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The International Energy Agency's Role in Supporting the Sustainability of Renewable Energy Supply in Indonesia

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ABSTRACT

Indonesia, as a country with abundant natural resources, faces serious challenges related to the use of non-renewable natural resources such as petroleum. Negative environmental impacts and the risk of depletion of these resources have triggered the need for a transition to renewable energy. We use an inductive qualitative method through document research as data collection. Given the International Energy Agency's (IEA) role in supporting national energy sustainability and reviewing Indonesia's energy policies, a pertinent question arises regarding its role in Indonesia. This study aims to analyze the concrete role of the International Energy Agency (IEA) in supporting the sustainability of renewable energy supply in Indonesia with reference to SDG 7. This study finds that the role of the IEA in striving for a renewable energy transition in Indonesia centres on providing analysis of the potential and challenges as well as policy recommendations to direct the government in developing strategies for implementing renewable energy. The IEA also facilitates international cooperation, technology transfer, and investment in the renewable energy sector. Indonesia is committed to achieving the targets of Sustainable Development Goal (SDG) 7, which focuses on universal access to affordable, clean, and sustainable energy. Cooperation with the IEA will continue to be key in achieving this goal, especially to achieve the net-zero emissions target by 2060 and ensure the availability of a sustainable renewable energy supply.

INTRODUCTION

Considering that Indonesia is located at the confluence of tectonic plates and has a tropical climate, it is not surprising that Indonesia has abundant natural resources ranging from renewable to non-renewable natural resources. These natural resources are then widely used and processed by humans into something to meet the needs of daily life, for example, such as petroleum from fossils which is usually used as fuel to drive conventional vehicles. The abundance of natural resources in Indonesia does not mean that there are no restrictions on their use, especially non-renewable natural resources such as petroleum because it is very possible that if the use of resources continues without paying attention to limits, these natural resources will then be used up so that future generations will certainly not be able to feel the availability of these non-renewable resources (Priyarsono et al, 2012).

In addition, there are also other dangers and negative impacts in the use of excess petroleum in the vehicle sector, for example, due to the combustion process by vehicles then the exhaust gas released into the air will cause depletion of the ozone layer and when this happens the level of oxygen reserves on earth will decrease and cause various diseases related to the respiratory system in humans. Then the effect of this carbon emission exhaust gas can also cause climate change. As is widely discussed climate change is also one of the international issues that must be resolved immediately or can

have a more severe impact if it occurs massively in various parts of the world because if climate change occurs it will cause extreme weather with an example of one region experiencing heavy rain continuously which results in flooding while in other areas there is a drought so that it cannot grow crops to meet the needs of the people who live in the region, it is certain that in the future there will be more natural disasters that befall various regions in the world. Therefore, countries in the world are trying various ways to reduce the use of non-renewable natural resources by diverting them to renewable energy sources or renewable natural resources such as sunlight, wind, geothermal, wind, biomass, and many more (Priyarsono, 2012).

Departing from this thought, international organizations were formed that could overshadow and realize these thoughts on the cooperation of countries in the world, one of which was the Organization for Economic Co-operation and Development abbreviated to OECD, a little review of the establishment of the OECD itself at first this organization was formed to assist in the reconstruction of Europe after World War II in the Marshall Plan chart. The OECD is also used as a forum between governments to share the experiences of their respective governments in seeking prosperity and prosperity for all parties. But within the OECD, another body was formed that has specifications related to energy discussions, namely the International Energy Agency (IEA) (Asmarani, 2022).

