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ENERGY DIPLOMACY AND GLOBAL COLLABORATION: INDODEPP'S ROLE IN FACILITATING INDONESIA'S ENERGY TRANSITION

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Abstract: *In Indonesia's energy diplomacy and sustainable development policy, energy transition is a strategic issue. The goal of the Indonesia-Denmark Energy Cooperation Program (INDODEPP) is to promote clean energy transition in Indonesia. In the context of bilateral cooperation in the field of renewable energy, this study will explain the implementation and barriers to implementation. The research method used is descriptive analysis using secondary data from official government documents, cooperation reports, news, and scientific literature related to INDODEPP. Data analysis techniques used include data reduction, data presentation, and conclusion drawing. The results show that the program has achieved many good things, such as the creation of the Energy Transition Roadmap and technical assistance in the renewable energy sector. However, there are several things that hinder the implementation of INDODEPP, such as the incompatibility of national and local policies, limited institutional and technical capacity at the local level, and problems in coordination between stakeholders. As a result, the Indonesia-Denmark Energy Cooperation Program (INDODEPP) is a strategic effort to support the transformation of the national energy sector towards a cleaner, more sustainable and efficient energy system. The ability of the parties to overcome structural and institutional barriers is an important factor in this program. Therefore, in order for this cooperation to make a real contribution to realizing the energy transition in Indonesia, cross-sector policy harmonization and technical capacity building at the regional level are needed.*

Keywords: *Bilateral Cooperation, Energy Transition, Indonesia, Denmark*

Abstrak: *Dalam diplomasi energi dan kebijakan pembangunan berkelanjutan Indonesia, transisi energi adalah isu strategis. Tujuan dari Indonesia – Denmark Energy Cooperation Program (INDODEPP) adalah untuk mempromosikan transisi energi bersih di Indonesia. Dalam konteks kerja sama bilateral di bidang energi terbarukan, studi ini akan menjelaskan pelaksanaan dan hambatan dalam pelaksanaannya. Metode penelitian yang digunakan adalah analisis deskriptif menggunakan data sekunder dari dokumen resmi pemerintah, laporan kerjasama, berita, dan literatur ilmiah terkait INDODEPP. Teknik analisis data yang digunakan meliputi reduksi data, penyajian data, dan penarikan kesimpulan. Hasilnya menunjukkan bahwa program ini telah mencapai banyak hal baik, seperti pembuatan Energy Transition Roadmap dan bantuan teknis di sektor energi terbarukan. Namun, ada beberapa hal yang menghambat pelaksanaan INDODEPP, seperti ketidakcocokan antara kebijakan nasional dan lokal, kapasitas kelembagaan dan teknis yang terbatas di tingkat lokal, serta masalah dalam koordinasi antara pemangku kepentingan. Oleh sebab itu, Indonesia-Denmark Energy Cooperation (INDODEPP) adalah upaya strategis untuk mendukung transformasi sektor energi nasional menuju sistem energi yang lebih bersih, berkelanjutan, dan efisien. Kemampuan para pihak untuk mengatasi hambatan struktural dan kelembagaan adalah faktor penting dalam program ini. Oleh karena itu, agar kerja sama ini dapat memberikan kontribusi nyata dalam mewujudkan transisi energi di Indonesia, diperlukan harmonisasi kebijakan lintas sektor dan pembangunan kapasitas teknis di tingkat regional.*

Kata Kunci*: kerja sama bilateral, transisi energi, Indonesia, Denmark*

INTRODUCTION

The consumption of fossil fuel-derived energy sources, including coal, oil, and natural gas, significantly contributes to elevated greenhouse gas emissions, especially carbon dioxide (CO_2), hence causing global warming and climate change. The combustion of fossil fuels for electricity generation, vehicular operation, or industrial use releases CO_2 gas into the atmosphere, accumulating and creating a layer that retains the Earth's heat. The Intergovernmental Panel on Climate Change study (IPCC, 2007) indicates that approximately 75% of global greenhouse gas emissions originate from the energy sector, rendering it the primary

contributor to the increase in Earth's temperature. Consequently, the shift to renewable energy sources, including solar, wind, and hydro power, is a crucial strategy for mitigating emissions and curtailing the pace of climate change.

