needs to support activities make energy an influential factor for everyday life. The guarantee of the availability of energy supply which has decreased requires diversification. Energy for defense requires a management planning strategy by supporting government programs, namely the energy mix using new and renewable energy (EBT). Through this research, it is hoped that an effective and efficient energy management strategy for national defense can be obtained in the face of the energy crisis experienced by Indonesia. The method used is by conducting literature studies through policies related to defense and energy and studying existing phenomena. The results showed that the need for electricity to support military base operations can use power plants with renewable energy sources. Regional arrangement based on the energy potential that is owned can be used as a strategic area for the formation of a defense area plan. The synergy between the targets of the National / Regional Energy General Plan (RUEN / D) and the Regional Defense Plan (RWP) can create infrastructure that can support the management and utilization of energy for military bases. Strategies that can be carried out are to carry out an inventory of the potential for new and renewable energy in various regions, do more in-depth research, make plans in more detail and finally determine energy generators that are suitable for availability and needs.

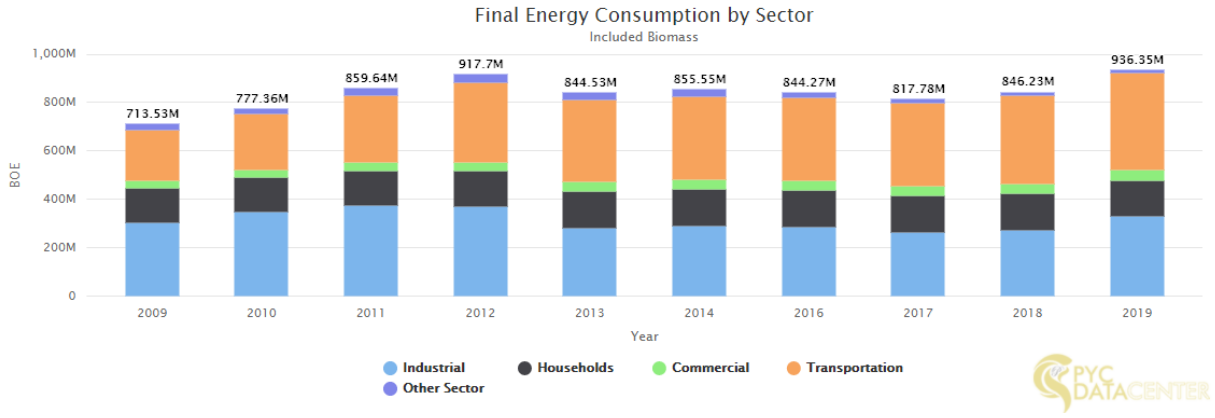
Keywords: Energy Crisis, Management, and Defense

Introduction

Energy Crisis

Energy is a strategic commodity because of its dependence on energy throughout the system and the dynamics of human life with countries from various sectors. Energy is a problem for human life and has become part of the interests of all countries in the world. Energy sustainability greatly affects the pace of the national economy. Therefore, energy is one of the important elements in ensuring national resilience (Kementerian Pertahanan, 2015). Judging from the level of final energy consumption in each sector from 2009-2019, it continues to increase with the dominance of the use of final energy from the transportation sector. Here is a graph of the final energy consumption per sector can be seen below.

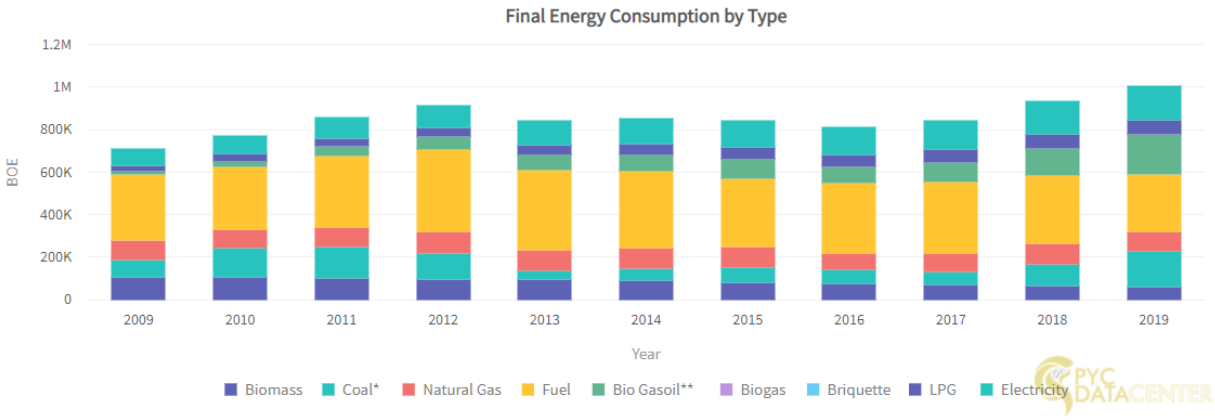
Picture 1. Final Energy Consumption by Sector