The existence of the IEA development was initially established with the basic aim of fixing a disturbance. At that time there was a disruption to the handling of world oil supplies, so the IEA was used as a 'tool' to fix the problem. Apart from that, the IEA is also used as a medium to promote international cooperation on energy-related policies. When international energy policies are systematically organized, it can ensure the sustainability of energy supply in one country by working together between countries, which is also one of the reasons Indonesia decided to join the IEA (Permana, 2015). Indonesia's partnership with the IEA is expected to improve Indonesia's pre-existing policies and targets related to renewable energy, such as the energy transition process and the net zero emission target set by Indonesia. Also, when Indonesia cooperates with the IEA, there is a great opportunity for investment from other countries to see the abundance of renewable natural resources in Indonesia. Therefore, the relevant agencies directly involved in the cooperation between Indonesia and the IEA must be good at seeing what policies and programs will be brought by the IEA to be implemented in Indonesia. Researchers feel that the acceleration of the energy transition program can continue to be monitored so that it is implemented correctly and evenly. Referring to the current conditions described earlier, this research will specifically examine more elaborately the concrete role of the IEA in supporting the sustainability of renewable energy supply in Indonesia concerning SDGs 7.

Against the background of the IEA as one of the bodies established by the OECD with its responsibility in supporting the sustainability of national energy supply and reviewing existing energy policies in Indonesia, the authors formulated the question "What is the concrete role of the IEA in supporting the sustainability of renewable energy supply in Indonesia concerning SDG 7?".

LITERATURE REVIEW

In this section, the author uses some previous research. This research will explain how an organization influences the availability of renewable energy supplies in a country and whether the organization is successful in preventing extreme climate change in Indonesia. The first thing to recognize is that renewable energy is an energy source that can be used continuously and is already available in nature, such as sunlight, wind, and water. However, in Indonesia, the use of renewable energy resources has not been maximized. In vehicles for example, conventional vehicles that are widely used by Indonesians use petroleum fuels which if done continuously will cause various negative impacts such as depletion of the ozone layer, unavailability of clean energy for future generations, and the most widely discussed is climate change.

Most people know the impact but that does not mean people will stop using petroleum fuels even in line with research by Onky that Indonesia which used to export petroleum is now a petroleum importing country (Prabowo, 2017). Indeed, when wanting to change a habit or make a transition process will not be able to be done in a fast period, Indonesian people must first know what the importance of renewable energy is as contained in previous research on the need for renewable energy resources which discusses that renewable energy has attractive features as previously mentioned that its existence will exist continuously and its cleanliness is also guaranteed, when renewable energy sources are used, the

possibility of negative impacts that arise is also less. As is well known, when using non-renewable energy sources, for example those produced by fossils, it will definitely run out, but not with renewable energy, therefore many scientists are working to develop the use of renewable energy to replace the use of fossil fuels.

In addition, the exhaust gas produced later is likely to be cleaner, and also in terms of costs to access renewable energy certainly requires less cost and can prevent climate change because the exhaust gas produced is cleaner. Because the renewable energy sector is also new, it has the potential to attract investment from countries around the world (Shahzad, 2012).

The study by Kurniawan et al (2022) elucidates the dynamics of renewable energy development in Indonesia. It is asserted that the renewable energy potential in Indonesia is substantial, reaching 442 gigawatts and can be harnessed across various regions: Java, Sumatra, Kalimantan, Sulawesi, and Papua, with Sumatra, identified as having the most significant potential due to more accessible resource availability. The energy mix in Indonesia includes hydropower (75%), bioenergy (21%), solar power (2.3%), and wind energy (1.7%). Presently, the focus of renewable energy development is on the establishment of solar power plants (SPP), supported by the Indonesian government through the General Plan for National Energy (RUEN), which sets a target of achieving 207.8 gigawatts of SPP by 2050. However, obstacles to renewable energy development in Indonesia include limited research on renewable energy due to insufficient information on its development and prospects. Administrative and regulatory issues also impede progress, as they affect community participation in implementing renewable energy, with solar panel owners being required to consume all their electricity production rather than sell it to the government. This regulation contradicts the government's primary objective to boost investments in environmentally friendly energy and renders solar energy investments uneconomical. Potential regulatory failures may hinder the willingness of the Indonesian public to contribute to the development of solar power plants.