Fossil fuels significantly increase greenhouse gas (GHG) emissions in Indonesia, especially within the electricity generation sector. In 2020, carbon dioxide emissions from fossil fuel consumption in Indonesia amounted to around 579 million tons, notwithstanding a reduction attributed to the COVID-19 pandemic (Triyatna, 2021). The predominance of fossil fuels in the national primary energy composition remains substantial, with coal as the principal source. Data from 2023 indicates that around 85% of Indonesia's power generation capacity relies on fossil fuels, with coal constituting 53% of the overall capacity (Alfathi, 2025).

The amount used of coal in the power industry has almost quadrupled over the last decade, resulting in an increase of 86 million tons of CO2 emissions in the power sector from 2013 to 2023. Emissions from the energy sector are anticipated to persist in increasing if dependence on fossil fuels is not diminished. In the business as usual (BAU) scenario, greenhouse gas emissions from the energy sector are projected to rise from 475 million tons CO2e in 2013 to 1,655 million tons CO2e by 2035, with power generation being the primary contributor (Mujiyanto, 2015).

The significant reliance on fossil fuels presents a substantial obstacle for Indonesia in meeting its emission reduction goals and transitioning to renewable energy sources. The Indonesian government, as outlined in Government Regulation No. 79/2014 on the National Energy Policy, aims to achieve a minimum target of 23% for new and renewable energy utilization by 2025, with an increase to 31% by 2050. This initiative seeks to decrease fossil energy consumption and enhance the contribution of renewable energy sources in the national energy mix. However, the 2025 target may be adjusted downward to a range of 17-19% (IESR, 2022; KESDM, 2021; Kompas, 2018).

As a country that ratified the Paris Agreement, Indonesia is striving to meet its commitments in the Enhanced Nationally Determined Contributions of 2022 to increase its emission reduction ambitions from the previous targets, namely: Unconditional emission reduction (without international support): from 29% to 31.89% compared to the business-as-usual (BAU) scenario. Conditional emission

reduction (with international support): from 41% to 43.20% compared to the BAU scenario (UNFCCC, 2022).

Indonesia collaborates with Denmark to advance its goal of reducing emissions via energy transition. Denmark has established itself as a frontrunner in decarbonisation initiatives. In 2022, the government set a net zero target for 2045, aiming for a 110% reduction in emissions by 2050 (Anugrah, 2024). Denmark exhibits significant technological leadership in offshore wind energy, bio methane, and district heating. The government has broadened its focus to encompass carbon capture and storage (CCUS) as well as hydrogen. Denmark exhibits robust energy and climate governance, overseen by the Ministry of Climate, Energy and Utilities. The Climate 2020 law mandates annual policy actions and funding commitments. Denmark possesses the highest share of wind power among International Energy Agency member countries, with wind, bioenergy, and solar photovoltaic panels collectively contributing over 80% to the nation's electricity supply. Denmark aims to eliminate fossil fuel production by 2050, with a primary objective of attaining 100% bio methane in heating by 2030 (IEA, 2025).

The collaboration between Indonesia and Denmark in the energy sector commenced with the Environmental Support Program (ESP), which comprised three phases. The initial phase (2006-2007) concentrated on addressing the environmental harm resulting from the 2004 tsunami disaster and restructuring Indonesia's environmental management priorities (Prakoso et al., 2019). During this phase, Aceh Province served as the focal point for reconstruction, receiving DKK 60 million from a total budget of DKK 90 million (approximately Rp180 billion). The remaining funds were allocated to support projects focused on environmental sustainability and development, including coastal area management, mangrove planting, and sustainable urban development practices. The second phase (2008-2012) emphasized the promotion of sustainable energy policies, whereas the third phase (2013-2018) advanced these initiatives through a more strategic and implementation framework (Samhati et al., 2023).