Source: Purnomo Yusgiantoro Center, 2020

The use of energy from the transportation sector is still dominated by the use of fossil energy. As can be seen in the figure below, the level of final energy consumption from 2009-2019 was still dominated by the use of fuel, although it had decreased compared to previous years. Below is a graph of the final energy consumption per type.

Picture 2. Final Energy Consumption by Type



Source: Purnomo Yusgiantoro Center, 2020

The high use of fuel has added to the dependence on energy imports to meet demand, both in the form of imports of crude oil and imports of fuel (BPPT, 2019). The level of consumption of fossil energy, which is still dominated by use in Indonesia, includes the need for coal exports to increase state income. Meanwhile, the use of coal to support or replace BBM still requires further technology. The energy used for daily activities is currently mostly sourced from fossil energy, such as petroleum, coal, and natural gas. Fossil energy is energy that comes from non-renewable resources that have a limit on the availability of the source. If the number of available energy sources reaches its limit, there will be an energy crisis which gradually affects the national economy (Kementerian ESDM, 2016). Energy management in Indonesia is seen from 5 indicators known as 4A + 1S, namely Availability, Accessibility, Affordability, Acceptability, and Sustainability. Limited fossil energy sources result in obstacles to the sustainability indicator. At present, not only are the

sources of fossil energy limited, but the technology they have is still inadequate to extract and manage energy from inaccessible locations. The threat of this energy crisis is the basis for the United Nations (UN) to change its mindset to switch to using renewable energy sources known as renewable energy sources and by mobilizing all the countries that are members of the UN.

Energy dan Defense

Energy needs are needed by all sectors because they have an impact on the national economy and the level of social welfare. Therefore energy is one of the strategic logistics, apart from water and food, given the very large role of energy in human life. For defense, energy is a part that plays a role in national defense, besides energy is a part that plays a role in directly supporting national defense. The defense sector is an energy user whose supply must always be guaranteed. The defense sector in its energy use function is still dominated by the use of energy from fossil energy sources. The limited availability of fossil energy sources is an important focus where the availability of energy supplies affects national defense efforts.

The elements contained in Indonesia's national resilience are known as Asta Gatra, which consists of the Tri Gatra and Panca Gatra. The Tri Gatra explains the elements of natural resources and national defense. In Undang-Undang Nomor 3 Tahun 2002 tentang Pertahanan Negara, natural resources are used as a reserve component and a component intended to support the main component, this is as explained in Article 8 of the UU. So that the main purpose of exploiting and managing natural resources in this case is to support national defense efforts. State defense functions to safeguard national sovereignty and territorial integrity as well as the safety of the nation from various threats, challenges, obstacles and disturbances (ATHG). In Undang-Undang Dasar Negara Republik Indonesia Article 33 paragraph (3) it is stated that "The land and water and natural resources contained therein are controlled by the state and used for the greatest prosperity of the people." Thus the energy generated from natural resource management must be properly maintained and controlled by the state.

National defense in Indonesia is pursued by taking into account the geographical constellation as an archipelagic country that has thousands of islands and borders with many countries, 10 (ten) countries at sea and 3 (three) countries on land. The territory of Indonesia which stretches from East to West is divided into 3 (three) time zones showing how big and wide the area must be maintained. This certainly affects the provision of energy support needed for national defense activities, especially in areas that are difficult to reach but are the spearhead for national defense in border areas. Therefore, good resource management is needed to ensure the availability of energy for national defense, so that defense efforts can be carried out optimally in guaranteeing the country's sovereignty.

In Undang-Undang Nomor 23 Tahun 2019 tentang Pengelolaan Sumber Daya Nasional untuk Pertahanan Negara, it is explained that natural resources are part of the national resources that are managed to face threats. Natural resources are managed so that they become energy used to support the main components, so that they are included in the category of supporting components in the effort to organize national defense. Currently, the concern is the diminishing reserves of energy originating from fossils. In addition, the continuous management and use of fossil energy will result in a greenhouse effect that triggers global warming. So it is necessary to make efforts to provide energy that is more environmentally friendly.