In encouraging people and governments to immediately switch to renewable energy, of course, institutions and organizations that support the promotion of renewable energy itself are needed to show that it is worth it. In this study, the organizational body that encourages Indonesia to make the transition to renewable energy is the IEA. There is a detailed explanation of what programs the IEA brings to the table in terms of energy cooperation for its member countries. First, following the original purpose of the IEA, the OECD-led agency has a maintenance program for oil supply disruptions. Second, to cover the globe, the IEA also cooperates with non-member countries to promote more rational energy policies. Third, the IEA provides and creates a system of oil information on the international market. Fourth, to promote renewable energy sources, the IEA seeks to improve energy supply and demand in the world by developing alternative energy sources. Fifth, not only promoting the renewable energy sector but also promoting it in the field of technology that might use renewable energy. Sixth, the IEA assists in integrating policies related to the environment and energy (Waide, 2007).

Furthermore, for theory, researchers use international organization theory. According to Suryokusumo, written in his book, an international organization is a merger of two or more countries to make joint efforts to achieve a benefit and there is a fixed system and related bodies by their respective duties to obtain common goals relying on cooperation by its members (Suryokusumo, 2007). Usually, an organization is formed when there is a problem that arises or issues that require resolution by cooperating between two or more countries with the same goal.

The formation of international organizations is also usually due to the urgency to meet the needs of human life. Because the needs of the world community vary according to the situation and conditions in their country, international organizations always have agreements. So it can be said that international organizations are legal products of agreements between member countries or multilaterals. In this study, the international organization discussed is the OECD by focusing on the body under it, namely the IEA, which was originally formed because there was a disruption to the handling of world oil supplies and is now collaborating with Indonesia to strengthen Indonesia's policies regarding renewable energy.

Furthermore, related to the theme of this research, the researcher will describe the concept of renewable energy. The IEA stated the concept of renewable energy itself, namely energy that is already available from nature and that energy can be utilized by humans regularly. This study uses Indonesia as a reference country because Indonesia is one of the countries that has abundant renewable energy resources. Perhaps the application of renewable energy sources such as

the use of geothermal or wind power is still small in Indonesia, but it is a sign that there is already sensitivity from the Indonesian government and related agencies to utilize renewable energy resources available in Indonesia.

The steps in implementing renewable energy policies are through energy conservation where the government can encourage the use of renewable energy sources effectively and also rationally, for example by setting the time of use on electrical energy goods because in this day and age, everything is sophisticated and things like that can be arranged through gadgets. Second, diversifying energy can be done by utilizing various energy sources, for example by investing in various types of energy instruments available with the aim of reducing all forms of risk that can occur in this case, for example changing the use of energy from non-renewable energy sources to renewable energy sources. Third, energy intensification, to increase the availability of energy reserves, then look for renewable energy sources that can be utilized to meet the needs of daily life, such as wind power plants to generate electricity (Lubis, 2007).

METHODS

The research approach uses a qualitative method that is inductively patterned, through the utilization of case studies and the detailed examination of review outcomes, an analysis is generated in alignment with the research's scope (Bryman, 2006). As for this research itself, qualitative analysis is reviewed as one of the methods prevalent in the scope of social science (Faircloth, 2003). Then, phenomenon and document-based research will be the reference in processing data from secondary sources and related primary sources. The research team will conduct a literature review encompassing diverse research findings, journal articles, books, print and electronic media, documents from international institutions, prior studies by practitioners and academics, and other audiovisual materials. The research team will also undertake a more holistic examination of the various benefits obtained and findings resulting from the empirically and qualitatively conducted exploration process. Our research endeavours to address environmental challenges in Indonesia, specifically those pertaining to energy, while aligning with Indonesia's sustainability vision in pursuit of the SDGs 7. After that, we tried to explain how IEA can assist Indonesia regarding the matter. The research team realizes that qualitative research seems biased because the researcher is the main instrument in analyzing the research substance. We select the sources from reputable journals, official documents and reliable news. In discussing findings, careful consideration is given to broad perspectives, ensuring a comprehensive understanding devoid of partiality. Ultimately, conclusions are drawn based on the evidence presented, fostering an objective interpretation of the research outcomes.