The cooperation between Indonesia and Denmark in improving the Renewable Energy sector commenced with the signing of a Memorandum of Understanding on October 22, 2015, including many domains, including clean renewable energy and energy saving. In 2015, Denmark effectively advanced its renewable energy industry, with 42% of the nation's total electricity generation derived from wind energy, establishing it as a significant partner for Indonesia in renewable energy development initiatives. A notable accomplishment of this collaboration was the release of the Indonesia Wind Energy Potential Map in May 2017, marking a crucial advancement in the assessment of Indonesia's renewable energy potential (DEA, 2022). On November 28, 2017, President Joko Widodo and Danish Prime Minister Lars Løkke Rasmussen executed the Plan of Action 2017-2020, intended to enhance bilateral cooperation between the two nations. The agreement primarily emphasizes the advancement of large-scale renewable energy initiatives and the promotion of investment from Denmark to Indonesia (Setkab, 2017). Despite the agreement concluding in 2021, the program persisted under the Indonesian Danish Energy Partnership Program (INDODEPP) established in 2020, serving as a continuation of bilateral collaboration overseen by the Strategic Sector collaboration Forum (Tianotak et al., 2023).

The Indonesia Denmark Energy Partnership Program (INDODEPP) perpetuates the bilateral collaboration between Indonesia and Denmark in the energy sector, with the objective of fulfilling Indonesia's national energy requirements. The program aims to facilitate the attainment of national objectives in the energy sector, specifically addressing the seventh and thirteenth points of the Sustainable Development Goals (SDGs) and the energy mix target of 23% by 2025. Financial support for this initiative is provided by the Danish Ministry of Foreign Affairs, as INDODEPP remains under the auspices of the South-South Cooperation (SSC) forum, which is set to conclude in 2021. On November 24, 2020, Indonesia and Denmark enhanced collaboration in renewable energy development. The Minister of Energy and Mineral Resources conducted a virtual meeting with the Danish Minister of Climate, Energy and Utilities, H.E. Dan Jorgensen. The purpose of this conference was to deliberate on the ongoing implementation of INDODEPP, subsequent to the signing of a Memorandum of Understanding concerning

collaboration in clean energy, renewable energy, and energy conservation (KESDM, 2020). This study examines Indonesia's energy diplomacy in fostering a strategic partnership with Denmark, aimed at achieving the objectives of the energy transition.

METHODS

This research employs a descriptive qualitative research design, as outlined by Creswell, which aims to deliver a thorough and detailed account of social phenomena through systematically processed qualitative data. The findings are presented as rich and valid narrative descriptions (Creswell, 2018). This method is utilized to provide an in-depth analysis of bilateral cooperation concerning environmental issues between Indonesia and Denmark in the context of New Renewable Energy (NRE) development. This research design employs secondary data as the primary method for data collection and analysis of pertinent information. Literature studies will involve a review of credible sources, including academic journals, government reports, policy documents, and official publications, to achieve a comprehensive understanding of the historical context, theories, and developments in international cooperation within the renewable energy sector. The case study will analyse various concrete initiatives undertaken by Indonesia and Denmark, including realized renewable energy development projects, and will evaluate the challenges and opportunities arising from the implementation of this cooperation.

RESULTS AND DISCUSSIONS

Theoretical Framework

Energy diplomacy underscores the prioritization of energy issues within a country, highlighting that each stakeholder possesses distinct yet coordinated roles in the pursuit of national energy security. Energy diplomacy serves as a crucial tool for achieving national energy security and promoting sustainable development. Energy diplomacy refers to the application of foreign policy to ensure access to

international energy supplies and to foster cooperation in the energy sector, particularly through bilateral agreements between governments. (Goldthau, 2010).

The implementation of energy diplomacy within a foreign policy framework suggests that an alternative approach could involve establishing a comparable structure. William Dunn categorizes foreign policy ideas into three alternatives based on specific criteria. The first criterion is the perspective from which the issue is viewed, emphasizing the urgency of the matter by examining its historical context to facilitate consensus among policymakers. This shift in perspective aims to illustrate the government's ability to identify issues of significance, as they are increasingly becoming strategic across various dimensions of political, social, economic, and security relations at both national and international levels (Dunn & Wibawa, 2000).

Furthermore, the policies that are to be implemented ought to quantitatively assess the financial and human resources of the relevant administrative units. This indicates that the factors requiring consideration include financial capacity and the proficiency of specialists. Third, it is essential to establish supplementary measurement criteria that reflect an outward-looking orientation and international engagement in the pursuit of national energy security. This includes assessing the compatibility between constitutional provisions and international circumstances, particularly concerning the commitments that have been articulated. This indicates that the presence of international outreach initiatives signifies that this matter is not solely significant within the domestic context but also receives impact from the global arena (Dunn & Wibawa, 2000). The forthcoming policy will emerge as a confluence of both domestic and international circumstances. Indonesia possesses a concept of energy diplomacy designed to foster international collaboration for the purpose of securing energy supplies, enhancing renewable energy initiatives, improving access to modern energy, and promoting energy efficiency (Kementerian Luar Negeri, 2017).

