Jurnal Ilmiah

PEURADEUN

Political Development through Renewable Energy:
The Use of Ex-Mining Land in Indonesia's New Capital

Elyta Elyta[1]; Zulkarnaen[2]; Zinaida Zhyvko[3];
Beatriz Lucia Salvador Bizotto[4]; Muhammad Uhaib As'ad[5]

[1,2]*Universitas Tanjungpura, Pontianak, Indonesia*
[3]*Lviv State University of Internal Affairs, Ukraine*
[4]*University Center Unifacvest, Brazil*
[4]*Islamic University of Kalimantan, Banjarmasin, Indonesia*

POLITICAL DEVELOPMENT THROUGH RENEWABLE ENERGY: THE USE OF EX-MINING LAND IN INDONESIA'S NEW CAPITAL

**Elyta Elyta[1]; Zulkarnaen[2]; Zinaida Zhyvko[3];
Beatriz Lucia Salvador Bizotto[4]; Muhammad Uhaib As'ad[5]**

[1,2]*Universitas Tanjungpura, Pontianak, Indonesia*
[3]*Lviv State University of Internal Affairs, Ukraine*
[4]*University Center Unifacvest, Brazil*
[5]*Islamic University of Kalimantan, Banjarmasin, Indonesia*
[1]*Correspondence Email: elyta@fisip.untan.ac.id*

Abstract

In contemporary governance, the relocation of national capital is a recurring phenomenon. This study aimed to analyze the potential for political and developmental advancement through renewable energy in Indonesia's new archipelagic capital by repurposing former mining sites. An explanatory qualitative method was employed, using internet-based media as the primary means of reporting and online news outlets as the main data sources. The N Capture feature — a web browser plugin designed to collect online materials from websites, social media platforms, and documents such as scientific publications — was used to gather data in Nvivo 12 Plus. The findings indicate that repurposing abandoned mining sites in the archipelagic capital for renewable energy development could yield significant economic, social, and environmental benefits. However, stakeholders — including the public sector, private corporations, non-governmental organizations (NGOs), and local community — must collaborate to fully realize this potential. The use of abandoned mining lands should be strategically assessed to develop innovative solutions that address contemporary challenges while considering environmental sustainability, social equity, and economic viability.

Keywords: *Political Development; Renewable Energy; Archipelagic Capital City.*

A. Introduction

Political development can be advanced through the use of new and renewable energy sources. In this context, the relocation of national capitals has long been a topic of interest in contemporary governance (Icaza-Alvarez et al., 2022). Notable examples include the successful relocation of national capitals in Australia (from Melbourne to Canberra in 1927) and Brazil (from Rio De Janeiro to Brasilia in 1960) (Manan & Suprayitno, 2020).

Drawing insights from these two cases, Indonesia has adopted a similar approach, gradually implementing the relocation of its capital, with plans to complete the move by 2024 (Azmy, 2021). The debate surrounding the relocation of the new state capital has continued for an extended period (Tzaninis et al., 2021). The centralization of political and economic power in Jakarta prompted the government's decision to relocate the capital to East Kalimantan Province (Hudalah, 2023; Fahmi et al., 2024).

However, one of the pressing environmental challenges in East Kalimantan is the issue of abandoned mining sites, which pose a significant threat to the region—now designated as Indonesia's new capital (Nurida et al., 2020; Thamrin et al., 2023). According to the East Kalimantan Mining Advocacy Network (Jatam), mining-related fatalities have risen to 37, with most victims being young people (Rosadi, 2022). Additionally, mining activities severely damage the environment, especially when the natural balance of the land surface is disrupted, affecting local ecosystems including flora, fauna, and microorganisms (Sonny & Wardhana, 2020).
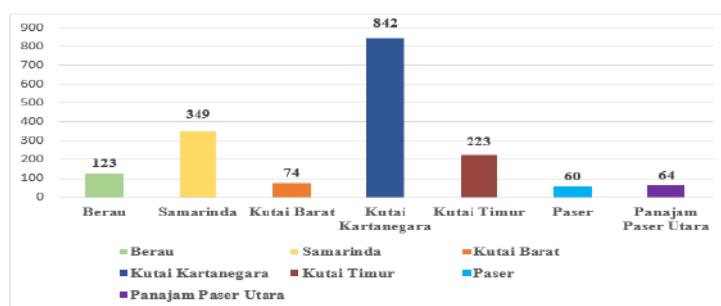

