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Legal Policy Impact on Indonesia's Geothermal Industry Development: FDI Cooperation and NDC

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Abstract: Geothermal significantly contributes to the state's energy industry development as a widely available low-carbon, sustainable, and strategic resource. As Indonesia is committed to achieving NZE 2060, renewable energy development is being conducted massively. Seeking Indonesia's geothermal energy potential, several regulations, policies, and schemes are implemented, including investment schemes, as financing plays a vital role in the industry's development. However, establishing a seamless procurement is highly dependent on national law regulations which govern the financing, procurement, and utilizations up to investors benefits. This article identifies international and national regulations on FDI, business schemes, and its alignment with INDC strategic programs, demonstrating Indonesia's commitment. It finds much room for improvement in national law regulation, especially the upcoming RE Draft Bill, as the implementation of established FDI schemes has not met the investor's favors. However, among AMS, Indonesia is the most committed country to achieving NZE. Therefore this article examines the Legal Policy Impact on Indonesia's Geothermal Industry Development through FDI Cooperation and NDC. This article is conducted in Normative Legal Research and uses the Statutory Approach as its problem approach.

Keyword: Foreign Direct Investment, Indonesia Nationally Determined Contribution (INDC), Renewable Energy, Geothermal Energy

INTRODUCTION

Reflecting on the world's worsening climate conditions, there's a need to substitute the energy sources used. Worsen climate condition is backed by the release of 6 (six) alarming reports released by scientists in the past 6 (six) decades. Recorded in 2018, Indonesia's TPEP (Total Primary Energy Production), including gas, coal, oil, and renewable energy, reached 411.6 MTOE. Renewable energy (hereinafter abbreviated as "RE") is an essential factor in reducing carbon in the energy system, encouraging technological innovation, and improving energy efficiency and security. Accordingly, geothermal energy has a low carbon footprint, which is able to provide a continuous supply of electricity and heat, and can overcome grid imbalances (IRENA, 2017). As one of the branches of

renewable energy sources, geothermal has room for diversification in ways that empower the environment and reduce gaps in access to energy use (Zeren et al., 2023). As is known, Indonesia has the second largest installed geothermal capacity in the world and 1st in Asia and has utilized 2,175.7MWe or 9% for Geothermal Power Plants (PLTP). This number is expected to overtake the United States, which is ranked first in the world. The potential electricity that Indonesia can generate by geothermal can reach 24GW, so it is considered not to increase the load on the government in electricity production because the price is competitive.

As stipulated in the results of the 21st Conference of the Parties (COP 21) UNFCCC in Paris, France, in 2015, which discussed Climate Change, stated that the Indonesian government has committed to reducing GHGs (Greenhouse Gas) emissions by 29% by 2030. The results of this convention were then ratified into Law No. 16/2016 on the Ratification of the Paris Agreement to The United Nations Framework Convention on Climate Change (Naskah & Dan, n.d.). Therefore, one of the main agendas of the Indonesian government is currently through the Energy Transition Mechanism (ETM), which is a program to improve energy infrastructure and accelerate the energy transition towards Net Zero Emission with the principles of just and affordable in 2060.

In 2023, UNFCCC's 28th session on talking about action on assessing climate change was held in Dubai, UAE. The convention's primary goals are to assess each party's progress in implementing the Paris Agreement and develop a plan for achieving NZE objectives. Like Nathalie Bernasconi (Interim Co-President and Co-CEO | Vice-President, Global Strategies and Managing Director, Europe at IISD) points out, the outcome of COP 28 represents notable victories overshadowed by setbacks, and the choices made will influence the world's most vulnerable communities, leaving them ill-prepared, underfunded, and exposed to the effects of global warming exceeding the 1.5°C threshold. About that, actions were taken into consideration, which in the end stipulated: 1) Providing financial support to developing countries which is the most affected, like Chad, Somalia, and Syria; 2) Stipulate fossil fuel phase-out agreement; and 3) Launch a private market capital evaluated at $30 Billion to facilitate the private sector for evolving and emerging economies.

