Driving Sustainable Development Through Green Financing: A Strategic Analysis of Indonesia's Renewable Energy Sector

Lenny Hidayat[1], Michael Timothy Tasliman[2], Cholisa Amalia[1]

[1] Greenwise Consulting, Jakarta, Indonesia
[2] Surveyor Indonesia, Jakarta, Indonesia
lennyhidayat@greenwise.co.id

Abstract. Energy is a primary capital for a nation in achieving its vision and mission. Indonesia's energy needs continue to increase along with its growing population. The government is continuously striving to meet this demand, but not without challenges. Environmentally-conscious development directions require the government to transition to more eco-friendly energy sources, known as Renewable Energy (RE), by launching the Just Energy Transition Partnership (JETP) with international funding at the G20 Summit. The strong interest from countries in the form of foreign investment indicates that Indonesia has high potential in the renewable power generation sector as a replacement for coal. Nonetheless, Indonesia's commitment to energy transition also faces several challenges. In this study, Greenwise Consulting aims to comprehensively analyse the drivers and barriers in the renewable energy sector in efforts to access green financing. The information gathered from a sample of respondents, including private companies, investors, associations, and government entities, was further analysed using the Impact Investment Matchmaking Model framework combined with PESTLE analysis as this framework is designed to connect investors who are interested in making impact investments with projects or companies that are seeking funding for initiatives that deliver both financial returns and positive social or environmental impacts. It can be concluded that the renewable energy sector has clear drivers such as a defined business model, momentum, and abundant renewable energy supply. However, barriers like the non-functional carbon trading market, long break-even points, and the low ability of the public to pay high prices need to be addressed. Therefore, several policies related to enabling private involvement and financing need to be adjusted to increase private sector involvement and create a thriving market, ensuring that Indonesia's commitment to achieving energy transition can be realised.

Keywords: renewable energy, green financing, impact investment matchmaking model, PESTLE analysis.

A. Arif et al. (eds.), *Proceedings of the International Conference on Multidisciplinary Studies (ICoMSi 2024)*,
Advances in Social Science, Education and Humanities Research 926,
https://doi.org/10.2991/978-2-38476-406-8_9

1 Introduction

Although Indonesia is increasingly exposed to various climate risks, it faces significant challenges due to insufficient financial resources to address these issues [17]. According to the INFORM Risk Index, Indonesia ranks in the third cluster of countries most vulnerable to climate risks, placing 47th out of 191 nations and facing threats such as flooding, droughts, and heatwaves [5]. As the world's fifth-largest coastal nation, Indonesia is particularly vulnerable to the impacts of flooding and rising sea levels, with coastal communities, farmers, and fishermen being the most affected [13]. For instance, projections suggest that up to 95% of Jakarta's coastal regions could be submerged by 2050 due to rising sea levels [17]. With a large portion of Indonesia's population living in coastal areas, especially on Java Island, many communities, particularly in rural areas, face heightened risks from climate change-related events such as tidal surges and storms [15].

If left unaddressed, climate change could result in catastrophic consequences, including more frequent natural disasters, increased harmful emissions, and rising sea levels. Among the acute challenges posed by climate change, global warming and environmental pollution/degradation are particularly concerning due to their devastating effects on various aspects of life. Serious pollution and higher temperatures are two critical issues that must be addressed [1]. The primary source of these problems is greenhouse gas emissions, with carbon dioxide (CO2), nitrous oxide (N2O), and methane (CH4) being the key contributors. While CH4 and N2O account for 16% and 4% of global emissions, respectively, CO2 constitutes 76% [4,7]. Increasing the share of renewable energy in the total energy mix can help mitigate greenhouse gases (GHG), particularly CO2 [3]. Renewable energy, commonly defined as energy derived from sources such as solar, wind, wood, tide, geothermal, waste, and biomass, is widely recognized for its safety, cleanliness, and inexhaustibility. The benefits of renewable energy are far-reaching, including higher economic growth, job creation, reduction of energy poverty, and enhancement of energy security [2,19].