Figure 1. Number of ex-mining pits and ex-mining victims in East Kalimantan Province, 2011-2021
Source: East Kalimantan mining advocacy network, 2021

According to data from the East Kalimantan Mining Advocacy Network, in 2021, 1,735 former mining pits were scattered across the province. Numerous mining corporations have failed to fulfill their obligation to rehabilitate these sites, leaving them unregulated and unchecked (Adhi et al., 2022). Kutai Kartanegara Regency, Samarinda City, and Paser Regency contain the highest numbers of ex-mining pits, totaling 842, 349, and 60, respectively (Rahmadi et al., 2022). Each site consists of multiple pits, and the data also indicate that East Kalimantan is facing an environmental emergency (CNN Indonesia, 2022). Additionally, these mining pits have caused both casualties and environmental degradation (Nisa & Syari, 2021).

This raises serious concerns, as many mining operations abandon sites without undertaking environmental restoration (Dong et al., 2019). Government regulations require companies to obtain a Mining Business License (IUP), which includes obligations to rehabilitate and reclaim post-mining land. This process begins with the payment of a reclamation guarantee upon submission of the IUP (Endrico Putri, 2021). The government also has implemented stricter policies to ensure responsible mining practices (Hutahaean, 2017). According to relevant laws and regulations at both national and regional levels—such as Government Regulation No. 78 of 2010 and East Kalimantan Regional Regulation No. 8 of 2013—mining activities must be accompanied by comprehensive reclamation or restoration efforts (Hanis et al., 2021).

A key aspect of this study is the analysis and identification of various site characteristics (Ogundipe et al., 2021). This is essential for reclaiming disused mining areas in the new national capital region and ensuring their development remains ecologically sustainable. Constructive and systematic approaches are necessary for evaluating the evolution of these sites over time (de Vries, 2021). According to the Regulation of the Minister of Energy and Mineral Resources No. 7 of 2014 concerning the implementation of reclamation and post-mining in mineral and coal business activities—and in line with the spatial planning of former sites—the rehabilitation of ex-mining

land is expected to support the development of a functional and thriving ecosystem in the archipelagic capital region (Pratiwi et al., 2021).

The reclamation of former mine pits in the archipelagic capital region aims to restore land productivity, mitigate erosion, reduce runoff, and improve soil stability by modifying previously mined lands for more effective future management (Adhi et al., 2022). Reclamation efforts are expected to improve both social and environmental conditions, enhancing the chemical and biological quality of former mining sites (Hindersah et al., 2018).

One of the promising uses of these reclaimed areas is the development of renewable energy facilities, particularly through the construction of solar power plants (Tian et al., 2021). Such efforts can supply electricity to surrounding communities, meet the energy demands of Ibu Kota Nusantara (IKN) and support the broader development of sustainable infrastructure (Rahardian Dewantoro et al., 2023). The political advancement of new and renewable energy initiatives through the repurposing of former mining land represents a critical step in addressing environmental challenges (Breyer et al., 2022). Currently, the capital region relies heavily on environmentally harmful and unsustainable conventional energy sources (Girgibo, 2022). This dependency has contributed to high levels of air pollution, climate change, and widespread environmental degradation (Surya, Suriani, et al., 2021).

In this context, renewable energy sources—such as solar, wind, hydro, and biomass—present viable and sustainable alternatives (Tan & Zhou, 2022; Sánchez et al., 2023). While new renewable energy infrastructure typically requires limited land use, vast areas of unproductive former mining land remain underutilized across the capital region (Worlanyo & Jiangfeng, 2021). Repurposing these lands offers several key advantages (Pouresmaieli et al., 2023). First, using abandoned mining sites for solar or wind energy generation reduces the need for additional land, thereby minimizing potential land-use conflicts (Rodríguez-Urrego & Rodríguez-Urrego, 2018). Second, the development of renewable energy projects on these sites may benefit local communities both economically and socially by creating jobs, fostering skill development, and offering training opportunities (Eddy, 2021).

Using abandoned mining sites for new renewable energy sources also contributes to ecosystem restoration (Carta et al., 2020). Renewable energy projects can aid land rehabilitation and reduce adverse environmental impacts by repurposing areas previously affected by mining operations (Dhar et al., 2020). This supports broader efforts to conserve natural resources and reduce greenhouse gas emissions. However, utilizing former mining sites also presents several challenges (Mohamad Muslim et al., 2017). The feasibility of developing projects on these sites requires comprehensive technical assessments (Marquardt & Delina, 2019). Project success is highly depended on supportive legal and policy frameworks, as well as active community participation in decision-making processes (Nyman et al., 2020).