Referring to the convention report shows that developing countries are going to be the most impacted. This implies what is stated in the global stocktake, which are the process for countries and stakeholders to monitor their progress towards achieving the goal of Paris Agreement. At COP28, ASEAN Member States (AMS) presented high-level national statements that outlined their commitments and strategies for energy transition and climate resilience. Among notable pledges, 118 countries, including Brunei Darussalam, Malaysia, and Singapore, focus on collaborative efforts, including financial support and streamlined processes. Meanwhile, Cambodia committed to seven key actions, including several strategies to reduce plastic use and manage waste. On the other hand, Indonesia and Malaysia unveiled the CTA and PPCA initiatives. Meanwhile, Laos is also actively involved in NZE from the health sector initiatives, (Ilham Rizaldi et al., 2024).

Additionally, Thailand focuses more on enhancing and establishing the technology and transportation sector by designing optimal routes, which led to one of many actions to support a net-zero transition in Saraburi. Therefore, AMS has laid a strong foundation for assessing actions toward climate change goals. The extent of each country can be seen by the implementation and scaling of these initiatives, which is stated in the stocktake report.

From 1973 to 1998, 17 geothermal areas were explored, confirmed, and developed across Java, Bali, Flores, and Sulawesi. The extent to which this energy can be used commercially is closely related to the area's geology, including volcanic activity or rainwater penetration into volcanic rocks. The geothermal gradient, which reflects the change in the earth's temperature with depth, plays a vital role in assessing the heat resources in the area. In Indonesia, the budget to drill is around 3-5 million USD, with a success rate of around 30%.

When 3 (three) points are drilled, PT Pertamina Geothermal Energy (PGEO) Tbk can get 30 - 50 MW of electricity with a total cost of around 15 million USD (Geothermal Plant Investment Supports Clean Energy | Pertamina, n.d.).

Whereas the development of a single point geothermal project generally takes 7-10 years. Geothermal energy development is highly dynamic and requires a complex process involving stakeholders, policies, regulations, and other interrelated and constantly changing elements. A key constraint in large-scale geothermal energy development is financing. This is due to the high exploration costs, production and injection well drilling costs, field infrastructure, geothermal fluid collection and disposal systems, costs associated with power generation, grid connection costs, and other project development costs. The introduction of geothermal energy has significant investment costs, and most of this funding is required before resource availability is confirmed, i.e., before geothermal energy is introduced.

Indonesia has various key strengths attracting international attention to FDI, as seen in the graphic attached below.

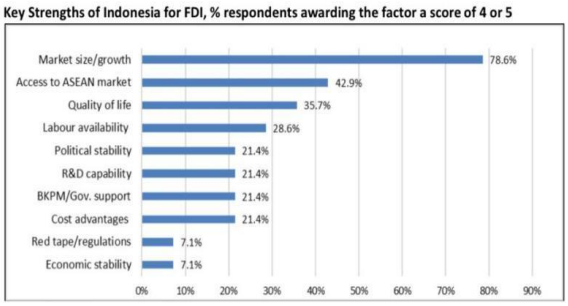

Figure 1. Indonesia Key Strength on FDI
Source: WAVTEQ Survey

Examining the graph, Indonesia has several key strengths that attract investors to contribute to Indonesia. The graph is organized based on the preferences and experiences of foreign investors in Indonesia. The most significant percentage lies in market size. One of the factors is the high productive age population in Indonesia. On the other hand, government support ranked 7th with a percentage of 21.4%, indicating the protection and outcomes provided by the Indonesian government to foreign investors. Investment in Indonesia is highly guided by The New Investment List, which applies effectively on March 4th, 2021, specifically 30 days after it was promulgated.

In achieving energy transition efforts, the government is optimizing policies by developing cooperation schemes with a broad scope, and variety. The implementation of cooperation with foreign corporations could be viewed through a joint venture conducted by PT PGEO Tbk with Chevron recently. Through the expansion of policies and investment methods, it is one way that this is one of Indonesia's commitments through the NDC (Nationally Determined Contribution) with the primary goal of reducing unconditional greenhouse gas (GHG) emission targets to 29% and conditional to 41% compared to the business-as-usual (BAU) scenario of 834 Mt CO2e and 1,185 Mt CO2e by 2030 (Indonesia Green Growth Program, n.d.). Indonesia has been committed to addressing climate change since COP-15 in 2009 with the Intended NDC pledge, which was strengthened through the 2016 NDC document by setting targets compared to the BAU scenario 2030 (Ibid.)