Green finance plays a crucial role in reducing CO2 emissions by prioritizing investment in environmentally friendly technologies like renewable energy, thereby helping to mitigate CO2 emissions [21]. Both finance and technology are essential for achieving a 40% reduction in greenhouse gas emissions by 2030 [18]. Green finance also has a significantly positive impact on sustainable development [22]. For every 1% increase in renewable energy investment, there is a 1.243% rise in private sector investment.

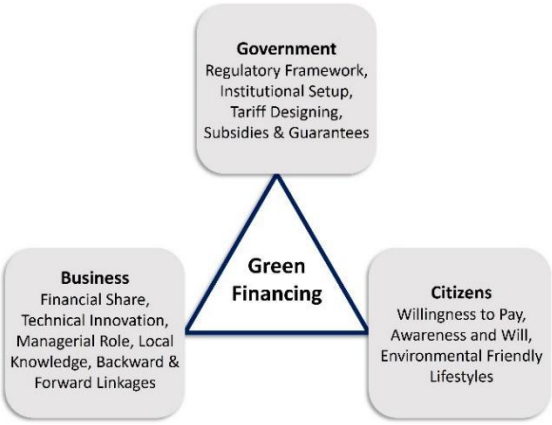

Fig. 1. Multi-stakeholders in green financing framework

Green finance contributes to economic growth in two primary ways. First, more developed green finance can better allocate resources and mitigate risks, enabling the economy to grow more quickly and sustainably. Second, technical innovation is essential for high-quality economic growth, and green finance can provide the necessary financial support and channels for firms through information transmission and innovation investment. Government subsidies, such as green loans and green production innovation, can help reduce companies' financial burdens and encourage them to adopt technological innovations [10]. The success of green finance in decarbonizing the economy through financing channels is stronger in developed credit markets, as evidenced by the size of domestic credit to private sectors [11,23]. Therefore, the government should also focus on developing credit markets to support green finance.

As the world recovers from the pandemic, Indonesia remains committed to advancing renewable energy as a national priority toward decarbonizing its energy sector. As one of Southeast Asia's largest coal and gas producers, Indonesia has ambitious plans to become a leading biofuel producer, aiming to reduce emissions by approximately 32% independently, or 43% with international support, exceeding the goals set by the Paris Agreement [14]. ASEAN countries have set regional renewable energy targets, and Indonesia has committed to achieving 25% renewable energy in its power supply by 2030. During the G20 Summit in November 2022, Indonesia launched the Just Energy Transition Partnership (JETP) with international financial support. Additionally, G7 countries have pledged USD 20 billion to help Indonesia retire coal-fired power plants early [12]. Meanwhile, the Asian Development Bank (ADB) is integrating climate change adaptation and mitigation measures into its infrastructure investments and supporting Indonesia's nationally determined contribution goal of 23% renewable energy production by 2025.

Despite Indonesia's strong commitment to renewable energy transition and the increasing momentum of green financing initiatives globally, significant challenges persist in aligning these efforts effectively. The high dependency on fossil fuels, coupled with the complexities of transitioning to renewables, exposes structural and financial

barriers that hinder progress [20]. Inadequate credit market development, unclear pricing mechanisms for renewable technologies, and an underdeveloped domestic carbon market exacerbate these challenges, limiting access to green financing. These constraints not only stall the implementation of renewable energy projects but also raise concerns about the feasibility of achieving Indonesia's ambitious decarbonization and energy transition targets.

In the pursuit of building a green ecosystem in Indonesia, Greenwise Consulting, with full support from the Fiscal Policy Agency (FPA) as the National Designated Authority (NDA) of the Green Climate Fund (GCF) in Indonesia and the Global Green Growth Institute, has conducted a situation analysis in the renewable energy sector.

2 Materials and Methodology

2.1 Materials

At the beginning of our study, we conducted an initial stakeholder mapping, which we categorized into several groups, such as private sector as companies seeking investment or funding, investors as fund providers, business associations, and government-related entities.