Promoting empowerment through the use of ex-mining land in the suburbs of Indonesia's new capital demands collaboration among government institutions, the private sector, and the general public (Franco et al., 2020). This approach facilitates the transition to a more efficient energy system, mitigates the negative impacts of conventional energy sources, and generates broad economic, social, and environmental benefits (Mert, 2019; Budiman et al., 2022). By scaling up these efforts, residents of the archipelagic capital region can harness the potential of ex-mining land to develop renewable energy resources (Surya, Saleh, et al., 2021). This not only generates abundant and valuable energy but also promotes inclusive development for the benefit of local communities (Sembiring, 2022).

The strategic approach to meeting energy needs and managing consumption in the context of Indonesia's new capital relocation to East Kalimantan has previously been examined by Hanan Nugroho. Building on that foundation, this study explores the potential for political development through the use of previously mined land in the new capital city. Advancing renewable energy initiatives on ex-mining sites supports government efforts in energy provision and human resource development. The study applies NVivo 12 Plus tools as part of a novel methodological approach.

B. Method

This study employed an explanatory qualitative method with news media as the primary data source. The method enabled an in-depth understanding of how specific information is presented within news media contexts (Islam et al., 2023; Nurdin, 2021). Data collection was conducted systematically using the N Capture function in NVivo 12 Plus, a web browser extension that allows the retrieval of material from various online sources. Data analysis was then conducted using the same software, employing the cross-query analysis feature to explore relationships between themes or concepts in the data. Word clouds were used to visually represent frequently occurring concepts or terms in the coded material. This study effectively combined digital tools with qualitative methods, facilitating a detailed and nuanced analysis of information presentation.

The N Capture tool in NVivo 12 Plus supported the selection of data from diverse sources, including news articles, academic publications, and social media content. Thematic analysis using NVivo's cross-query function followed the data collection phase. This analysis aimed to identify key patterns related to renewable energy development on ex-mining land. To ensure data validity, online media sources were selected based on their trustworthiness, evaluated using Semrush analysis. Five online media outlets with high trust scores were selected to ensure the accuracy of information.

Table 1. News media sources

Online Media	Website	Use of Online Media as a News Source (Newman et al., 2022)	Brand Trust Score (Newman et al., 2022)	News Coverage on Former Mining Sites and Political Development in IKN (Semrush analysis)
detikcom	https://www.detik.com	65%	61%	30
KOMPAS.com	https://www.kompas.com	48%	65%	44

Online Media	Website	Use of Online Media as a News Source (Newman et al., 2022)	Brand Trust Score (Newman et al., 2022)	News Coverage on Former Mining Sites and Political Development in IKN (Semrush analysis)
CNN.com	https://www.cnnindonesia.com/	35%	66%	33
SINDONEWS.com	https://www.sindonews.com	16%	49%	26
Tribunnews.com	https://www.tribunnews.com/	32%	52%	51

Source: Compiled by Researchers, 2023

According to Table 1, five online news outlets were analyzed in this study. The selection was based on brand trust scores and keyword analysis using the Semrush tool. Semrush is an online platform used for search engine optimization and performance analysis (Babs, 2012). It regularly updates rankings for news websites and online publications globally. In this study, Semrush was used to assess five media outlets reporting on the conversion of former mining sites into renewable energy developments. The data analysis process is illustrated in Figure 2.
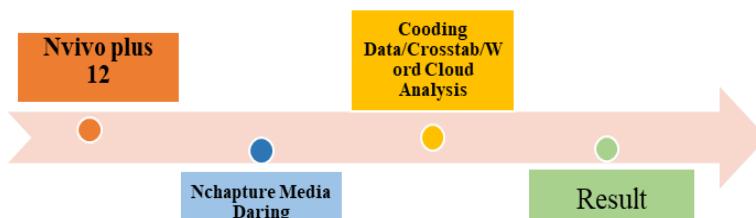
*Figure 2. Data analysis methods*

The N Capture function in NVivo 12 Plus was also used to examine the collected data (Phillips & Lu, 2018). This web browser extension allows users to capture digital content from websites, social media platforms, and other sources such as scientific publications. In addition, the cross-query analysis function in NVivo 12 Plus was applied to explore coded content and thematic

relationships. This function displays the percentage of manually coded data from news sources. Furthermore, word clouds were used to visually highlight frequently occurring concepts or phrases within the dataset by grouping similar or contrasting terms.