This pertains to sustainable development, emphasizing that energy policy should ensure not only the supply, access, and affordability of energy but also that energy security is sustainable and environmentally responsible. The utilization of fossil energy contributes to heightened emissions and environmental degradation

resulting from oil extraction and mineral mining activities. Sustainable development, as articulated by Emil Salim in 1990 (Salim, 1990), seeks to enhance societal welfare while addressing human needs and aspirations. Sustainable development seeks to achieve equitable development across generations, both in the present and future. Posits that development, primarily economically oriented, can be assessed through three criteria: (1) the absence of wasteful use or depletion of natural resources; (2) the absence of pollution and other environmental impacts; and (3) the capacity of activities to enhance usable or replaceable resources (Azmi & Purwanto, 2024).

1. Indonesia-Denmark Renewable Energy Cooperation

The Indonesia Denmark Partnership Program (INDODEPP), which operates from 2021 to 2025, is one of the multiple forms of energy sector cooperation between Indonesia and Denmark. This initiative serves as an extension of the Strategic Sector Cooperation (SSC) initiative, which concluded in 2020. INDODEPP is intended to enhance Indonesia's sustainable energy objectives by strengthening policy, infrastructure, and implementation aspects, in contrast to the previous SSC program, which prioritized capacity development and technical assistance. The program is a critical component in the support of Indonesia's national energy transition policy in accordance with a variety of international objectives, such as the reduction of greenhouse gas emissions through Nationally Determined Contributions (NDCs) and the achievement of the Sustainable Development Goals (SDGs), particularly SDG7 on access to clean energy and SDG13 on climate change mitigation (DEA, 2025).

INDODEPP aims to support Indonesia in achieving its energy mix goal of 23% renewable energy within the national energy system and enhancing energy efficiency to 17% by 2025. INDODEPP emphasizes several strategic areas to facilitate this achievement, including the formulation of energy policies that promote renewable energy investment, enhancing energy efficiency across sectors, fortifying electricity infrastructure and systems, and bolstering energy supply security. The program promotes a research and innovation-based approach, with Denmark as a partner country sharing its experience and advanced technology for

a greener and more sustainable energy transition (DEA, 2022; KESDM, 2021, 2023).

The Indonesian Ministry of Energy and Mineral Resources and the Danish Energy Agency of Denmark have maintained a strategic partnership in the field of energy since 2015. This collaboration will be extended from 2020 to 2025 within the Indonesia-Denmark Energy Cooperation Program (INDODEPP), with a financing support of DKK 60 million, or approximately IDR 140 billion. Furthermore, Denmark endorses a variety of energy transition initiatives that are implemented by three parties in Indonesia. These include the Green Energy Finance and Investment Mechanism by the OECD and Long-Term Energy Planning by IRENA. A larger contribution to the Green Climate Fund (GCF), sustained support for the Global Green Growth Institute (GGGI), and Partnering for Green Growth and Global Goals (P4G) (DEA, 2025).

The Indonesia Denmark Energy Partnership Program (INDODEPP) comprises three interrelated components aimed at facilitating Indonesia's energy transition. The initial component is Scenario-Based Long-Term Energy Plans and Regulation, designed to establish a dependable energy planning framework to enhance investment in renewable energy (KESDM, Press Release, 2020). This effort encompasses three primary aspects: Modelling Capacity, which enhances modelling of energy capabilities for improved planning; Energy Policy and Planning, which formulates energy policies grounded in thorough data and analysis; and Regulation, which seeks to establish and harmonize regulations to foster a more advantageous investment climate. The implementation of this component includes the Directorate General of Electricity, the Secretariat General of the National Energy Council (DEN), and the Directorate General of EBTKE, which is responsible for designing policies and regulations to promote a more structured and sustainable energy transition (EBTKE, 2020).