2.2 Methodology

The main methodology of this study is using several qualitative methods, such as desk review, in-depth interviews, and focus group discussion. In this study, Greenwise Consulting aims to comprehensively analyze the drivers and barriers in the renewable energy sector in efforts to access green financing. The information gathered from a sample of respondents, including private companies, investors, associations, and government entities, was further analyzed using the Impact Investment Matchmaking Model framework combined with PESTLE analysis.

The findings are synthesized with results from in-depth interviews with the main actors, both private investors and financiers, to get a real picture of the actual situation in each sector. The final research has been triangulated with focus group discussions that were attended by targeted respondents and resource persons. To identify resource persons for in-depth interviews, we employed purposive sampling from our existing network. This approach was selected due to the study’s limited timeframe and specific criteria. Private sector participants included companies interested in or actively pursuing green finance. For financial institutions and investors, we targeted impact investors and financiers offering green financing facilities, such as sustainability-linked loans. Given the resource and time constraints, the total number of participating entities was limited to 20.

Impact Investment Matchmaking Model Framework. This framework is designed to connect investors who are interested in making impact investments with projects or companies that are seeking funding for initiatives that deliver both financial returns and

positive social or environmental impacts. Investors are categorized based on their specific interests, risk tolerance, desired impact outcomes (e.g., environmental sustainability, social equity), and financial return expectations, while projects or companies are assessed and categorized based on their impact goals, sector, geographical focus, and funding needs. In this study, the aim for this framework is to analyze the gap between the investor's requirements and the private sector's appetite.

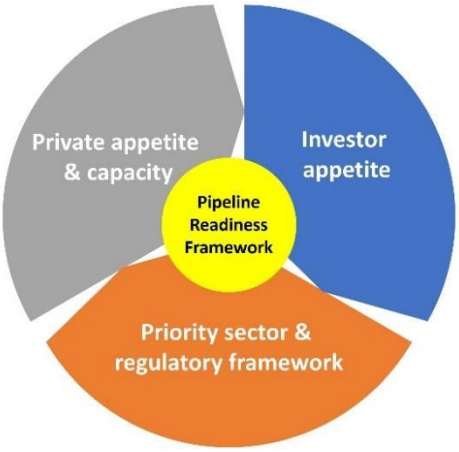

Fig. 2. Proposed Impact Investment Matchmaking Model Framework

PESTLE Analysis. This method is used to measure readiness for green financing opportunities in each sector. PESTLE identifies drivers and barriers from 6 main aspects – Political, Economic, Social, Technology, Legal, and Environmental – that are crucial in impact investing [16]. The PESTLE method is highly relevant to be used due to its prevailing use in green financing due diligence stage, infrastructure feasibility studies, as well as stakeholder mapping in the ESG sphere.

3 Results and Discussion

3.1 Political

In 2022, political commitment in energy sector from the Government of the Republic of Indonesia has been publicly set through national strategic documents and regulations at ministerial level. Fiscal Policy Agency, Ministry of Finance, also has set a strategic pathway for energy transition in Indonesia. There are four major strategies, such as (1) fair and just energy transition investment plan; (2) coal power plant early retirement; (3) "just transition" that covers the payback of loss from the early retirement phases; (4) increasing renewable energy supply and project development [20].

Despite this strategic action plan that has been prepared by the government to address bottleneck issues and strengthen the enabler factor for energy transition, the Government ought to work to develop more advanced policy to create an integrated clean

energy ecosystem, giving attention to switching costs that need to be borne by consumers, and implementing a fair and targeted carbon incentives to reduce the competitive advantage of fossil energy-based products [20]. Without these policies, Indonesia will not be able to deploy more green energy resources into an economy of scale.