The legal regulation of geothermal energy, which initially only relied on Law No. 79 of 2014 concerning National Energy Policy and Law No. 21/2014 concerning Geothermal in terms of geothermal business procurement and its derivatives, currently there is an initiation of the RE Draft Bill which believe to be one of the government's efforts in developing green energy in realizing the national energy transition in 2025. By considering the potential that Indonesia has in the geothermal industry and the commitments that Indonesia has made

through the NDC document, it is necessary to have the protection provided by the government both in terms of policies/legal regulations that can provide space for foreign investors who are simultaneously able to manage the use of energy under statutory regulations and carried out for the benefit of the Indonesian people.

Numerous studies have elaborated the importance of geothermal development in Indonesia considering its potential. The studies have been conducted in different power plant projects (PLTP). (Hermanto & Narindro, 2019) investigate a review on Law No. 21/2014 related to the use of geothermal energy and the sustainable implications. (Azmi et al., 2021) investigate and analyze legal protection clauses that regulates geothermal energy development and utilization in North Sumatra. Likewise, (Susanto & Toha, 2022), research examines energy investment arrangements in general and assess energy investment climate in Indonesia.

Previous studies have not discussed the relation between renewable energy industry development and Indonesia's commitment with Paris Agreement 2015, especially geothermal energy. Additionally, most studies have yet to examine the impact of national law regulation and policies on business schemes and financing which heavily impacted geothermal development, operational, and utilization. Therefore, this research will discuss the alignment between Indonesia's commitment on NDC which presented by national regulation and policies stipulated and its impact on geothermal energy industry development in Indonesia in the business aspect. Also, this article will elaborate the urgency and importance of regulation and policies in shaping the investment and business climate in RE sector.

Moreover, the objective of this article is to comprehensively examine the implementation of the stipulated regulation and policies alignment with Indonesia's commitment on NDC. Moreover, this article aims to review whether the stipulated regulation and policies help improve the valuation and numbers of investors as part of INDC strategic programs on achieving NZE 2060. In addition, this article is conducted to relate foreign direct investment and geothermal industry development in Indonesia.

Based on the context of the issue above, the research question that are determined is "The Impact of National Legal Policy on Indonesia's Geothermal Industry Development: FDI Cooperation and NDC Commitment". Hereinafter the research question that would be brought on this research is The Impact of National Legal Regulation on Indonesia's Geothermal Industry: FDI Cooperation. Retrieved from above, therefore this research will gather and conclude: 1) How International dan National Regulation Governs Foreign Direct Investment on Geothermal Sector?; 2) How FDI Cooperation Scheme in Geothermal Energy Sector align with Indonesia NDC Commitment?.

METHOD

This research is conducted in Normative Legal Research, whereas the concepts that are brought in this research will likely provide an evaluation standard. In this case, the use of principles from the legal or regulatory system will be used as a reference and research standard. As stated by Vranken, research involving the legal or regulatory system in a country must be seen as a subject of various theoretical perspectives and normative principles themselves are used as a standard of assessment of the varied system. Therefore, the question of what can be used as a normative framework is crucial because it is an essential factor that determines the plausibility of answers to normative questions. Therefore, understanding international, global, and regional regulations and their accompanying legal foundations is crucial in this research. All answers to the research questions are to be analyzed from an understanding of legal science concepts, doctrines, and legal principles implemented in government regulations/policies. This research utilizes one type of problem approach: Statute Approach.

RESULTS AND DISCUSSION

International dan National Regulations Govern FDI in the Geothermal Sector

In November 2023, the keys utilized to promote investment are released based on the policy evaluation on 798 RE policies covering 192 economies (Investing in the Energy Transition: Countries Need More Balanced Policies | UNCTAD, n.d.). It was stated that developing countries face challenges in formulation and adopting policies and strategies specific to RE. Globally two-thirds of countries have enacted policies and laws specifically dedicated to RE. Only half of LDCs and third of SIDS have done so. Advanced economies tend to favor more complex and targeted mechanisms (Unctad, 2023), including FIT, auctions, and financial incentives adopted by 91%, 74%, and 70%. In this case, efforts to progress in RE by developing comprehensive legal and regulatory frameworks have been limited primarily to developed and emerging countries. In this case, OECD endorsed having a more integrated approach for clean energy finance and investment training programs, increasing clean energy R&D funding and shifting the focus from fossil fuels; developing national RE development as well as regional transmission network and power trading simultaneously; and consider the implementation of targeted programs and support schemes to encourage and facilitate access to finance for women entrepreneurs (OECD, 2021).

