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New and Renewable Energy Policy Implementation for Sustainable Development

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ABSTRACT

Humans are the driving force in all activities on this earth, for this reason human individuality is an important point, to accelerate himself and hone his skills properly, in order to optimize his function as an individual creature. Besides that, because humans also live in society (Zoon Politicon) they must also contribute to the order of life of society and the state as mandated by the constitution, the existence of control and exploitation of natural resources that are fundamental to the life of the nation and state is carried out by the state, including energy natural resources that can be encouraging the growth and improvement of just law, as well as the application of new and renewable energy policies for sustainable development in Indonesia. Based on constitutional support and the need for a legal umbrella to protect new and renewable energy, it is necessary to regulate it comprehensively. This study aims to determine the application of new renewable energy policies for sustainable development. This research method uses a normative juridical research method with a case approach and statutory approach (statute approach). The implementation of new renewable energy policies for sustainable development shows that it has not been optimally implemented, especially in Indonesia, while Indonesia has the potential for large sources of new and renewable energy. However, utilization of this potential is still not maximized due to technological limitations and economic considerations. The business scheme and types of new renewable energy generators which are still small scale are not yet optimal, and the interconnection system is still limited. Therefore, the need for an important urgency in regulating the application of new and renewable energy policies for sustainable development must have a legal basis in its implementation.

Keywords: *Policy Implementation, Renewable energy, Sustainable Development*

A. Introduction

The development of new and renewable energy, if implemented seriously, can contribute to sustainable development. However, currently Indonesia is still dominated by non-renewable energy such as coal, oil and natural gas. Non-renewable energy has a very limited amount in the bowels of the earth, with continued use this natural resource will run out and cannot be renewed. So, when all the non-renewable energy is used up it will take a long time to replace it. To anticipate this, we can utilize new and renewable energy so that the natural resources in Indonesia can be used for a longer period of time.

Renewable energy sources are energy sources that are produced from sustainable energy resources if managed properly, including geothermal heat, wind, bioenergy, sunlight, water flows and waterfalls, as well as movements and temperature differences in the ocean layers.[1] To carry out sustainable development, of course new, renewable energy is needed, this is because city governance is one of the biggest challenges today, and success or failure in promoting sustainable cities will contribute to achieving global sustainable development goals.[2]

Sustainable development indicators have emerged in the development of urban planning, covering aspects such as basic needs, resource efficiency, overall emissions and commitment to sustainable development, as evidenced by funding and the number of professionals. These aspects must be taken into account to answer the challenges of population growth in urban areas.

Therefore, in carrying out sustainable development, policies are needed as a basic reference and support for the implementation of the program, especially in terms of the use of new and renewable energy in sustainable development. Development an inclusive economy is the most effective way to reduce poverty and increase prosperity. Most of these activities are impossible without the availability of modern energy that is reliable and efficient.

Energy and its use must be efficient, sustainable and renewable. In the last 20 years, several countries have made great strides in reducing energy intensity. If all currently available energy efficiency technologies were implemented, energy consumption could be significantly cut by around one third. However, only a small part of this potential has been realized, through a combination of several energy efficiency technologies, good building design.

In many cases, these buildings generate solar power that is fed into the grid for use by others. Of course, apart from energy efficiency, policy reform and eliminating subsidies, it is also necessary to ensure that countries switch from fossil fuels to renewable energy. Rapid technological advances have lowered the cost of renewable energy for each person. We are now seeing large-scale investment in common renewable energies – such as hydropower – as well as advanced technologies such as geothermal, solar and wind power. Between 2010 and 2012, there was a 4 percent increase

[1]Peraturan Pemerintah Republik Indonesia Nomor 79 Tahun 2014 Tentang Kebijakan Energi Nasional.

[2]Kementerian Energi dan Sumber Daya Mineral Direktorat Jenderal Energi Baru, Terbarukan dan Konservasi Energi, "Peran EBT Wujudkan Kota Berkelanjutan di Indonesia", *Artikel,* Jakarta: Gedung Slamet Bratanata, Februari 2021

globally in the use of modern renewable energy – three quarters provided by wind, solar and hydropower.[3]

Indonesia has enormous opportunities for renewable energy, especially since Indonesia has very abundant natural resources. Apart from that, Indonesia's tropical climate is very helpful for developing renewable energy, especially wind, water and solar to support sustainable development. The formulation of problem are 1) What are the benefits of using the new renewable energy? 2) What are the policy steps for using new and renewable energy? 3) What is the potential for new renewable energy sources in Indonesia? This research method uses a normative juridical research method with a case approach and statutory regulations (statute approach).