3.2 Economic

For the economic aspect, renewable energy has the most promising business model compared to other sectors as the sector has clear umbrella policies, fiscal and tax incentives as regulated in several Ministry of Finance Decrees, i.e. Regulation of the Ministry of Finance (PMK) Number 21/PMK.011/2010 for renewable energy producers and imports of materials. However, there are two major barriers in the economy that have yet to be solved: heavily subsidized sectors and repairing pricing mechanisms to improve renewable energy supply [20].

Firstly, an unstable pricing mechanism creates uncertainty for the investor to enter the market, especially newer technology. Since the sector is heavily subsidized, the market price could not be competitive and attractive for the investor. Additionally, based on the in-depth interview result, there is a need for more clarity on domestic content requirement (Tingkat Komponen Dalam Negeri/TKDN) percentage, as most of renewable energy technology is sourced from foreign resources, including companies and experts. Several renewable energy technologies could not be accessed or provided by domestic resources, especially in technology and human capital e.g. hydrogen, geothermal, wind, that resulted in higher prices.

Secondly, there is a lack of price guidelines for different types of technology in Asia Pacific. Different technologies which apply to different operation models, create variables in operational expenses. This will cause one renewable energy technology to have a higher price than the other.

In Indonesia, there is only one prevailing price in the market, which is heavily subsidized. Therefore, the option for more renewable energy technologies will be less likely to thrive. For example, geothermal and mini-hydro plant producers expect an increase of Feed-in tariff (FiT – guaranteed above market price for producers with long term contract) that makes them postpone potential projects. All in all, to have access to green finance, the energy sector requires pricing certainty to make the projects bankable.

3.3 Social

In terms of social aspects, the main driver is employment since the renewable energy sector is labor intensive [20]. Based on [6], employment in the renewable energy sector in 2022 has reached 13 million workers and will continue to grow until 2050. In Indonesia, it is estimated that the number of jobs in the renewable energy sector will reach approximately 3 million jobs until 2050.

As the side note, more policies on fiscal and incentive are required to tackle public perception on renewable energy as more expensive than traditional brown technology, i.e. clearer carbon-related incentive policy to increase value of the Certified Emission

Reduction (CER). Based on the in-depth interview, one example of a thriving carbon market in Asia is the Republic of Korea. The price of CER in the Republic of Korea is USD 9 dollars/CO2e, which could give a more positive market signal. Meanwhile, CER in Indonesia is still not a high incentive as the carbon trading market in Indonesia is still minimal.

3.4 Technological

Currently, PT Perusahaan Listrik Negara (PLN) through its subsidiary, PT Energy Management Indonesia (EMI), is conducting continuous feasibility studies on various renewable energy power supplies with partners to seek viable and workable models based on Indonesia's diverse island and supply chain conditions. The main goal is to increase the number of renewable energy projects all around Indonesia, which will result in an increase of traded CER on yearly basis.

This year, the CER from renewable energy projects has reached more than 2 million tonnes CO2e to enter the market. The more feasible renewable energy technologies could be replicated, hence incentive for renewable energy projects will improve.

3.5 Legal

Energy Law Number 30 of 2007 is the umbrella of all regulations in the sector. This law is followed by the National Energy Policy (KEN), Government Regulation Number 79 of 2014, that regulates the national target for renewable energy power supply up to 23% by 2025 and 31% in 2030. Another supporting regulation for investment in energy sector is Law Number 25 of 2007 on investment, which recently followed with the Presidential Decree Number 112 of 2022 on Acceleration of Renewable Energy Power Supply [20] and President Decree Number 11 of 2023 on clarity of authority between central and local government in accelerating renewable energy.

Based on the in-depth interview, there is still a unanimous desire for an end-to-end Presidential Regulation for a plan for the energy transition despite this lengthy list of regulations. Relying only on PLN's RUPTL (National Energy Power Plan) is inadequate to give certainty to the sector players and investors, as the PLN's authority is limited only for private and Independent Power Producer (IPP) under their ecosystem.