With this in mind, to support energy for national defense, proper energy management is required based on 3 (three) main pillars in implementing energy policies, namely [1] energy

security, which is related to how to maintain energy supply; [2] energy equity is carried out to maintain the welfare of the community and ensure the availability of modern, clean and sustainable energy access; and [3] environmental sustainability so that energy development should always pay attention to environmental conditions, which in turn ensures the stability of economic conditions.

Energy Policies in Indonesia

In the effort to manage energy in Indonesia, as regulated in the Undang-Undang Dasar Republik Indonesia 1945 article 33 article 3 "The land and water and natural resources contained therein are controlled by the state and used for the greatest prosperity of the people." It means that energy is included as one of the resources that must be safeguarded because it is controlled by the state. Not only that, the government also has the responsibility to manage energy for the prosperity of the people. The government regulates that energy diversification is carried out with alternative uses of non-fossil energy (new and renewable energy) where the availability of energy sources is abundant and realizes the important role of energy for increasing economic activity and national resilience, as written in Undang-Undang Nomor 30 Tahun 2007 tentang Energi (Pemerintah Republik Indonesia, 2007). In implementing regulations related to Undang-Undang Nomor 30 Tahun 2007 tentang Energi Article 12 paragraph (2) and Article 17 paragraph (1), the National Energy General Plan is stipulated in the Peraturan Presiden Republik Indonesia Nomor 22 Tahun 2017 tentang Rencana Umum Energi Nasional (RUEN). RUEN was formed to describe and as a plan for implementing the National Energy Policy (KEN) which is cross-sector in nature. RUEN is an energy management plan at the national level, and the Regional Energy General Plan is at the provincial level (Pemerintah Republik Indonesia, 2017)

The government also regulates spatial planning to strengthen national resilience based on the insight of the archipelago. In this regulation, Undang-Undang Nomor 26 Tahun 2007 tentang Penataan Ruang regulates natural resources (energy) with due regard to energy potential with the aim of having infrastructure and facilities for the public interest. Following up on the existence of UU No 26 Tahun 2007, the defense sector is also committed to playing a role by implementing implementing regulations in the form of Peraturan Pemerintah Republik Indonesia Nomor 68 Tahun 2014 tentang Penataan Wilayah Pertahanan Negara. This PP regulates defense area planning by indicating the location of the defense area for the benefit of national defense, namely in the form of a Defense Area Plan (RWP) (Pemerintah Republik Indonesia, 2014). The defense sector as an energy user also supports government programs related to energy management planning as stipulated in the Undang-Undang Republik Indonesia Nomor 23 Tahun 2019 tentang Pengelolaan Sumber Daya Nasional which explains the management of main components, reserve components and supporting components (Pemerintah Republik Indonesia, 2019).

Management Strategy

Discussing strategic management cannot be separated from an understanding of strategic management. Strategic management is a process of decision-making and actions that lead to the development of effective strategies or those that help the company achieve its goals (Taufiqurokhman, 2016). The process or series of decision-making activities is fundamental and comprehensive, accompanied by the determination of how to carry it out, which is made by the leadership and implemented by all levels in an organization to achieve goals. Strategic management is generally used to be able to plan a long-term action by taking into account all aspects that will influence and influence the outcome of the decision. Strategic management can also be defined as

the art and science that formulates, implements, and assesses cross-functional decisions that enable an organization to achieve its objectives (Nugraha, 2014).

Furthermore, regarding strategy, there are several definitions, including according to Marrus (2002: 31), strategy is defined as a process of determining the top leaders' plan that focuses on the long-term goals of the organization, along with the preparation of a method or effort to achieve these goals. Furthermore, Quinn (1999: 10) defines strategy as a form or plan that integrates main goals, policies and a series of actions in an organization into a unified whole. A well-formulated strategy will help compile and allocate company-owned resources into a unique and durable form. A good strategy is prepared based on the company's internal capabilities and weaknesses, anticipation of changes in the environment, and the unity of movements carried out by enemy spies.

Next is about management which in the Big Indonesian Dictionary has 4 (four) meanings, namely:

1. Management is a process, method, act of managing;
2. Management is the process of carrying out certain activities by mobilizing other people's personnel;
3. Management is a process that helps formulate organizational policies and goals; and
4. Management is a process that provides supervision on all matters involved in implementing policies and achieving goals.