RESULTS AND DISCUSSION

Natural Resources and Environmental Problems in Indonesia

Natural resources are a vital instrument for a country to meet the various needs of its people. Indonesia is a country with a wealth of natural resources in every part of its territory which, if utilized properly, will help realize the welfare of its people. Nevertheless, Indonesia still faces natural resource problems, especially dependence on limited natural resources. For example, in the case of fossil energy, according to the Ministry of Energy and Mineral Resources, 87.4% of the total national energy mix is dominated by fossil energy (Arini, 2022). Moreover, there is an increase in population which coincides with increasing human activity and needs, in contrast to the decreasing supply of natural resources. The aftermath of this condition can be seen from the high consumption of oil and gas which is not in line with its production, making Indonesia a net importer country or a country that imports more oil than it exports.

Dependence on fossil energy is highlighted as a serious problem for the sustainability of the new and renewable energy transition in Indonesia because apart from its limited availability, fossil energy is also prone to price instability on the global market which also impacts national economic stability. The increase in oil and gas prices on the global market has resulted in the provision of energy subsidies for the public. Unfortunately, the provision of subsidies is increasingly increasing dependence on fossil energy because it is considered more affordable. Massive subsidies for fossil energy make people tend to choose it rather than using new, renewable energy whose prices are still high (Ermawati, 2015). This means that this dependency makes it difficult to transition to new and renewable energy. Not to mention very dynamic geopolitical conditions, such as during the Russia-Ukraine war which disrupted global-scale energy supplies which again made it necessary for the government to inject massive fossil energy subsidies. For 2023 alone, the government has set a target of IDR 209.9 trillion for energy subsidies, including IDR 139.4 trillion for fuel oil (BBM) and liquefied petroleum gas (LPG) subsidies, as well as IDR 70.5 trillion for electricity subsidies as a step to maintaining people's purchasing power and industrial competitiveness during the economic recovery period (Ministry of Energy and

Mineral Resources of the Republic of Indonesia, 2023). The large subsidy funds make the use of fossil energy increasingly inefficient and should be diverted to support the development of new, renewable energy to accelerate the energy transition in Indonesia.

Looking further, dependence on fossil energy often causes environmental problems. Pollution, climate change, and health threats are very common problems. The use of fossil energy releases dangerous chemicals, such as carbon dioxide, methane, and nitrous oxide which contribute quite a lot to carbon emissions. The massive use of fossil energy also produces air pollutants such as sulfur dioxide, nitrogen oxides, particulates, volatile organic compounds, and carbon monoxide which are very dangerous for health if inhaled by living creatures. Looking at the cases that occurred, in Jakarta from late August to early September 2023, air quality reached poor levels. With a concentration of 88.5 g/m3 and the main pollutant PM2.5, Jakarta's air quality index is 168, which is very far from WHO's safe air quality standards (Setawati, 2023). The cause of this bad condition is the aftermath of busy transportation to the PLTU. This indicates that the development of new renewable energy is urgent for Indonesia.

Supporting the Sustainability of Renewable Energy Supply and SDG 7 Agenda in Indonesia

Indonesia is very committed to implementing the SDGs at the national and sub-national levels, as well as at the community and society levels. However, considering the broad SDGs targets and indicators, close collaboration is needed between government platforms, philanthropic and business organizations, non-governmental organizations, academics, practitioners, development partners, and other stakeholders. Before the SDGs were declared in September 2015, Indonesia was committed to SDGs by synergizing 94 SDG targets into the 2015-2019 National Medium-Term Development Plan (RPJMN). By including additional goals for the SDGs in the 2020–2024 RPJMN document, this commitment will be continued and enhanced.

One of Indonesia's efforts to support SDG 7 is by participating in the 2015 Paris Agreement. The 2015 Paris Agreement is an international agreement that is legally binding and therefore parties need to fulfill the targets stated in their commitments. For Indonesia, the commitment to take part in overcoming the impacts of climate change is reflected in Indonesia's participation as a party to the climate change regime, including the 2015 Paris Agreement.