National roadmap transition is required to accommodate coordination with other sectors, interministerial coordination, avoid task force redundancy in several ministries, as well as mainstream the renewable energy to upstream and downstream, especially to connect various technologies and resources to develop the overall renewable energy ecosystem.

3.6 Environmental

In terms of environmental safeguards, not all energy supply could be categorized as renewable energy. For example, even large hydro power plants with afforestation programs are still categorized as high-risk projects due to the time needed for the forest to grow and offset the initial destruction from the construction stage.

One of the strategies to make less harm to the environment is by creating a decentralized power supply model with an integrated grid or generators [8]. However, more research funds are required to make the project bankable and scalable.

Table 1. Summary of PESTLE in renewable energy sector.

PESTLE	Findings
Political	**Driver** Energy transition has gained momentum since G-20 and COP 28 in 2023 **Barrier** ● Carbon trading market has less market attention. ● The current regulation has limited coverage to cover the country's transition roadmap. ● Several taskforces create redundancy and confusion for the private to contribute. ● Unclear implementation of renewable energy policy.
Economic	**Driver** Energy has the most steady and clear business model. Financiers and investors have common interest in the sector. **Barrier** Average break event point for investment is around 8-10 years even more.
Social	**Barrier** As public goods, the willingness to pay for higher electricity price is still low and makes the renewable energy projects less bankable.
Technological	**Driver** More researches and new technologies to create energy has provided alternative solutions. **Barrier** Development of the interconnected grid toock time to accommodate different types of renewable energy.
Legal	**Driver** Presidential Regulation Number 112 of 2022 on Acceleration of Renewable Energy Development to Provide Electrical Energy **Barrier** ● Need and end-to-end Presidential Regulation to regulate interministeral decree on energy transition roadmap to give market certainty ● Energy conservation has been regulated in Presidential Regulation Number 33 of 2023 on Energy Conservation, but it only regulates incentives and disincentives without penalty/sanction which does not put high levels of urgency.
Environmental	**Driver** Renewable energy supply from nature is abundant. **Barrier**

More researches need to be done to find the right business model. Renewable energy is still seen as more expensive than fossil fuel due to lack of infrastructure, supply chain, and human capital.

From the findings above, it is found that the sector still faces significant challenges, such as high perceived costs, inadequate infrastructure, and limited human capital, all of which hinder the development of sustainable business models. Even though it has a promising business model due to clear policies and fiscal incentives, heavy subsidizations and unclear pricing mechanisms deter investment in newer technologies. This shows that the most essential foundation to overcome these challenges is that the Indonesian government must develop better policies in pricing mechanisms, fair carbon incentives, and create a comprehensive transition roadmap that incorporates decentralized power supply models.

Apart from identifying and addressing the drivers and barriers in the current condition, Indonesia could also learn global best practices. One example of a successful renewable energy project that is financed through a blended finance model is a utility-scale renewable energy project called the Benban Solar Park project [24]. It is one of the world's largest solar complexes, consisting of 32 plants with a total capacity of 1,465 MW. In April 2022, Scatec and its partner refinanced the debt for six plants (380 MW) that generate 930 GWh annually, powering 420,000 households and avoiding 423,000 tons of CO2 emissions. The Multilateral Investment Guarantee Agency (MIGA) and the European Bank for Reconstruction and Development (EBRD) worked together to form a credit enhancement mechanism. MIGA provided political risk insurance cover while EBRD provided a liquidity support facility, thus enhancing the bond's credit and attracting a larger pool of private capital.

Another example is the Pro Mini-Grids Programme by the government of Uganda, supported by the German Agency for International Cooperation (GIZ) [25]. This programme facilitated private investments in solar mini-grids across 15 villages in southern Uganda and 25 in the north. It offered subsidies for generation assets and streamlined project aggregation to attract larger developers through economies of scale. Aiming to mobilize private investment for 50-60% of capital costs, tariffs of USD0.50/kWh proposed by bidders were reduced to USD0.29/kWh via increased subsidies, resulting in a 20% private contribution. The programme mobilized USD16 million in financing, including a USD4 million syndicated facility between the Dutch Entrepreneurial Development Bank (FMO) and Renewable Energy Performance Platform (REEP). Indonesia could follow these blended finance models by utilizing multilateral development banks and intergovernmental organizations to provide risk alleviation mechanisms to attract private investment.