The second component, Integration of Renewable Energy, is dedicated to enhancing the national capacity to apply and integrate renewable energy in order to facilitate the decarbonisation process in the electricity sector. In order to accomplish this objective, the program comprises three primary components: the Wind Power Pilot Tender, which promotes increased investment in wind power generation by

means of a more transparent and competitive tender mechanism; Energy Forecasting and System Operation, which establishes energy forecasting methodologies to preserve the stability of the electricity system in the presence of variability in renewable energy sources, including solar and wind power; and Least Cost Grid Integration Strategies and Planning, which endeavours to optimize the integration of renewable energy with the most cost-effective approach and technical feasibility within the national grid system. PT PLN is instrumental in preparing the electricity network to optimally absorb renewable energy, thereby facilitating the attainment of a more environmentally suitable energy mix, through its implementation (EBTKE, 2020). The primary aim of these initiatives is to improve bilateral and multilateral cooperation between Denmark and Indonesia, facilitating a transition in the energy sector that supports the attainment of the Sustainable Development Goals (SDGs). The programs are designed to facilitate the attainment of SDG 7 (Clean and Affordable Energy), SDG 12 (Responsible Consumption and Production), SDG 13 (Action on Climate Change), and SDG 17 (Sustainable Partnerships).

2. Implementation of INDODEPP Program

INDODEPP aims to accomplish three main goals that facilitate the energy transition in Indonesia. Investment in the New Renewable Energy industry should be augmented through the formulation of long-term strategies grounded in scenarios and laws. Secondly, incorporate renewable energy to facilitate the decarbonization of the electricity grid. Third, enhance energy efficiency techniques for sectors including generating, industrial, and commercial buildings (KESDM, 2017). The Minister of Energy and Mineral Resources, alongside Flemming Møller Mortensen, the Minister of Development Cooperation and Nordic Cooperation of Denmark, executed a Memorandum of Understanding between PT Sarana Multi Infrastruktur Persero and Danida Sustainable Infrastructure Finance. This affirms Denmark's dedication to assist Indonesia's energy transition sustainably (KESDM, 2023). The partnership program comprises energy modeling, renewable energy integration, and energy efficiency, concentrating on regions including Lombok, Batam, Aceh, and West Java (KESDM, 2023). Direktorat Jenderal Energi Baru, Terbarukan, dan Konservasi Energi, 2023 In 2025, PT Sarana Multi Infrastruktur

(Persero) (PT SMI) entered into a Memorandum of Understanding (MoU) with Danida Sustainable Infrastructure Finance (Danida SIF) to facilitate cooperation on sustainable infrastructure financing in Indonesia. This collaboration seeks to facilitate funding for sustainable infrastructure initiatives and advance the energy transition and green economic growth in Indonesia.

This partnership enables PT SMI to enhance its access to financing, thereby facilitating support for renewable energy, energy efficiency, and various sustainable infrastructure projects. The MoU enhances PT SMI's function as a key driver in advancing Indonesia's green economy and energy transition, aligning with governmental directives and the nation's dedication to its climate objectives and the Paris Agreement. This collaboration is integral to PT SMI's strategy to enhance its capacity for sustainable financing and to foster synergies with international financial institutions, thereby aligning with Indonesia's objectives for sustainable development and achieving net zero emissions in the future (ptsmi, 2022).

Delegates from the Danish Embassy, Danish Energy Agency (DEA), and Energinet Denmark participated in a meeting of the Indonesian Renewable Energy Society (METI) on May 13, 2024. The seminar aimed to discuss the prospects for renewable energy growth in Indonesia. The Indonesian Renewable Energy Society (METI), in collaboration with the Danish Energy Agency (DEA) and ENERGINET, presented information about current regulations and conditions related to renewable energy. The gathering culminated in the concept of "Electrification of the Islands," which seeks to optimize the renewable energy potential of Indonesia's islands and establish a more sustainable electrical network. The goal of this initiative is to reduce Indonesia’s dependence on resources derived from oil and gas. (IESR, 2023).