In this study, ethical considerations were strictly observed even though the data were derived from online media and publicly accessible publications. The researchers ensured that all data were collected exclusively from legitimate and credible sources, as demonstrated by the selection of five major online media outlets assessed through brand trust and Semrush analysis. All data were processed academically while respecting copyright, maintaining content integrity, and avoiding any manipulation of information beyond its original context. Since this research did not involve direct interaction with humans as research subjects, there were no risks to individual confidentiality or safety. Nevertheless, the fundamental principles of social research ethics were applied, namely transparency, accountability, and objectivity in interpreting the data. Every citation and source used was clearly acknowledged to prevent plagiarism and to guarantee the accuracy of information. In this way, the research not only meets academic standards but also complies with internationally recognized research ethics.

C. Results and Discussion

The following section presents the results of the study and offers a comprehensive discussion on the potential and challenges of utilizing ex-mining land for renewable energy development in Indonesia's new capital region. The findings are derived from data collected through online media sources and analyzed using NVivo 12 Plus software. This analysis includes thematic categorizations and narrative patterns that reflect the political, environmental, social, and economic dimensions of sustainable development. By combining empirical observations with theoretical insights, this section aims to examine how political development can be advanced through renewable energy initiatives on degraded land, and how these efforts align with broader sustainability goals.

1. Results

Assessing the potential for renewable energy development on former mining sites in the Capital City of the Archipelago is essential. This evaluation involves multiple variables that significantly influence the viability of establishing new renewable energy sources on previously mined lands.

There are several advantages to repurposing abandoned mining areas for renewable energy. Given the consistently high levels of solar radiation, the Capital City shows strong potential for solar energy utilization (Shah et al., 2023). Additionally, wind energy development is feasible, particularly in coastal or highland regions (Eddy, 2021). The availability of extensive abandoned mining sites presents a valuable opportunity to support renewable energy initiatives. Repurposing these areas can help diversify the energy mix and reduce dependence on environmentally harmful conventional energy sources.

However, addressing technical and technological challenges is critical to optimizing the transformation of abandoned sites into functional renewable energy facilities. This includes overcoming issues related to infrastructure and technological readiness. Moreover, sufficient funding is required to support the establishment, implementation, and maintenance of renewable energy projects on these lands.

Government assistance and incentives represent significant opportunities for developing renewable energy projects on abandoned mining sites. These opportunities span various areas, including policies and regulations that support the adoption of renewable energy. Incentive packages may include financial support such as cash subsidies or tax breaks for entities investing in new renewable energy initiatives. Additionally, growing demand for clean energy and increasing public awareness of the transition toward sustainable sources further strengthen the prospects for repurposing abandoned mining land.

However, both the opportunities and challenges must be addressed comprehensively. Government policy changes can directly affect the availability of financing and incentives for renewable energy infrastructure on former

mining sites. In this context, policy uncertainty poses a significant risk to developers involved in such projects. There is also concern about competition with conventional energy sources, which remain dominant and well-established in the region. These factors necessitate careful planning and strategic policymaking to ensure a smooth transition to renewable energy while maintaining energy reliability in the area.

Despite these challenges, leveraging the advantages, addressing the risks, and seizing available opportunities can lead to substantial economic, social, and environmental benefits from the use of abandoned mining land in the IKN region. However, realizing this potential requires effective collaboration among key stakeholders, including government agencies, private sector actors, non-profit organizations, and local communities.
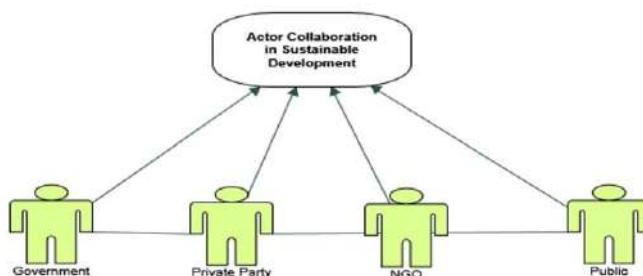
Figure 2. Actors utilizing mining potential in the archipelago capital city
Source: Project Map through NVivo 12 plus Software

Figure 2 illustrates that multiple actors—each with different objectives and perspectives—can interact and collaborate in the utilization of former mining sites. Collaboration and active participation from these actors are critical to the successful repurposing of ex-mining land for various purposes, including renewable energy development, environmental restoration, and sustainable infrastructure projects.