According to the ESCAP report (2020), Indonesia's progress in achieving SDG 7 targets is quite promising, but current steps will not be enough. Without concerted efforts and a supportive policy framework, it will be difficult for Indonesia to achieve all SDG 7 targets by 2030. Indonesia plans to expand its city gas network to supply another 52 million people with clean technology for households. However, this will require significant investment in infrastructure development. Another option for Indonesia is to explore the use of surplus electricity with induction-type electric stoves which are very energy efficient, especially in areas that have adequate electricity supplies. Current trends indicate that Indonesia may not achieve the 2025 renewable energy target promised in the Paris Agreement. The share of renewable energy will need to be increased to 22 per cent of total final energy consumption, which is an increase of 6 per cent from now so that Indonesia can achieve the NDC target for the energy sector along with SDG target 7. A deeper analysis shows that the operation of power plants New coal after 2020 is not feasible, both from an economic and environmental perspective. A faster transition to cleaner energy, especially renewable energy, will help Indonesia meet national energy supply security and NDC targets. The life cycle costs of renewable energy-based power plants are cheaper than coal-fired power plants. Moreover, eliminating subsidies for fossil fuels for electricity generation will further attract private investment in renewable energy.

The expectation that Indonesia will find it difficult to fulfil all SDG 7 targets is rational considering that Indonesia cannot meet all the financial costs required to fulfill SDG 7. However, Indonesia's efforts to continue to improve its posture in fulfilling SDGs are something that should be appreciated. One of them is the Low Carbon Development Indonesia (LDCI) program. Bappenas, as the government agency with the authority to plan development in Indonesia, places LCDI as a national priority and is included in the 2020-2024 RPJMN considering that reducing greenhouse gas emissions is one of the indicators of national development (HukumOnline, 2022). Meanwhile, a circular economy is one approach to realizing LCDI, including energy transition, waste management, and building a green industrial sector. This shows Indonesia's seriousness in building a sustainable future.

Collaborative Relations between the IEA and Indonesia

The IEA exists as an international organization that seeks to help countries maintain energy security. This effort is carried out through collaboration with member countries or various related energy companies. Since the 1990s, the IEA itself has expanded its activities to include gas, coal, and renewable energy and has raised issues regarding energy efficiency (Downie, 2020). One of the things that the IEA is currently highlighting most is the transition from conventional energy to renewable energy, which is increasingly being promoted in line with the decline in energy capacity such as oil and natural gas, and the increasing impact of climate change due to carbon emissions.

Meanwhile, to support the implementation of renewable energy, the IEA also collaborates with countries' governments and companies, one of which is Indonesia. The involvement of countries in the IEA is driven by various national interests as well as the role of the international organization itself as an instrument for state interests. The cooperation carried out by Indonesia with the IEA has been carried out for a long time and shows several progressive results from the energy transition in Indonesia which aims to support the sustainability of renewable energy supplies in Indonesia. The IEA's participation in supporting Indonesia's steps can be achieved through diplomacy and dialogue that has been ongoing since 2006. Based on this, the IEA has attached various policy recommendations that can help countries like Indonesia make a renewable energy transition. From Indonesia's side, the Ministry of Energy and Human Resources also actively participates in various IEA programs and collaborations to strive for energy security and development.

IEA cooperation regarding renewable energy entered a new phase in 2015 through guidelines for reducing fossil fuels (Kusnadi et al., 2022). The IEA has recommended several things that Indonesia can do regarding the renewable energy targets that Indonesia wants to achieve. First, be firm in reducing fossil fuel subsidies. This policy is based on the IEA which sees that Indonesia is highly dependent on fossil fuels as a subsidy for conventional vehicle fuel. This dependence on fossil fuels is then considered a serious threat such as the depletion of petroleum reserves for future generations if no source is found. or a new oil well. Apart from that, there is also the potential for global oil price fluctuations due to demand being greater than oil production. This is followed by the effects of combustion residue from conventional vehicles which then causes pollution which in turn risks affecting climate change and damage to the ozone layer (Indartono, 2005).