Geothermal energy, one of the fastest-growing industries, is governed by several regulations that divide and delimit, significantly contributing to the potential development framework. Geothermal significantly contributes to the state's energy industry development as a widely available low-carbon, sustainable, and strategic resource. As the use varies subsequently, technical and regulation regimes change to meet the new standard. Existing and modification of legislative regulations are believed to be one way to achieve energy transition further in 2030. The global geothermal energy market, valued at USD 5733.42M in 2022, is expected to grow at a CAGR of 6.16%. The industry's growth is fueled by strict regulations, limited resources, and volatile fuel prices. Indonesia is among the major markets driving demand for geothermal power globally, according to the International Energy Agency (IEA).

As a matter of global concern, geothermal development and procurement are regulated through international pacts, which are stipulated considering the countries involved and are majorly set forth through bilateral agreements and international pacts. The range of themes related to Foreign Direct Investment (FDI) encompasses various aspects such as improving efficiency, enhancing management capabilities, transferring new technologies, introducing innovative processes, managing costs, expanding technological expertise, and developing global production networks (Doğan Başar et al., 2021). In 2023, FDI in ASEAN flows increased to $224 billion, marking an all-time peak. Investment project numbers increased across all three main models of international investment. Investment towards Indonesia increased by 5 per cent, totalling $86 billion A Special ASEAN Investment Report, 2023). ASEAN needs to invest a total of $180 billion annually to achieve an energy transition. Meanwhile, the region only attained $43 billion in 2022. Addressing this challenge will need the involvement of the public sector and the private sector, both domestic and international investors.

Across SEA, FDI is governed under a regulatory restriction that contains information on FDI restrictions in several industries, including mining and manufacturing (Mistura & Roulet, 2019). The regulations are categorized under four areas: foreign equity restrictions, screening or approval mechanisms, restrictions on the employment of foreigners as key personnel, and operational restrictions. This regulation is not a full measure of AMS investment climate; however, it is an evaluation result of the implementation of FDI rules in each country. As of 2021, the ASEAN investment facilitation framework is retrieved. As stated in Article 3, the framework aims to create a competitive investment area in ASEAN by gradually eliminating regulations that may hinder investment flows and project operations

Framework Agreement on The ASEAN Investment Area, n.d.). In the context of regulation on SEA scope, ASEAN establish several key regulations and agreement which detail as follows:

Table 1. ASEAN FDI Agreement

No.	Topic	ACIA	AEC Blueprint	BIT
1.	Objectives	Enhancing ASEAN's effectiveness in attracting investments while aligning with the AEC objectives. Creating a space to help AMS achieve economic integration under the AEC Blueprint.	Turn ASEAN into a unified market and production hub, a region characterized by high competitiveness, equitable economic growth, and complete integration.	Creating a safe space for Indonesia and country partner on foreign investment
2.	Focus	Incorporates provisions on liberalisation, promotion, facilitation, and protection. Also contain provision on compensatory adjustment to deal with modification of commitments.	Incorporates strategic approach as well as strategic programs.	Usually incorporate limits, provisions, investment guarantees, and new investment regulation.

Source: Multi-Source

In 2021, the Indonesia – Singapore Bilateral Investment Treaty (BIT) came into effect, providing DTAA (Double Taxation Avoidance Agreement) provisions. The treaty guarantees the protection of investment in broader areas. This treaty establishes multi-tiered dispute settlement mechanisms, including mediation, consultation, and international arbitration. Through the settlement of this treaty, both parties are restricted to holding a specific transfer, and it is categorized by types of settlements, not by industries. This shows that the implementation and standings of this BIT can be a supportive tool to enhance investment transfers in the renewable energy sector, which is indeed Indonesia's geothermal industry development.