Based on some of the definitions described above, strategic management is a decision-making process to formulate a policy in achieving organizational goals. In relation to this research, strategic management is used to determine appropriate, effective and efficient policies regarding energy supply to support national defense.

Research Methods

In this study using a qualitative descriptive method by providing an overview of Indonesia's current condition and studying energy management strategies. The analysis was carried out using literature studies.

Results and Discussion

Synergy of the Regional Defense Plan (RWP) and the National/Regional Energy General Plan (RUEN/D)

The synergy between the Ministry of Defense and other Ministries/Institutions, local governments and related parties in defense area planning development planning is needed. This is closely related to the issue of regional spatial planning in each region which must provide space for defense. Ryamizard Ryacudu when serving as Minister of Defense of the Republic of Indonesia once emphasized that "The real arrangement of the defense area cannot be separated from the concept of spatial planning of the national territory which is a shared responsibility, where this defense area is a national strategic area whose spatial planning must be prioritized" (Ihsan & Febriana, 2019). This was conveyed by Ryacudu when providing understanding and increasing the synergy of all stakeholders related to the arrangement of the state defense area in order to realize a strong national defense, in July 2019 during the Symposium "Arrangement of Defense Areas in Order to Realize a Tough State Defense" organized by the Ministry of Defense.

Through this symposium, it is hoped that it can produce ideas and views on how to organize a good defense area from various aspects and perspectives, so that it can be used as input in formulating a reliable national defense policy. As it is well known that the regulation regarding the state defense area has been listed in Peraturan Pemerintah Nomor 68 Tahun 2014 tentang Penataan Wilayah Pertahanan Negara. However, in its implementation there are often obstacles because it collides with regional interests. Therefore it requires synchronization and synergy from all related parties. As a national guideline for spatial planning and state territory it has been regulated in Undang-Undang Nomor 26 Tahun 2007 tentang Penataan Ruang dan Undang-Undang Nomor 43 Tahun 2008 tentang Wilayah Negara.

The substance of the various regulations above clearly regulates that certain spaces and areas are declared as strategic / defense areas and the implementation of this defense area arrangement is carried out in an integrated manner with national spatial planning, provincial spatial planning and regency / municipal spatial planning. The defense area is determined by taking into account the defense function and regional interests (Kementerian Pertahanan, 2019).

Furthermore, based on this regulation, each region also makes policies related to their respective spatial arrangements. In the manufacturing process, not all of them have paid close attention or involved the defense sector, this is what ultimately becomes an obstacle. The various development policies at the central and regional levels that have been running to date, have not yet been integrated with the concept of structuring the defense area. Massive infrastructure development lately should very possibly be synergized with the concept of zoning for the benefit of national defense. The construction of air / sea ports, expressways, bridges, state roads that have almost opened up access to all corners of the country should need synchronization with defense interests.

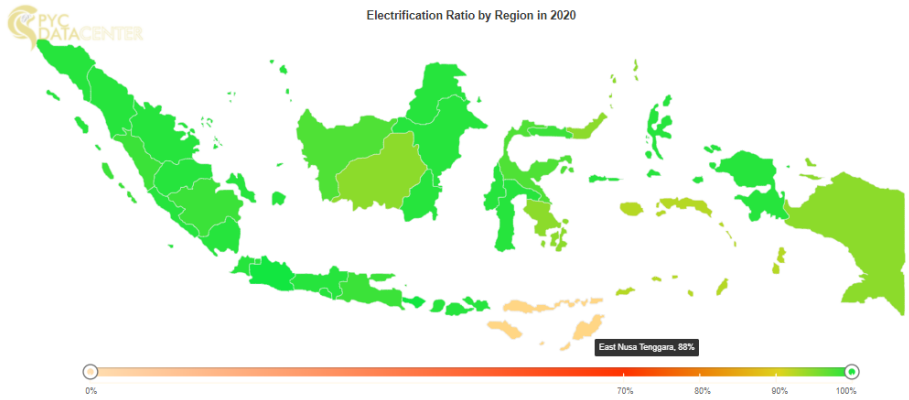
One example of a case is the construction of the Red and White Bridge in Halong, Ambon. When making plans for the height of the bridge to sea level, it did not coordinate with the Indonesian Navy, so the altitude was not sufficient for the KRI to pass through to get to the TNI AL Base pier. In the end, the position of the Indonesian Navy jetty had to be moved, thus increasing construction costs and ineffective time. This incident emphasizes the importance of synergy between the Ministry of Defense and related Ministries / Agencies as well as local governments in defense area planning development, including matters related to the general plan for energy supply.