Then in 2017, Indonesia took a step further to intensify the implementation of renewable energy by participating in the Clean Energy Transition Program (CETP) launched by the IEA to jointly develop renewable energy. This indicates that Indonesia's intensive diplomacy has resulted in Indonesia's partnership with the IEA going further, and now the IEA is Indonesia's main strategic partner in the energy sector. Furthermore, the IEA, in its role as an actor capable of acting independently, can issue various energy policy recommendations that will later be adopted by countries, including recommending solutions to problems regarding the increasing development of human life which also drives energy needs while energy availability is limited.

However, the author believes that this cooperation has not been optimal in reducing emissions problems in Indonesia. It is also known that in 2019 the transportation category released emissions of 157,326 Gg CO2e with an average increase of 7.17% per year (ESDM, 2021). Talking about the challenges faced, in 2021 the Minister of Energy and Mineral Resources on Tuesday, March 30, 2021, announced cooperation in the field of Energy Transition between the IEA and Indonesia as a step forward in Indonesia's ambitions for the energy transition. This collaboration will increase collaboration between Indonesia and the IEA in overcoming the energy challenges that are currently emerging, both in Indonesia and internationally. This collaboration provides a framework to support policy development, accelerate Indonesia's energy transition, and mobilize high-level political engagement. This collaboration will enable Indonesia and the IEA to build new partnerships and launch new work streams to support Indonesia's leadership in the energy sector at the international level to maintain environmental sustainability as well as contain and reduce the impact of climate change and maintain the availability of petroleum fuels for generations. in the future, it is deemed necessary to carry out an energy transition immediately (EBTKE, 2021).

Then the IEA also provides a bridge so that Indonesia can carry out international collaboration with other member countries. This collaboration can take the form of cooperation between countries regarding renewable energy projects, technology transfer, and investment. With the IEA as a bridge for Indonesia, Indonesia will more easily access global resources because the IEA, through its position, holds various trusted sources related to world-class data, analysis, and

policy recommendations which will later be used to accelerate the development of renewable energy. To foster coordination in making energy policies and regulations, the IEA recommends that there be consistency in creating a framework for modelling scenarios, targets, and the implementation of regulations that will later be implemented. This can be done by clarifying competencies and increasing consultation between stakeholders to determine maximum results at the national and sub-national levels.

Furthermore, the IEA suggests improving the energy investment framework. This can be done by speeding up decision-making and also opening up opportunities for other countries to invest in Indonesia to maintain the sustainability of renewable energy. One example of this opening up is the speech of the President of Indonesia at the Leaders Summit on Climate 2021, which informed and also invited the countries present that Indonesia was open to investment and technology transfer, including investment for the energy transition (Setkab RI, 2021). The IEA also suggests establishing an institution to coordinate investment entering Indonesia. This aims to facilitate infrastructure investment in renewable energy, electricity, and natural gas. The establishment of this institution is also intended as a consultant to investors in providing advice and supporting investors in obtaining permits and licenses from central institutions.

Specifically, the IEA emphasizes the development of electricity and gas. This development requires a mature long-term development plan with long-term goals where this could be an alternative to energy sources other than fossils (IEA, 2015). In addition to previous recommendations, the IEA has recommended many other programs following the conditions occurring in Indonesia, some of these programs have been successfully implemented and some are still in the process of completion. The seriousness of the Indonesian government in responding to recommendations from the IEA is demonstrated by the Indonesian government which since 2016 established the Coordinating Ministry for Maritime Affairs and Investment, which oversees the Ministry of Energy and Natural Resources as well as the Ministry of Investment or the Investment Coordinating Board. However, it is important to note that the nature and depth of IEA support to each country may vary depending on the commitment and cooperation between the Indonesian government and the IEA itself.