B. DISCUSSION

1. Benefits of Using New Renewable Energy

According to Law Number 30 of 2007 concerning Energy, energy is the ability to do work which can be in the form of heat, light, mechanics, chemistry and electromagnetics .[4] Energy is the most basic human need. Energy is used in various fields to support various activities in daily life. In simple terms, energy is something that can make everything around us happen and we can use energy for everything we do. The reduced production of fossil energy, especially petroleum, as well as the global commitment to reducing greenhouse gas emissions, encourage the Government to increase the role of new energy. and continuously renewable as part of maintaining energy security and independence.

Sustainable development is a paradigm of the development concept. The term sustainable development was first widely introduced by the World Commission on Environment and Development (WCED) through Our Common Future in Niken defining sustainable development as follows: *"Development that meets the needs of the present without compromising the ability of the future generation to meet their own needs"* the meaning of development that meets the needs of the current generation without reducing the ability of future generations to meet their needs.[5]

Meanwhile, sustainable development through energy development can be interpreted as development efforts carried out by utilizing renewable energy sources in a sustainable manner in order to meet current and future energy needs by paying attention to economic, social and environmental aspects. The benefits of new renewable energy are benefits of renewable energy Renewable resources are a great wealth that every country has. Its benefits can be felt throughout time because the quantities are very abundant. On the merdeka.uma.ac.id page, there are several benefits of renewable energy that are important to know, namely reducing global warming; abundant or unlimited energy sources; improve human health; save resources and money and have the opportunity to create jobs.

[3]Kementerian BPN/ Bappenas, "Energi Bersih dan Terjangkau Menjamin Akses Energi yang Terjangkau, Andal, Berkelanjutan dan Modern untuk Semua", https://sdgs.bappenas.go.id/tujuan-7/di akses 5 Oktober 2023

[4]Undang-Undang Nomor 30 Tahun 2007 tentang Energi

[5]Niken Pratiwi, dkk. "Analisis Implementasi Pembangunan Berkelanjutan di Jawa Timur.", 2018, IEP-Vol. 18, No 1, Maret 2018 ISSN (P) 1412-2200 EISSN 2548-1851.

Other benefits of new renewable energyis:[6]

a. Emits low greenhouse gases, phe use of fossil fuels produces large amounts of greenhouse gas emissions that contribute to global warming. According to resource solutions.org, 38% of national carbon dioxide (CO2) is produced from fossil fuel power plants and has a major contribution to climate change. On the other hand, the majority of renewable energy produces little emissions to date.
b. Cost effective, bowing to its local scale production, renewable energy is less affected by geopolitical crises, soaring prices, or sudden disruptions in supply chains. Renewable energy also provides affordable electricity in all countries of the world today, so in the long term it will help stabilize energy prices in the future. In contrast, fossil fuel prices can vary widely and tend to be susceptible to price fluctuations. By relying on renewable energy, this can help protect consumers when fossil fuel prices soar.
c. Creating job opportunities, compared to fossil fuels which are mechanized and capital intensive, the use of renewable energy is more labor intensive. Solar panels require humans to install and wind farms dotechnician for maintenance are two examples of jobs in renewable energy. In this case, more green jobs (*green jobs)* that may be created in relation to the renewable energy sector as opposed to the fossil fuel industry. For example, in 2016, the wind energy industry in the United States employed more than 100,000 employees, more than 500 factories had produced wind turbine parts and produced investment of $13.0 billion.
d. Tough and reliable, using of renewable energy tends to make urban energy infrastructure less dependent on distant sources. This robust nature is important to prevent power shortages in operations. Due to the high dependence of fossil fuels on water as a cooling agent, water scarcity is another risk for non-renewable power plants.
e. Accessible to all, Due to its nature as an affordable energy source, renewable energy can be accessed by everyone. Especially in developing countries, it can be considered as a way to expand energy access for those living in informal settlements and in peri-urban areas.
f. Improving public health mAccording to ucsusa.org, pollution due to the use of fossil fuels is linked to health problems such as respiratory problems, nerve damage, heart attacks and premature death. Using wind and sun to generate electricity does not produce air pollutants. In addition, wind and solar energy do not require water to operate, so they do not have the potential to pollute water sources.

2. Policy Steps of Renewable Energy in Indonesia

According to the Webster Dictionary quoted by Solitchin, the definition of implementation is formulated briefly, meaning (carrying out, providing the means to do something), effect/cause of something. Implementation can be understood as the process of implementing a decision (usually in the form of articles of association, government regulations, court decisions, presidential orders or presidential decrees).[7]

Implementation is not only about the mechanism of translating government decisions into routine procedures through bureaucratic channels, but implementation is about decisions and who gets what from something that is implemented. Therefore, it is no exaggeration to say that implementation is a

[6] https://waste4change.com/blog/contoh-manfaat-renewable-energy/ di akses 5 Oktober 2023.