4 Conclusions

Indonesia's commitment to advancing its energy transition is reflected in its strategic national policies and regulations, which aim to foster a shift towards renewable energy [9]. The government's strategies, including fair energy transition investments and the

early retirement of coal power plants, lay a strong foundation for a cleaner energy future. However, the success of these strategies hinges on overcoming critical gaps, such as addressing consumer switching costs and implementing a targeted carbon related incentive to counteract the competitive advantages of fossil fuels. These measures are essential for scaling up green energy resources and unlocking the full potential of green financing.

The potential for green financing in Indonesia is substantial but remains underutilized due to several barriers. The renewable energy sector offers a promising business model, supported by favorable policies and incentives. However, economic challenges such as unstable pricing mechanisms and heavy subsidies continue to deter investors. Green financing, which includes investments in sustainable projects and green bonds, relies heavily on stable and predictable financial environments to attract capital. To fully leverage green financing, Indonesia needs to address these economic uncertainties by implementing more robust pricing mechanisms and reducing subsidies that distort market signals. Additionally, creating a more transparent and dynamic carbon market could enhance the attractiveness of green investments by providing clearer financial incentives and reducing risks associated with carbon trading.

Socially, the sector's growth presents significant employment opportunities, which could further bolster green financing by demonstrating the tangible benefits of renewable energy investments. However, addressing public perceptions of renewable energy as more expensive and developing a robust carbon market are crucial to improving investor confidence. Technological advancements and ongoing feasibility studies are vital to scaling up renewable energy projects, but they require more targeted research and financial incentives. Legally, while existing regulations provide a solid foundation, a comprehensive national roadmap is essential for effective sector-wide coordination and ensuring that green financing aligns with broader energy transition goals.

Environmentally, minimizing the ecological impact of various energy sources and focusing on sustainable development will further enhance the attractiveness of green financing. By addressing these challenges comprehensively, Indonesia can unlock the full potential of green financing, attracting more investment and accelerating its transition to a sustainable and resilient energy future.

Acknowledgments. The authors would like to express profound gratitude to PT Energy Management Indonesia (EMI), PT Perusahaan Listrik Negara (PLN), Indonesian Chamber of Commerce and Industry (Kamar Dagang dan Industri Indonesia/KADIN), Indonesia Venture Capital Association for Startups (Asosiasi Modal Ventura untuk Startup Indonesia/Amvesindo), Mirova, PT Sarana Multi Infrastruktur (SMI), Catalytic Finance, CI Ventures, and The Financial Services Authority (Otoritas Jasa Keuangan/OJK) for their support in accomplishing this work.

Disclosure of Interests. The authors declare that they have no known competing financial interests or personal relationship that could have appeared to influence the work reported in this paper.