Knowing the full potential of Indonesia's geothermal, ever since the 1990s, geothermal has been providing electricity. There seems to be an increasing geothermal energy power capacity in the 2010s. However, the ratios were maintained at a lower level because, on the other side of the geothermal exploration, geoscientist researchers unveiled more considerable geothermal energy potential but could not exploit all the available due to the high risk of exploration (BAPPENAS, 2014). Furthermore, PT PLN stated that only five provinces in Indonesia are located near geothermal power plants.

In the early 1980s, PT Pertamina Tbk was appointed head of all Indonesian geothermal energy development. During the reformation era in 1998, KUBE (Kebijakan Umum Bidang Energi) was issued to regulate energy diversification and increase the intensity of energy resource explorations (Hermanto & Narindro, 2019). It stated that upstream sections were managed by improving the inventory and potential evaluation by intensive exploration to change the status of speculated and hypothetic resources into ropable, possible, and proven reserves (*Ibid.)*

In 2007, the Government of Indonesia (GOI) expanded its geothermal data coverage by enacting Government Regulation 59/2007, which took legal ownership of all data gathered under the Geothermal Mining Business License (Fan & Nam, 2018). However, geothermal operations in forests became much more possible after getting authorization, and the breakthrough in geothermal regulation resulted in the creation of the Geothermal Law of 2014 (Law No. 21/2014). The law re-centralized responsibility over geothermal power generation, including the distribution of geothermal licenses and working area tenders falling solely under federal jurisdiction (Hadiputranto, Hadinoto & Partners, 2014) It regulated the fundamentals of geothermal procurement in Indonesia, which stipulated licensing, working

areas, and standardized operations. As a high-risk, high-cost project, the GOI recognizes that finance for exploration is one of the most critical hurdles, making up around 20-25% of the overall geothermal project cost and being extremely volatile.

The GOI regulates the entry of investment initially through Law No. 25/2007 on Investment and Investment, which was later transferred to Law No. 11/2020, which is now stipulated as Law No. 6/2023 on the Stipulation of Government Regulation instead of Law No. 2/2022 on Job Creation into Law. As a result of this are GOI states regulations within the scope of FDI in geothermal power procurement in Indonesia:

Table 2. Geothermal Power Procurement Regulation

No.	Topic	Explanation/Details
1.	Foreign Equity Ownership	a) 100%, applies to public-private partnership (PPP) scheme during concession period b) 95%, applies to large-scale projects (>10 MW) c) <49%, applies to small-scale power generation. d) 95%, applies to geothermal drilling services e) 95%, applies to geothermal surveying services f) 49%, applies to testing and analysis of electrical installation and utility installation.
2.	Feed-in Tariff (FIT)	*Subject to negotiate
3.	Public Private Partnership (PPP)/Power Purchase Agreement (PPA)	*Subject to negotiate
4.	Land Acquisition	Allowed under certain conditions.

Source: Special ASEAN Investment Report 2023

Moreover, intending to accelerate geothermal power development, the GOI establishes several incentives and benefits for investors as stated in Article 4 Presidential Regulation No. 10/2021 on Investment Business Field with details as follows:

Table 3. Investor Incentives and Benefits

No.		Topic	Explanation/Description of what is expected
1.	Fiscal Incentives	Tax Allowance	Investors given a 6-year net income tax reduction of 5% annually of 30% of the investment value.
		Tax Holiday	Applies to investors with minimum investment Rp500M, investors obtain 5-20 years of tax relief and max.100% income tax deduction. ***Mini Tax Holiday** applies to investors with minimum investment Rp100-500M, investors obtain 5 years of tax relief and max. 50% income tax deduction.
		Investment Allowance	a) reduction of net income on new investment or that are labour-intensive industries; and/or b) deduction of gross income for organizing apprenticeship, internship, and/or learning activities aims to foster and develop specific competency-based human resources.
		Customs Incentives	Exemption from import duty and imports of machinery and materials.
2.	Non-Fiscal Incentives	Administrative and Others	a) ease of business licensing b) provision of supporting infrastructure c) guaranteed availability of energy d) guaranteed availability of raw materials e) immigration f) employment g) other facilities in accordance with laws and regulations.