In the process, the IEA plays an important role in Indonesia realizing the sustainability of renewable energy, for example by providing information and analysis related to policy recommendations that encourage the growth of renewable energy in Indonesia as well as providing analysis related to how renewable energy market is developing and the opportunities and challenges faced by Indonesia in implementing renewable energy. Bearing in mind that Indonesia is also a country that is committed to reducing carbon emissions with a reduction target of 31.89% in 2030, to achieve this target it needs to be supported by a renewable energy transition supported by various parties including the IEA. The IEA is making various contributions that can help Indonesia realize the energy transition, including achieving Indonesia's EBT target, which is also supported by the IEA in several ways. Therefore, Indonesia's relationship with the IEA is currently focused on how to realize clean and sustainable energy by pursuing renewable energy. Indonesia itself is a country that has planned a target of 23% for 2025 in the New and Renewable Energy (EBT) mix target and 50% for 2050. This EBT target is a strategy to meet the national energy supply to replace fossil fuels, the amount of which will continue to decline. in the future.

New Phase of IEA Cooperation with Indonesia

The IEA establishes and strengthens cooperation with the Indonesian government in achieving net-zero emissions by 2060 (IEA, 2022). Net-zero emissions is the Indonesian government's plan to implement a commitment to reduce carbon emissions which is structured around five principles, namely emphasizing the use of fossil energy, the use of electric vehicles, increasing the use of electricity in households and industry and the use of Carbon Capture and Storage. To support this mission, the IEA presents a roadmap containing guidelines for achieving the net-zero emissions target as well as short-term steps that need to be taken. Furthermore, the IEA recommends several policies that are needed to face the challenges of implementing renewable energy. For example, adjustments to contracts that regulate coal and natural gas operations to operate more flexibly with lower capacities so that energy efficiency is achieved at lower prices and policies not to build new coal power plants other than those included in the current plan while also stopping plant operations. old coal electricity.

The IEA encourages the use of potential resources that can support renewable energy in Indonesia, such as hydropower, geothermal, and solar PV, the use of which is still rare because it is relatively expensive. On the other hand, the IEA also

offers a solution to this in the form of a long-term initiative on the application of solar PV which will also encourage the development of local industry and the prices charged will become more affordable.

Then, the IEA encourages investment flows towards sectors that support renewable energy. The IEA launched a report entitled "World Energy Investment (WEI) 2020" as an effort to assist Indonesia in obtaining foreign investment in environmentally friendly electricity in Indonesia (Kusnadi et al., 2022). Through assistance and support for achieving NRE targets, the availability of renewable energy supplies will be continuously pursued.

CONCLUSION

Indonesia, with its location at the intersection of tectonic plates and a tropical climate, has abundant natural resources, including renewable and non-renewable resources. However, this abundance also has the potential for danger if not managed wisely, especially in the use of non-renewable natural resources such as petroleum. Excessive use of petroleum and other fossil energy can cause various problems, including climate change and negative impacts on the environment. Therefore, Indonesia has committed to shifting its focus to renewable energy as a more sustainable alternative. International organizations such as the Organization for Economic Co-operation and Development (OECD) and the International Energy Agency (IEA) play an important role in supporting Indonesia in this effort.

The IEA's role in pursuing a renewable energy transition in Indonesia is centred on providing analysis results regarding potential and challenges as well as policy recommendations to direct the government in developing strategies for implementing renewable energy. This can also help the government ensure the continuity of renewable energy supplies to fulfill national interests which include energy security and a commitment to reducing emissions through the application of clean and sustainable energy. The IEA also facilitates international cooperation, technology transfer, and investment in the renewable energy sector. Indonesia is committed to achieving the targets of Sustainable Development Goal (SDG) 7, which focuses on universal access to affordable, clean, and sustainable energy.

Although challenges still exist, including dependence on fossil energy and environmental problems, Indonesia has taken progressive steps in supporting the renewable energy transition. Collaboration with the IEA will continue to be key in achieving this goal, especially to achieve the net-zero emissions target by 2060 and ensure the availability of a sustainable supply of renewable energy.

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