[7]Abdul Wahab Solihin, Analisa Kebijakan: Dari Formulasi ke Implementasi (Jakarta: Rineka Cipta, 2004), p. 64.

very important aspect of the entire implementation process. Azmi defines policies as social engineering which have a broad impact on life.[8] In addition, the term is more often and widely used in relation to government actions or activities or state behavior in general. In a government system, policy leads to decision making. Policies or policies in government regulations and in everyday life are often heard and implemented.

So far, many people think that policy and wisdom have the same meaning, or even when implementing a policy people say that it is wisdom. For this reason, it is necessary to clarify the differences between the two meanings of policy and wisdom. Policy steps for the use of renewable energy are implemented through:

a. Energy Conservation

Encouraging efficient and rational use of energy without reducing the use of energy that is really needed, conservation on the generator side, which is preceded by an energy audit, reducing the use of electricityconsumptive nature, beauty, comfort, replacing inefficient equipment and managing the time of use of electrical equipment.

b. Energy Diversification

Efforts to diversify the supply and utilization of various energy sources in order to optimize energy supply. In order to diversify, the use of energy from*nonrenewable energy resources*to renewable energy resources, for example: Initiate efforts to replace fuel with Bio-diesel (Bio-Solar) and Bio-Ethanol, Encourage the development of micro hydro PLT in rural areas and reducing the role of fuel generators and replacing them with non-fuel generators (a mixture of 10 percent biodiesel and 90 percent diesel) to IDR 2,400 per liter, a price that is not too high for a more environmentally friendly fuel. With Indonesia's diesel demand of around 23 million tons per year (7.2 million tons imported), the use of B-10 will require 2.3 million tons of biodiesel, or the equivalent of 2.415 million tons of CPO which can be produced from around 700,000 ha of oil palm plantations, and can support around 350,000 oil palm farming families, assuming land ownership of 2 ha per family. There are many advantages to using biodiesel. This type of fuel does not contain carcinogenic sulfur and benzene compounds, so biodiesel is a cleaner fuel and easier to handle compared to diesel. The difference between biodiesel and diesel is mainly in their composition. Biodiesel consists of methyl esters of vegetable fatty acids, while diesel is hydrocarbon.

Basically, there is no need to modify the diesel engine if the fuel uses biodiesel. Biodiesel even has a cleaning effect on fuel tanks, injectors and hoses. Biodiesel does not add to the greenhouse effect like diesel, because the carbon produced is still in the carbon cycle. The energy produced by biodiesel is similar to diesel, so the engine torque and horsepower produced are also similar. Apart from that, biodiesel produces a higher level of engine lubrication compared to diesel. The difference between biodiesel and diesel is mainly in their composition. Biodiesel consists of methyl esters of vegetable fatty acids, while diesel is hydrocarbon. Basically, there is no need to modify the diesel engine if the fuel uses biodiesel. Biodiesel even has a cleaning effect on fuel tanks, injectors and hoses. Biodiesel does not add to the greenhouse effect like diesel, because the carbon produced is still in the carbon cycle. The energy produced by biodiesel is similar to diesel, so the engine torque and horsepower produced are also similar. Apart from that, biodiesel produces a higher level of engine lubrication

[8]Fachruddin Azmi, Islamic Education Policy Empowers Civilization, (Medan: Manhaji, 2016), p. 4.

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c. Energy Intensification

Efforts to search for new energy sources in order to increase energy reserves to be used to produce electricity. Construction of Wind Power Plants in scattered locations (2 units expected to be completed in 2006, and 10 units completed after 2006). Construction of Hybrid Power Plants in remote areas.[9]

3. Potential of New Renewable Energy Sources in Indonesia

In accordance with PP no. 79 of 2014 concerning National Energy Policy, the new and renewable energy mix target in 2025 is at least 23% and 31% in 2050. Indonesia has quite large new and renewable energy potential to achieve the primary energy mix target, as shown in Table 1.1

Table 1.1 Renewable Energy Potential

Type of Energy	**Potency**
Hydropower	94.3 GW
Geothermal	28.5 GW
Bioenergy	PLT Bio: 32,6 GW
	BBN: 200 thousand Bph
Sun	207,8 GWp
Wind	60,6 GW
Ocean Energy	17,9 GW

[9] Imam Kholiq, "Pemanfaatan Energi Alternatif Sebagai Energi Terbarukan Untuk Mendukung Subtitusi BBM", *Jurnal IPTEK*, Vol.19 No. 2, Desember 2015, p. 83-84