Source: Multi-Source

Considering the economic aspects involved, establishing incentives is expected to increase the number of investors. However, research shows that the number of incentives offered could be more economically attractive to impact investors' growth significantly. The lack of optimization by business entities and the administrative complexities have hindered the effectiveness of the incentives in stimulating investment in renewable energy.

In 2019, Indonesia created the New and Renewable Energy Draft Bill (RUU EBT) to ensure national security, resilience, and efficiency in renewable energy availability. The draft bill aims to establish a comprehensive regulation in a separate law, referencing existing laws and regulations and addressing domestic energy and raw material needs. The draft bill systematically outlines principles, objectives, control, transition period, renewable energy sources, licensing, exploitation, environmental management, research, development, incentives, funds, guidance, sanctions, and community participation (Bestari, 2019).

Considering the factual regulations above, stipulated policies heavily impact the development of actions and the course of action. It needs more certainty in the industry, resulting in overlapping responsibilities, which are depicted through the Ministry's overlapping objectives and diverging interests. Although the new geothermal law appears advantageous, determining its actual effect on geothermal development is challenging. This is because, by no longer categorizing geothermal energy as a mining activity, the law necessitates the creation of additional supporting laws and regulations.

FDI Cooperation Scheme in the Geothermal energy sector aligns with Indonesia's NDC Commitment

FDI is seen as a driver of growth because it typically involves foreign capital, technology, and know-how. Generally, estimating the effect of FDI on the host country's economy is challenging. Nevertheless, the origin of foreign direct investment is that investors own assets that will yield significant profits. This suggests that foreign direct investment is essential for modernizing a country and promoting growth. Research shows that foreign direct investment can be carried out in various ways, including establishing joint ventures (JVs). The success of an FDI policy depends not only on whether joint ventures are needed but also, more importantly, on whether a sound business environment maximizes the economic benefits of FDI in the host country (Zulfikar, 2019).

The procurement of JV in Indonesia is regulated through Investment Law: 1) Article 1 Section 3 defines foreign investment as business operations in Indonesia undertaken by foreign investors using entire foreign capital or joint capital with domestic investors; 2) Article 2 of Government Regulation No. 20/1994 regarding the Share Ownership in Companies Established In the Framework of Foreign Investment explains that foreign investment can be made in two forms, namely (i) a joint venture between foreign capital and capital owned by Indonesian citizens and/or Indonesian legal entities; and (ii) direct, in the sense that all capital is owned by foreign citizens and/or foreign legal entities.

In 2023, a JV between PGEO and Chevron was set out. The arrangement is established to support the construction and development of Way Ratai NPP in Lampung, Indonesia. This agreement resulted in a JV Company named PT Cahaya Anagata Energy, with 60% of the shares owned by Chevron and 40% by PGE. As law regulations mention, PGE and Chevron will allocate exploration commitment into a joint account between the auction winner and the GOI in this agreement. Through the arrangements, both parties targeted focusing and aligning to NZE 2060. Conversely, PGEO will generate a high margin and stable economic growth, allowing the company to produce 11 billion kWh/year, which allows PGEO to hold 9% of the global market share.

Throughout Indonesia's RE development years, the GOI has set out countless contractual operations in different forms. To achieve the development needed and align with INDC commitment and strategies, stakeholders that hold power, which in this case is PGEO,

are strategically arranged with multiple parties. Generally, JOCs are created to expand business areas or improve output quality. Non-Administrative JOC (Kontrak Operasi and Bersama) is implemented by Pertamina to set out development in the geothermal sector in Indonesia by strategically engaging partners to achieve and provide clean and environmentally friendly energy (Joint Operation Contract - Pertamina Geothermal Energy Tbk, n.d.). Therefore, the contract is only regulated and used as a coordination tool, which means that the work responsibilities of the project owner rest with each party.

JOC is set out between Pertamina and private companies, establishing a contract with PT PLN. As the ruler, Pertamina owned the field; afterward, private companies handled exploration, development, construction, and commissioning. This makes Pertamina own 4% of the shares, GOI 34%, and the rest are privately owned. Currently, PGE has 5 JOCs with partners nationwide, including PLTP Sarulla in North Tapanuli, North Sumatra. 2017, it started operating after a consortium between PGE and Sarulla Operations was disclosed.