The energy available in each region has different capacities and characteristics. The need for energy for defense is crucial because it involves state sovereignty, so that good, effective and efficient energy planning is needed. Therefore, all related entities from the central and regional levels need to sit down together and make a well-synchronized plan, including exploring all the existing energy potentials.

Renewable Energy Potential

The need for electrical energy supply in Indonesia is still not distributed evenly. It can be seen that based on the results of the electrification ratio data until the end of 2020, East Nusa Tenggara (NTT) is the region with the lowest electrification rate in Indonesia, with a percentage of 88%. The following is a map of the electrification ratio in Indonesia.

Picture 3. Electrification Ratio in Indonesia



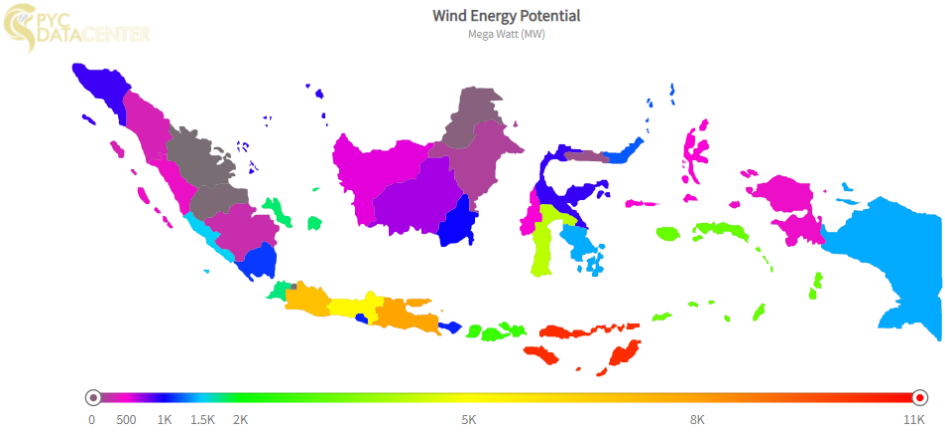
Source: Purnomo Yusgiantoro Center, 2021

When viewed from the strategic area in East Nusa Tenggara, it is included in the outer islands, where there is a land border area with East Timor, and a sea border with Australia. The NTT region also has abundant natural gas potential, namely in the Masela block. It is not only the area of state sovereignty that needs to be safeguarded, but the potential for natural gas is included as a national vital object that needs to be safeguarded and maintained.

There are several new and renewable energy potentials in Indonesia, including solar, wind, mini hydro, micro hydro, biomass, waves, and so on. Based on the results of calculations from the Strategic Planning section of the Director General of Renewable Energy and Energy Conservation (EBTKE) processed by the Purnomo Yusgiantoro Center (PYC), the following data were obtained:

1. The potential for wind energy in Indonesia, with the largest wind energy potential is in East Nusa Tenggara, amounting to 10,190,000 MW.

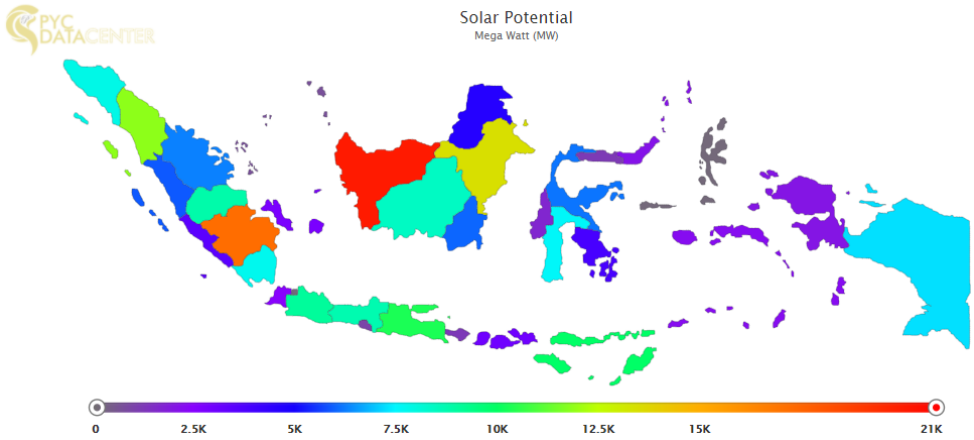
Picture 4. Wind Energy Potential in Indonesia



Source: Purnomo Yusgiantoro Center, 2021

2. The potential for solar energy in Indonesia, with the greatest potential for solar energy is in West Kalimantan, amounting to 20,110,000 MW.