The government plays a central role in regulating and managing ex-mining land within the capital site. In addition to formulating laws and regulations for the use of such land, the government ensures the alignment of spatial planning with the development of renewable energy. Local governments, in particular, are responsible for issuing permits, overseeing land-use functions, and guiding stakeholder activities.

The advancement of sustainable renewable energy initiatives depends on effective collaboration among government entities, the private sector, local communities, and affiliated institutions. Through this collective effort, projects can be designed, implemented, and evaluated to generate substantial economic, social, and environmental benefits.

Local communities—empowered through engagement with non-governmental organizations (NGOs)—also play a vital role in the decision-making processes related to ex-mining land. Through consultations and public dialogues, residents gain insight into the environmental and social implications of renewable energy projects, enabling them to participate meaningfully in all stages of development, from planning to implementation and assessment. Community involvement in repurposing former mining land is especially significant. By contributing local knowledge and insights, communities can help shape, execute, and monitor renewable energy initiatives. Integrating this local expertise enhances the relevance and sustainability of projects, ultimately improving the overall well-being of the region.

A crucial step in achieving political development objectives is the utilization of former mining sites for new renewable energy initiatives. This land use presents an opportunity to diversify energy sources while mitigating the environmental damage caused by past mining activities. In this context, evaluating the potential use of abandoned mining sites through the lens of sustainable development is essential—taking into account environmental, social, and economic dimensions.

The prospective use of ex-mining land must align with the principles of political development. From an environmental perspective, this includes assessing the ecological impacts of past mining operations and the feasibility of implementing renewable energy technologies on-site. Socially, it is vital to engage local communities to better understand their needs and assess the positive impacts that such projects may generate in advancing sustainable development goals. Additionally, technical and economic evaluations are necessary to determine the project's overall viability and its potential to contribute to the local economy.

The potential use of abandoned mining sites can be comprehensively assessed by considering environmental, social, and economic factors. This approach provides essential guidance for decision-making aimed at maximizing the utility of former mining land while maintaining a balance between ecological sustainability, social welfare, and inclusive economic growth. Insights into the prospective use of ex-mining land are derived from analysis based on sustainable development indicators. This information was analyzed using the NVivo tool, leading to the following results.
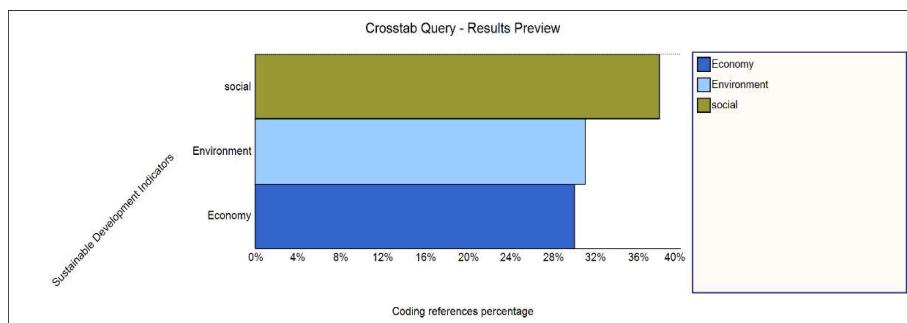
Figure 3. Potential use of ex-mining land in the archipelago capital region based on political development indicators
Source: Processed by researchers using NVivo application

Table 2. Percentage of the potential use of ex-mining land in the archipelago capital region based on political development indicators

Indicator	Percentage
Social	38,48%
Environment	31,13%
Economy	30,39%
Total	**100%**

Source: Processed by researchers using NVivo application

The prospective use of former mining sites must be carefully assessed through a sustainable development lens, taking into account social, environmental, and economic factors. According to the data, the social dimension holds the greatest potential, accounting for 38.48%. A better understanding of community needs and priorities will enhance the evaluation process. Recognizing the social benefits and opportunities associated with repurposing former mining

sites is essential for advancing political development. In this context, social sustainability and community inclusion are key considerations.

Environmental factors rank second, representing 31.13% of the potential. These involve assessing the environmental impacts of previous mining activities and considering the ecological risks and consequences of repurposing the land. Economic considerations make up 30.39%, focusing on technical and financial evaluations of renewable energy development on former mining land. Assessing the project's economic feasibility includes analyzing its potential to stimulate local economic growth through job creation, increased revenue, and long-term economic contributions.