Aspects of JOC are regulated in PMK 33/2013 concerning the ownership status of geothermal assets originating from joint operation contracts. Article 3 PMK 33/2013 mentions that assets mentioned in the contract belong to PT Pertamina and are categorized as State Capital Participation. Article 5 mentioned the transfer of the ownership status of assets as intended in Article 3 to a subsidiary, which was formed to carry out geothermal business by the provisions of statutory regulations without waiting for the determination as intended in Article 4.

One of the ways to measure whether the implemented schemes and the between the schemes and Indonesia's commitment with the Paris Agreement 2015, is by assessing the growth of investment value and number of investors over the years. In 2023, investment in RE has decreased by 9,3% valuated $1.5M or Rp23.3T (Investasi Energi Terbarukan Turun 23 Triliun Pada 2023, Pemerintah Gencarkan Peningkatan - Masyarakat Energi Terbarukan Indonesia, n.d.). This percentage is still far from the 2025 RE target of 17-19%. The growth of investment in the sector as well is not as expected. Hereby is the valuation of RE investment in Indonesia since 2017.

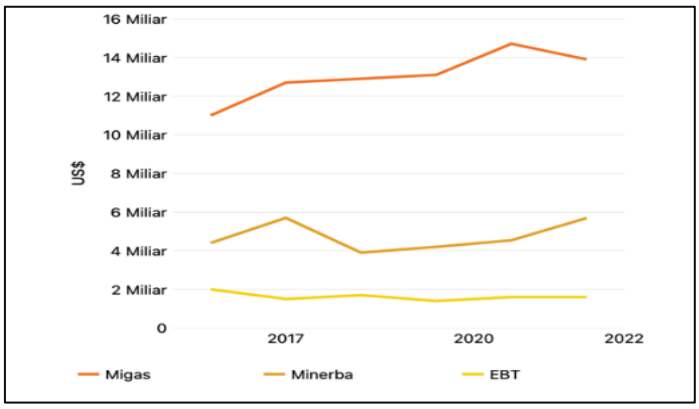

Figure 2. Energy Sector Investment Growth
Source: Ministry of Energy and Mineral Resources, 2024

The graph above shows the incline and decline of all energy industry investment for almost the last decade in Indonesia. Oil and gas are meeting an all-time high investment since the industry's investment number is significantly growing. However, investment in RE has stagnated and has not shown any significant investment value for the past five years. Even though the RE investment number seems static, Indonesia's geothermal investment value shows significant growth.

The schemes and regulations implemented align with INDC's commitment to the Paris Agreement 2015. However, there is still lots of room for improvement. Primarily, when

it comes to achieving the NDC goals, the GOI set out nine strategic ways, of which 3 of the clauses focus on developing policies, regulations, and frameworks. One of the concerns and remains a challenge is the framework and policy of financing strategy. This is closely related to geothermal development since financing plays a vital role; therefore, the GOI must establish a scheme that favors the investors while maintaining state benefits and sustainability. Hereby is the problems that need to be address in order to achieve expected development, which heavily related to the financing and investors attraction:

First, there are overlapping regulations between the Geothermal Law and Omnibus Law, which are shown in the governance of the central government, especially in the utilization of direct use of geothermal power. The Omnibus Law empowers the central government to establish regulations and procedures for direct geothermal use, which local governments must obey. The central government has vast authority, from developing national policy to encouraging research and exploration. The Geothermal Law No.14/2014 required geothermal permit holders to pay production fees for direct consumption. The Omnibus Law eliminated this obligation, and permit holders must now pay municipal taxes and retributions.

Second, there are regulation uncertainties and voids. One of which is on Article 53 Geothermal Energy Act 2003, IPB (current is IUP) holders are required to pay a production bonus within the jurisdiction of the geothermal project. The amount of the bonus is to be determined as a fixed percentage. Meanwhile, in the New Geothermal Law, technical procedures regarding bonuses are nowhere to be found. It only stated the bonus size and payment procedures. In addition, the New Geothermal Law does not contain a detailed breakdown of tax and other revenues.