Source: Ditjen EBTKE, 2018

Energy supply in Indonesia is regulated by Law Number 30 of 2007 concerning Energy. Specifically, regarding renewable energy, the law mandates that the supply of new energy and renewable energy must be increased by the government and regional governments in accordance with their authority. A derivative of this law is Government Regulation Number 79 of 2014 concerning National Energy Policy (KEN). In the KEN, the EBT target is specifically set with a deadline of 2025 and 2050. In this target, the portion of EBT in the national energy mix must reach at least 23% in 2025 and at least 31% in 2050 as long as the economy is met.[10]

In encouraging the development of EBT for electricity, what Indonesia still needs is regulations and policies related to incentives for the private sector. High renewable energy development targets require private sector contributions, and a supportive investment climate is very necessary. Apart from electricity, Indonesia does not yet have a focus on providing clean energy for cooking. The government's kerosene to LPG conversion program has now reached 52% of Indonesia's population (SEFA, 2017), but there are still many households, especially in rural areas, who are still not reached by this program and depend on kerosene and firewood.[11]

Regarding this policy, the implementation process regarding new renewable energy in Indonesia has not been implemented optimally, this is because the capacity of human resources and technology is still limited. Current domestic policies are also considered not conducive by investors so they are less interested in investing in the renewable energy sector, for example the lack of incentives for developers and the changing dynamics of policy changes.[12]

Renewable energy is a superior alternative option for meeting Indonesia's energy needs and for realizing sustainable development. Policies related to the use of renewable energy for sustainable development have been made by the government, although implementation has not been optimal, this is due to limited technology and human resources who are experts in this matter.

Apart from what has been mentioned above,Some potential and abundant renewable energy sources in Indonesia are wind, geothermal, hydropower, solar, biomass (biogas, solid biofuel and liquid biofuel).

a. Wind Wind is the most abundant renewable energy source in the world. According to the Directorate General of Electricity and Energy Utilization (2009), the potential for wind energy as renewable energy in Indonesia reaches 9290 MW.
b. Geothermal Geothermal or geothermal is renewable energy obtained from geothermal heat. Currently, in the world, including Indonesia, geothermal energy is one of the promising energies of all existing RES.

[10]IESR, "ENERGI TERBARUKAN: Energi untuk Kini dan Nanti", 2017, https://iesr.or.id/wp-content/uploads/2018/11/COMS-PUB-0001_Briefing-Paper-1_Energi-Terbarukan.pdf di akses 5 Oktober 2023.

[11]IESR, "ENERGI TERBARUKAN: Energi untuk Kini dan Nanti", 2017, https://iesr.or.id/wp-content/uploads/2018/11/COMS-PUB-0001_Briefing-Paper-1_Energi-Terbarukan.pdf di akses 5 Oktober 2023.

[12]IESR, "ENERGI TERBARUKAN: Energi untuk Kini dan Nanti", 2017, https://iesr.or.id/wp-content/uploads/2018/11/COMS-PUB-0001_Briefing-Paper-1_Energi-Terbarukan.pdf di akses 5 Oktober 2023.

c. Water Renewable energy sources include river flows, waterfalls and sea tides. Also read: How does the energy change process occur in hydropower? Water is a very abundant RES in Indonesia. According to the Directorate General of Electricity and Energy Utilization (2009), Indonesia's Hydropower potential reaches 4.99 x 1018 J/year.
d. Solar energy Solar energy is renewable energy produced from the sun in the form of solar radiation. Renewable energy such as solar energy is suitable for development in the Nusa Tenggara region because the best solar intensity in Indonesia is on the islands of Sumba and Timor, as quoted from Kompas.com (09/03/2023).
e. Biomass Alternative energy from biomass is one form of energy that is popular in the use of renewable energy. Bioenergy is basically energy produced from biomass. Energy sources that include bioenergy include biogas, liquid biofuel and solid biofuel. Reliable Energy Source for Achieving the Net Zero Emission Target Biomass energy has more potential to be developed in rural areas. This is because wood, leaves, rice husks and straw (biomass sources) are the main fuels for heating and cooking in rural areas. Records from the International Energy Agency show that biomass energy provides 30 percent of the main energy supply in several developing countries.[13]

C. CLOSING

The implementation of new renewable energy in Indonesia has not been implemented optimally, this is because human resource capacity and technology are still limited. Based on theseSo this research will provide input on the implementation of new and renewable energy policies for sustainable development, namely that the government needs to implement national energy policies consistently through preparing renewable energy development plans. The central government needs to involve local governments in planning, development and evaluation in renewable energy development programs so that renewable energy projects can be managed by local governments in a sustainable manner.

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