The three main elements of the INDODEPP initiative collaboratively facilitate energy transition in Indonesia. The initiative aims to expedite the realization of the National Energy General Plan / *Rencana Umum Energi Nasional* (RUEN) sustainable energy objectives, which include data-informed long-term planning and regulation, enhanced integration of renewable energy, and improved energy efficiency methods. Moreover, INDODEPP facilitates Indonesia's dedication to attaining Net Zero Emissions (NZE), enhances the nation's energy

security, and fosters more sustainable economic growth by promoting energy efficiency and renewable energy (KESDM, 2017).

INDODEPP's implementation emphasizes various aspects, including the assessment of wind energy potential in Indonesia, published in May 2017, the formulation of sustainable energy policies, and the transfer of technology and expertise from Denmark, particularly regarding wind energy, bio methane, and district heating systems. Furthermore, to attain Net Zero Emissions (NZE) by 2060, the program facilitates the formulation of rules and initiatives aimed at enhancing the renewable energy mix (KESDM, 2023).

a. Supporting factors

One of the key components to the Indonesia Denmark Energy Partnership Program's (INDODEPP) success is both nations' strong commitment to promoting the development of new renewable energy and energy efficiency. The initiative aligns with Indonesia's national energy mix target of 23% by 2025, which is supported by policies like RUEN and *Rencana Usaha Penyediaan Tenaga Listrik* (RUPTL). Denmark, with its expertise in wind power transition and energy efficiency, gives technical help and knowledge transfer to the development of Indonesia's renewable energy sector (KESDM, 2021).

Alongside policy and technology support, INDODEPP engages various stakeholders, including national and local governments, the private sector, academia, and international organizations. The Danish government allocates DKK 60 million (approximately EUR 8 million) for infrastructure development, workforce training, and research and innovation in green energy. This collaboration enhances technology adoption, strengthens human resource capacity, and fosters a more favourable investment environment(DEA, 2025).

Social and environmental challenges remain, particularly in large-scale renewable energy projects, which may provoke community resistance. Participatory approaches are essential for fostering local acceptance and ensuring program sustainability. INDODEPP illustrates that energy diplomacy serves as a strategic instrument to facilitate a just, sustainable, and inclusive energy transition in Indonesia (Dewi, 2024).

b. The Inhibiting Factor

While INDODEPP aligns strategically with national policies like RUEN and RUPTL, its implementation faces several structural and operational challenges. The main challenges is the discordance of regulations between national policies and their provincial implementation. Divergent regulations and intricate licensing procedures obstruct the efficient execution of new renewable energy initiatives. Regulatory uncertainty leads to diminishing investor confidence in the stability of Indonesia's energy policy. The subsequent challenge is to the inadequate electricity infrastructure in certain areas, particularly in eastern Indonesia. This scenario complicates the integration of renewable energy technologies, such as solar and wind, into the national electrical system, particularly due to the limited preparedness of local technology (DEA, 2022).

The financing aspect represents a considerable challenge. The investment required to meet the 23% NRE mix target by 2025 is estimated at USD 14.02 billion; however, the current level of investment realization remains below this target. The absence of fiscal incentives and limited investment guarantees has resulted in a relatively low level of interest from both domestic and foreign investors. Despite receiving grant support from the Danish government, INDODEPP faces significant challenges due to limited local funding. Furthermore, the optimization of human resource capacity within the energy sector remains unachieved. The transfer of knowledge from Denmark has not been adequately aligned with the availability of local human resources, in both technical and institutional aspects (DEA, 2022).

Limited stakeholder engagement, encompassing the national private sector and civil society, further complicates program implementation. Renewable energy projects frequently adopt a top-down approach, resulting in limited community engagement, which contributes to social resistance and diminished ownership among local populations. Wind and solar projects have occasionally been rejected on the grounds of environmental concerns, land disputes, and conflicting cultural values. The predominance of fossil energy, which constitutes over 80% of Indonesia's energy mix, remains a significant structural barrier to the integration of renewable energy sources (KESDM, 2017). The success of INDODEPP relies

significantly on cross-sectoral regulatory enhancements, the strengthening of human resource capacity, inclusive engagement of multiple stakeholders, and sustained political commitment to diminish the prevalence of fossil energy. INDODEPP represents a potential model for energy diplomacy aimed at advancing the low-carbon development agenda; however, its effectiveness is contingent upon the implementation of sufficient structural reforms (DEA, 2025).