Third, fixed prices on resource purchasing over the years. Geothermal power purchases are on fixed price over the years by PT PLN. Even though Article 40 RE Draft Bill states that PT PLN is required to buy resources from RE, pricing regulations still need to be mentioned. Considering that this matter is one of the critical factors, investors are having second thoughts on Indonesia's geothermal market; it is better to have it retrieved. Not having yet to mention, as stated in Article 22, "economic" pricing on resource purchases.

Fourth, the regulations for enhancing Indonesia's geothermal industry need assurances. This is reflected in the long process of issuing and stipulating the RE Draft Bill. Considering the potential magnitude of geothermal, it would be better if the sector were made into a separate clause, equivalent to solar power.

Fifth, as stated in the Investment Law, the procurement of RE investment itself is still a secondary topic. Examining the geothermal potential, the GOI must stipulate a distinctive law regulation concerning RE Investment, which could favor the investor. Since looking at the NZE 2060 and INDC goals, it is mandatory to prioritize the development of the geothermal industry because one way we could assess the alignment between the schemes and the commitment is by seeing how far the stakeholders could go ahead.

Sixth, implementing a JV and creating a new company is ingenious. This would allow other potential investors globally to see an alternative investment method rather than only stock investment and a consortium. After decades of attempting different approaches to investment methods, a JV method is implemented, and it is believed it could be a breakthrough in the geothermal industry. Other than that, the implementation of JOC in terms of contractual agreement still has much room for improvement. However, considering the majority ownership percentage given to the private sector, it will give the investors accountability for the project and show the support given by the GOI. Nevertheless, the schemes are designed to support and assist the funding of the geothermal industry, which aspires to accomplish significant infrastructure development.

One of the parameters used to evaluate the progress made is by examining Indonesia's global stocktake. On the other hand, the mitigation scenario of the energy sector, as stated in the updated NDC 2022, is also one of the considered parameters. So, the big question is

whether the policies and regulations that stipulating the business and contractual agreement align with Indonesia's commitment to the Paris Agreement and whether all the progress is being made is well-enough to help Indonesia achieve both NDC implementation and national goals. It is believed that if there's no progress to be made around the regulation scope, especially on the stipulation of RE Draft Bill, achieving ETM in 2030 then NZE in 2060 would be really challenging. Considering the development of geothermal industry, whether upstream or downstream is highly dependent on financing which are fully impacted by the Investment Law. Therefore, key improvements must be made. The stipulation of RE Draft Bill must be accelerated, regulations must be simplified, regulations certainty especially which closely related to purchase pricing and financing.

Even though there is still a void in the stipulated regulations, business schemes, and strategic programs set forth, the efforts and actions being made align with INDC's commitment. However, there is still lots of room for improvement. This improvement could be made upstream and downstream since both sectors still face major changes that play a vital role in operational business routines. Other than that, improvements could be made to the simplicity of the bureaucracy, administration, and system, which has been one of the rising issues for investors for the past decade. Ultimately, the actions and progress that have been taken and are being made throughout the decade since 2015 is leading Indonesia to achieve the NZE goals if improvement constantly being made.

CONCLUSION

This article emphasizes the critical role of policy evaluation and regulatory frameworks in shaping investment climates for RE, with a specific focus on Indonesia's geothermal sector. Disparities in policy adoption between developed and developing economies highlight the challenges in transitioning to sustainable energy. International agreements and bilateral treaties govern geothermal development and foreign investment, underscoring the complexity of the regulatory landscape. Despite incentives, attracting investors remains challenging due to administrative complexities. Legislative initiatives like the New Job Creation Law (UU Cipta Kerja) and Renewable Energy Draft Bill aim to provide a comprehensive framework, yet regulatory challenges persist. However, there is recognition of the potential of foreign direct investment (FDI), mainly through joint ventures (JVs) and joint operation contracts (JOCs), to drive modernization and growth in the geothermal sector. However, if there are no improvements being made, especially on the financing/business sector, then achieving NZE 2060 in the long term will be daunting. While efforts align with Indonesia's commitments to the Paris Agreement, addressing bureaucratic complexities and regulatory uncertainties is crucial for advancing sustainable energy goals. Streamlining regulatory processes and fostering strategic partnerships are essential to realizing Indonesia's renewable energy objectives and fulfilling its international commitments.

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