A comprehensive assessment of the potential use of ex-mining land—integrating social, environmental, and economic dimensions—supports sustainable decision-making. This holistic approach promotes environmentally sound practices, social well-being, and inclusive economic development, ultimately contributing to the broader goals of sustainable development.

2. Discussion

This study highlights the importance of developing new and renewable energy as a critical step toward achieving sustainable development, particularly through the utilization of ex-mining sites. The implementation of renewable energy offers numerous benefits for both local communities and the environment. It enables communities to access clean and sustainable energy sources. By harnessing solar panels, wind turbines, or biogas, communities can generate electricity independently, thereby reducing reliance on environmentally harmful fossil fuels and lowering greenhouse gas emissions—an essential contribution to mitigating climate change.

In addition, renewable energy development can stimulate local economies and create new employment opportunities. Empowering communities to produce, install, and manage renewable energy systems fosters entrepreneurship and generates demand for skilled labor in construction, maintenance, and system management. Utilizing ex-mining sites for renewable energy aligns with the core principles of sustainable development, including

the responsible use of natural resources and the commitment to meeting present needs without compromising the ability of future generations to meet theirs (Elyta et al., 2023; Ruggerio, 2021). Moreover, this approach incorporates the values of social inclusion and community empowerment by encouraging the active participation of local communities in the planning, development, and management of energy projects (Ryszawska et al., 2021).

When comparing these results with international studies, it is evident that many countries have adopted similar strategies to repurpose former mining sites for renewable energy development. For instance, Germany has implemented a project to transform former coal mining land into solar power plants (Breyer et al., 2022). This research also emphasizes the importance of regulatory and technological support from various stakeholders to ensure the success of such initiatives. Similarly, China—known for its rapid technological advancement—has demonstrated expertise in repurposing ex-mining land for wind energy projects. However, a key challenge in China's case is land pollution, which necessitates the use of specialized technology to enable implementation (Worlanyo & Jiangfeng, 2021; Lathifah et al., 2025).

Utilizing previously unproductive land for renewable energy can also generate economic benefits for local communities. By empowering communities through participation and ownership, awareness of energy-related issues is enhanced, and involvement in the shift toward more sustainable energy sources is encouraged. This inclusive approach strengthens community participation in energy-related decision-making and contributes to broader sustainability goals.

Renewable energy development on mined-out sites can succeed through a multi-stakeholder approach involving local communities, government institutions, and energy companies. This study was conducted to project the potential energy yield from various renewable sources. Accordingly, the argument for thoroughly understanding existing site potential is reinforced as a key factor for the effective implementation of renewable energy projects. By actively involving communities in the planning and decision-making processes, these projects can adopt a more inclusive and community-centered approach

that reflects local needs. Community ownership and operation—often through energy cooperatives—help ensure a fairer distribution of economic benefits.

In the capital region, new renewable energy initiatives on former mining sites have delivered sustained benefits to local populations, largely due to comprehensive and participatory political development. This approach also advances sustainable development goals by generating environmentally friendly energy that serves the broader interests of surrounding communities.

Although the findings of this study provide an overview of the social, economic, and environmental impacts of renewable energy development, the implementation of renewable energy itself was not the central focus. Nevertheless, significant challenges remain in applying renewable energy to ex-mining land, and these warrant further exploration. One such challenge lies in the inconsistency of regulatory implementation. Policies governing the use of ex-mining land often differ between the central and regional governments, leading to conflicting interpretations and interests across administrative levels. One such challenge lies in the inconsistency of regulatory implementation. Policies governing the use of ex-mining land often differ between the central and regional governments, leading to conflicting interpretations and interests across administrative levels (Ulum & Ulum, 2023).

In addition, financial constraints present a major barrier to land conversion for renewable energy purposes. Implementing renewable energy systems requires substantial upfront investment, which can be especially challenging during the initial phases of development. To address these issues, greater alignment between national and regional policies is needed to streamline funding mechanisms and improve coordination. Furthermore, promoting investment in this sector could be achieved by offering financial incentives, such as tax breaks or subsidies, to encourage investor participation in renewable energy projects on former mining sites.