3. Strategies to Enhance the Implementation of INDODEPP in Facilitating Indonesia's Energy Transition

To enhance the Indonesia Denmark Energy Partnership Programme (INDODEPP), a more thorough strategy is required to address obstacles to programme execution. A primary objective is the streamlining of rules and bureaucracy within the energy sector. The intricacies of licensing and the ambiguity of policy have posed substantial obstacles to investment in renewable energy initiatives. Consequently, there is an urgent necessity for open and pro-investment energy policy reforms, encompassing clarification on price controls, fiscal incentive programs, and competitive power purchase frameworks (KESDM, 2023).

Supporting regulatory reform, offering appealing and consistent incentives for investors is a crucial mechanism. Incentives may include investment subsidies, tax reductions, and improved access to financing for both large-scale and community-based green energy initiatives. This method may promote broader private engagement in the advancement and implementation of sustainable energy technology. Nonetheless, these incentives must be coupled with legal certainty to enhance investor confidence in the stability of national energy policy (DEA, 2025; KESDM, 2023).

From a technical standpoint, enhancing the national grid infrastructure is a critical component. Indonesia's existing power system is inadequately prepared to integrate intermittent renewable energy sources, including solar and wind power. Consequently, investments in smart grid technologies, energy storage systems, and the digitization of energy distribution management are essential to enhance the flexibility, efficiency, and resilience of the energy system. The successful implementation of the energy transition is significantly dependent on the capabilities of human resources. Development of technical competencies is

prioritized through vocational education, job training, and collaboration across government, academia, and industry. This capacity building is essential for preparing the workforce to utilize new technologies and enhance the management of sustainable energy systems (DEA, 2025; KESDM, 2020).

In the end, social aspects must be a fundamental component of the INDODEPP implementation plan. Enhancing public knowledge on the advantages of the energy transition necessitates the implementation of educational initiatives and active engagement with local communities. Participatory and inclusive methodologies in the development and execution of renewable energy initiatives can mitigate social opposition and enhance community endorsement, particularly in distant regions with limited engagement. Through the implementation of integrated policies, INDODEPP might serve as an exemplary example for international collaboration in expediting Indonesia's energy transition. The initiative enhances Indonesia-Denmark bilateral relations while simultaneously promoting national energy security, reducing carbon emissions, and fostering equitable and sustainable low-carbon economic development.

CONCLUSIONS

Indonesia's energy diplomacy seeks to foster international collaboration to ensure energy supply, enhance renewable energy, improve modern energy access, and promote energy efficiency, as exemplified by the Indonesia-Denmark Energy Cooperation Program (INDODEPP). This initiative is a strategic endeavour to facilitate the transformation of Indonesia's energy industry into a cleaner, more sustainable, and efficient energy system. INDODEPP aims to address global energy concerns, including rising energy consumption, reliance on fossil fuels, and the obligation to mitigate greenhouse gas emissions as outlined in the Paris Agreement. The initiative entails the transfer of technology and expertise from Denmark, an established nation in the renewable energy industry, to Indonesia, which is undergoing an energy transition. Furthermore, INDODEPP promotes the enhancement of governmental institutions' capabilities to mitigate reliance on fossil fuels.

External barriers come from disparities in systems and governance between Indonesia and Denmark, encompassing bureaucratic culture, development strategies, and anticipated collaboration results. Denmark, with extensive expertise in renewable energy management, prioritizes a technocratic approach grounded in data and long-term research outcomes, whereas Indonesia continues to have difficulties in establishing a coherent and evidence-based planning framework. These discrepancies frequently result in miscommunication or discord among the parties concerned, both in policy development and project execution.

The volatile nature of Indonesia's internal political and economic landscape, characterized by shifts in leadership and policy focus, frequently engenders uncertainty regarding the sustainability of collaborative initiatives. Conversely, the bilateral framework employed in this analysis illustrates that the efficacy of international collaboration hinges not solely on the state as the principal entity, but also on the involvement of non-state participants, including research institutions, civil society organizations, the private sector, and international donor agencies. Within the framework of INDODEPP, the participation of these entities plays a crucial role in facilitating knowledge transfer, advocating for policy changes, and executing technical initiatives in the domain. Nonetheless, this variety of participants necessitates a more intricate coordination system, which, if not effectively managed, may pose a significant obstacle.

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