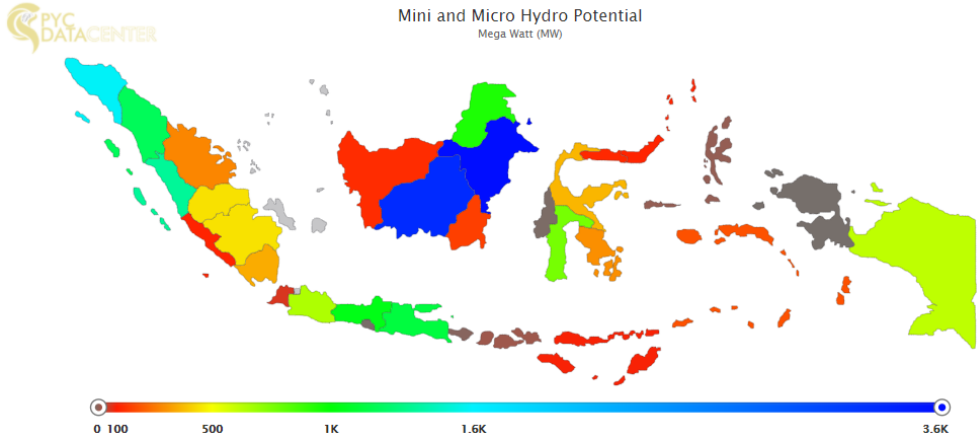
Picture 5. Solar Potential in Indonesia



Source: Purnomo Yusgiantoro Center, 2021

3. The potential for mini and micro hydro energy in Indonesia, with the largest potential for mini and micro hydro energy is in East Kalimantan, amounting to 3,560,000 MW.

Picture 6. Mini and Micro Hydro Potential in Indonesia



Source: Purnomo Yusgiantoro Center, 2021

Energy Management Planning for Defense

Based on national and regional energy planning, which targets energy diversification due to limited fossil energy which is continuously used to support human activities. For the defense sector as energy users, energy consumption in defense is divided into 3 functions, namely for combat vehicles (ranpur), tactical vehicles (rantis), and military bases. These three functions are still dominated by fossil energy in their utilization. Meanwhile, the availability of fossil energy has decreased and is not friendly to the environment and technological innovation is needed by looking at the potential for new and renewable energy that can be utilized.

The energy management plan for defense that can use new and renewable energy sources is a military base. In line with the goal of achieving the target of energy diversification by demonstrating a commitment to support from the defense sector. Based on data on the potential

for EBT found in several regions of Indonesia, it can be used as the basis for making energy management independently by the defense. For example, the construction of a wind power plant (PLTB) in NTT was carried out by the defense, especially in border areas, to support defense duties and responsibilities to guard the border area.

The making of PLTB can be used as input and learning material in planning energy management for defense needs. Strategies that can be carried out are as follows:

1. Inventory of the potential for EBT in each area where there are military bases and supporting infrastructure, including those owned by civilian and private agencies as supporting components.
2. In-depth follow-up research to determine alternative types of energy generation to be made, including carrying out an environmental feasibility study.
3. Planning in detail based on the results of the research obtained until the amount of budget needed is obtained.
4. Choosing the best alternative for the type of energy generation to be made.

Since the beginning, all of these activities have involved all related parties including representatives of the local community who will also benefit from the development impacts that will be carried out.

Conclusion

Based on the research that has been done, the following conclusions can be drawn:

1. Whereas in order to manage energy for national defense, synergy is needed between the Ministry of Defense and related Ministries / Agencies as well as local governments and other elements of society, especially in relation to the arrangement of the defense area and the general plan for national / regional energy. Then for the energy crisis that comes from fossils, it can be resolved by making efforts to provide energy through the utilization of the potential of EBT that is owned in each region.
2. Energy management strategies that can be implemented are: further research; make a detailed plan; and the selection / determination of energy generation alternatives.

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