Word cloud analysis can also help identify the dominant narratives used in news media regarding political developments in new and renewable energy through the utilization of ex-mining land in IKN. Frequently used terms in the news articles were compiled using NVivo 12 Plus, and a maximum

of 43 words were displayed in the visual analysis. These narratives, highlighting political progress in renewable energy development through abandoned mining land in the capital region, appear across various media platforms.

Figure 4. World cloud
Source: Processed by researchers using NVivo application

According to the word cloud, the term "IKN" appeared most frequently, with a total of 683 mentions. The word "result" appeared 542 times, while the phrase "Capital of the Archipelago" also featured prominently. This suggests that news media consistently use recognizable terms like "IKN" when referring to political developments related to the repurposing of former mining land in the capital region.

The narrative constructed by digital media regarding the transformation of ex-mining lands into renewable energy hubs in Indonesia's new capital, IKN, reflects a growing public discourse at the intersection of environmental sustainability and political development. As shown in the word cloud analysis, frequently occurring terms such as "IKN" and "Capital of the Archipelago" indicate how media outlets frame the issue within the broader context of national development, underscoring its significance beyond a purely local or technical matter.

Media narratives do more than report progress—they shape public perception, influence stakeholder engagement, and build momentum for political and civic support. In this sense, media plays a critical role in

democratizing the energy transition discourse by making complex issues more accessible and urgent for the general public. This aligns with de Vries (2021), who emphasized the significance of strategic urban greening and sustainability planning in new capital cities, arguing that environmental transformation must be accompanied by systematic stakeholder participation and communication frameworks that elevate public awareness.

Furthermore, the media's portrayal of renewable energy development on ex-mining sites can also serve to align local policies with global energy transition movements. Breyer et al. (2022) argue that the history and future of 100% renewable energy systems are not solely contingent on technological advancement but are deeply rooted in socio-political will and institutional collaboration. When media narratives emphasize IKN's potential as a model for post-mining land revitalization and renewable energy integration, they support a broader national ambition to position Indonesia as a leader in sustainable energy transformation within the Global South.

Moreover, Worlanyo and Jiangfeng (2021) highlight that international experiences—particularly from countries such as China and Germany— demonstrate how repurposing post-mined lands can mitigate land degradation while enhancing energy resilience. These parallels reinforce Indonesia's strategic trajectory and validate its policy relevance in tackling global environmental issues, including climate change mitigation and ecological restoration.

By drawing from international experiences and translating them into local contexts through both policy frameworks and media channels, the IKN project illustrates a unique synthesis of global sustainability ideals and Indonesia's socio-political realities. The integration of former mining sites into the renewable energy landscape signals a paradigmatic shift from resource extraction to regenerative development, symbolizing a political commitment to sustainability.

As Mert (2019) observes, the redevelopment of post-mining brownfields represents a vital contribution to sustainable development, offering economic, social, and environmental benefits when pursued through multi-stakeholder collaboration and strategic planning. Thus, the role of digital media in amplifying these narratives is critical. It not only documents the transformation

but actively co-constructs the meaning of sustainable political development, positioning media as a key actor in Indonesia's path toward inclusive and ecologically responsible growth.

The findings of this study not only provide insights into the potential of renewable energy development on ex-mining sites in Indonesia's new capital but also carry broader global implications. The transformation of degraded land into renewable energy hubs reflects a paradigm shift that is highly relevant for countries in the Global South, where similar challenges of post-mining degradation and energy dependency on fossil fuels persist. By demonstrating how political development can be advanced through the repurposing of abandoned mining lands, this research offers a transferable model that can inform policy innovations in other developing nations. Furthermore, it contributes to international discussions on sustainable energy transitions, ecological restoration, and inclusive development by presenting Indonesia as an emerging case of regenerative land use in alignment with global climate change mitigation agendas.

This study has certain limitations that need to be acknowledged. First, the analysis was based primarily on secondary data from online media and academic publications, which may contain framing biases and do not necessarily represent the complete perspectives of all stakeholders involved. Second, because no field-based validation was conducted, the findings cannot be fully generalized to the broader contexts of ex-mining land utilization in Indonesia. Third, the study emphasized the political and developmental dimensions of renewable energy projects, while technical, financial, and engineering aspects were not examined in detail. These limitations should be taken into account when interpreting the findings of this research.