References

1. Bakry, W., Mallik, G., Nghiem, X.-H., Sinha, A., & Vo, X. V.: Is green finance really "green"? Examining the long-run relationship between green finance, renewable energy and environmental performance in developing countries. Renewable Energy, 208(1), 341-355 (2023)
2. Creutzig, F., Goldschmidt, J. C., Lehmann, P., Schmid, E., Blücher, F. v., Breyer, C., Fernandez, B., Jakob, M., Knopf, B., Lohrey, S., Susca, T., & Wiegandt, K.: Catching two European birds with one renewable stone: Mitigating climate change and Eurozone crisis by an energy transition. Renewable and Sustainable Energy Reviews, 38(1) (2014)
3. Dogan, E., & Seker, F.: Determinants of CO2 emissions in the European Union: The role of renewable and non-renewable energy. Renewable Energy, 94(1), 429-439 (2016)
4. EPA: Inventrory of US Greenhouse Gas Emissions and Sinks: 1990-2015. The Environmental Protection Agency (2017)
5. Inter-Agency Standing Committee and the European Commission, https://doi.org/10.2760/817042, last accessed 2024/09/04
6. International Labour Organization, https://www.ilo.org/resource/news/renewables-jobs-nearly-doubled-past-decade-soared-137-million-2022, last accessed 2024/09/04
7. IPCC: 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (2019)
8. Khalid, M.: Smart grids and renewable energy systems: Perspectives and grid integration challenges. Energy Strategy Reviews, 51 (2024)
9. Khofsoh, N. A., Nugraha, N. a. D., Purnamasari, N. B. D., Rustandi, N. D., Harjadi, N. B., Erwandi, N., Nugroho, N. H., Afianti, N. H., Hapsari, N. I., Maharsih, N. I. K., Majesty, N. K. I., Solim, N. M. H., Puryantini, N. N., Widyastuti, N. N. L., Rasgianti, N., Adiputra, N. R., & Yasunaga, N. T.: Indonesia's Energy Transition Preparedness Framework towards 2045. In Penerbit BRIN eBooks (2023)
10. Li, Z., Liao, G., Wang, Z., & Huang, Z.: Green loan and subsidy for promoting clean production innovation. Journal of Cleaner Production, 187(1), 421-431 (2018)
11. Mamun, A., Boubaker, S., & Nguyen, D. K.: Green Finance and Decarbonization: Evidence from around the World. Finance Research Letters, 46 (2022)
12. Mongabay, https://news.mongabay.com/2022/11/indonesia-seals-20-billion-deal-with-g7-to-speed-up-clean-energy-transition, last accessed 2024/09/04
13. Neumann, B., Vafeidis, A. T., Zimmermann, J., & Nicholls, R. J.: Future coastal population growth and exposure to sea-level rise and coastal flooding - A global assessment. PloS ONE, 10(3) (2015)
14. Reuters, https://www.reuters.com/world/asia-pacific/indonesia-pledges-more-ambitious-carbon-emission-cut-2022-10-25, last accessed 2024/09/04
15. Rudiarto, I., Handayani, W., & Setyono, J. S.: A regional perspective on urbanization and climate-related disasters in the northern coastal region of central Java, Indonesia. Land, 7(1) (2018)
16. Siddiqui, A.: The Use of Pestel Analysis Tool of Quality Management in the Health Care Business and its Advantages. Am J Biomed Sci & Res., 14(6) (2021)
17. The World Bank Group and Asian Development Bank, https://climateknowledgeportal.worldbank.org/sites/default/files/2021-05/15504-Indonesia Country Profile-WEB_0.pdf, last accessed 2024/09/04
18. United Nations Climate Change Conference: COP26: The Negotiations Explained (2021)
19. Wang, W., Xiao, W., & Bai, C.: Can renewable energy technology innovation alleviate energy poverty? Perspective from the marketization level. Technology in Society, 68(1) (2022)

20. Widya Yudha, S., & Tjahjono, B.: Stakeholder Mapping and Analysis of the Renewable Energy Industry in Indonesia. Energies, 12(4) (2019)
21. Wu, G., Liu, X., & Cai, Y.: The impact of green finance on carbon emission efficiency. Heliyon, 10(1) (2024)
22. Xiong, Y., & Dai, L.: Does green finance investment impact on sustainable development: Role of technological innovation and renewable energy. Renewable Energy, 214(1), 342-349 (2023)
23. You, W.-H., Zhu, H.-M., Yu, K., & Peng, C.: Democracy, Financial Openness, and Global Carbon Dioxide Emissions: Heterogeneity Across Existing Emissio Level. World Development, 66(1), 189-207 (2015)
24. OECD. (2022). OECD Blended Finance Guidance for Clean Energy. OECD.
25. Pérez-López, D. (2020, November). A Bundled Approach to Mini-Grid Tendering: Uganda. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.