D. Conclusion

This study has demonstrated that the utilization of abandoned mining land in the Ibu Kota Nusantara (IKN) region as a renewable energy hub offers significant political, economic, social, and environmental value. The findings highlight that repurposing post-mining sites for solar and other renewable energy initiatives can simultaneously address ecological

degradation, reduce dependence on fossil fuels, and create opportunities for local empowerment. The synthesis of the results confirms that political development can be advanced through sustainable land use strategies that integrate renewable energy infrastructure with ecological restoration and social inclusion.

The research contributes both theoretically and practically. Theoretically, it reinforces and extends perspectives in political development and sustainable energy transition by introducing the concept of post-mining land as a strategic locus for renewable energy governance. This approach enriches discourses on how degraded landscapes can be reframed as assets for political, social, and economic advancement. Practically, the study provides a framework for policymakers, local governments, and communities to collaborate in transforming abandoned mining sites into renewable energy projects. It also emphasizes the novelty of using digital media analysis to explore political narratives, offering methodological insights for future research in similar contexts.

In line with the limitations acknowledged in the discussion, future research should move beyond secondary data analysis to incorporate field-based validation and multi-stakeholder perspectives. Combining media analysis with interviews, surveys, and technical feasibility assessments would provide a more comprehensive understanding of renewable energy development on ex-mining sites. Comparative studies across different regions or countries could also enrich the analysis, allowing for cross-contextual insights into how political development intersects with environmental restoration and energy transition in varied socio-political settings.

Finally, this study confirms that abandoned mining land, often perceived as a liability, can be reimagined as a catalyst for sustainable political development. By integrating renewable energy, ecological restoration, and community participation, Indonesia not only addresses urgent local challenges but also positions itself within global debates on energy transition and climate change. This research underscores the novelty and significance of turning environmental liabilities into developmental assets, offering valuable insights for both scholarship and practice.

Bibliography

Adhi, Y. P., Dewi, I. G. S., & Turisno, B. E. (2022). Ecological Impacts and Socio-Legal Infrastructure as an Approach to Environmental Management in Ex-Mining Land Reclamation. *International Journal of Sustainable Development and Planning*, *17*(7), 2279–2285. https://doi.org/10.18280/ijsdp.170729.

Azmy, A. S. (2021). Examining the Relocation of the Capital City of Indonesia Through the State Perspective in Political Economy. *Polit Journal: Scientific Journal of Politics*, *1*(1), 26–35. https://doi.org/10.33258/polit.v1i1.365.

Babs, K. (2012). *SEMRush Review: Best Competitor Keyword Research Tool*. Tricks Machine; Tricks Machine.

Breyer, C., Khalili, S., Bogdanov, D., Ram, M., Oyewo, A. S., Aghahosseini, A., Gulagi, A., Solomon, A. A., Keiner, D., Lopez, G., Ostergaard, P. A., Lund, H., Mathiesen, B. V., Jacobson, M. Z., Victoria, M., Teske, S., Pregger, T., Fthenakis, V., Raugei, M., … Sovacool, B. K. (2022). On the History and Future of 100% Renewable Energy Systems Research. *IEEE Access*, *10*(July), 78176–78218. https://doi.org/10.1109/access.2022.3193402.

Budiman, B., Dyastari, E. L., Linggi, R. K., Alaydrus, A., & Saputra, H. (2022). Framing Wacana Politik Ekologis: Pembangunan Berkelanjutan Ibu Kota Negara Baru Indonesia. *Journal of Government and Politics (JGOP)*, *4*(2), 155-174. https://doi.org/10.31764/jgop.v4i2.10380.

Carta, M., Ronsivalle, D., & Lino, B. (2020). Inner Archipelagos in Sicily. From Culture-Based Development to Creativity-Oriented Evolution. *Sustainability (Switzerland)*, *12*(18), 7452. https://doi.org/10.3390/SU12187452.

CNN Indonesia. (2022). *Jatam Kaltim Sorot Lubang Tambang di Ibu Kota Baru Belum Direklamasi*.

de Vries, W. T. (2021). Urban Greening for New Capital Cities. A Meta Review. *Frontiers in Sustainable Cities*, *3*, 1–12. https://doi.org/10.3389/frsc.2021.670807.

Dhar, A., Naeth, M. A., Jennings, P. D., & Gamal El-Din, M. (2020). Perspectives on Environmental Impacts and a Land Reclamation Strategy for Solar and Wind Energy Systems. *Science of The Total Environment*, *718*, 134602. https://doi.org/10.1016/j.scitotenv.2019.134602.

Dong, L., Tong, X., Li, X., Zhou, J., Wang, S., & Liu, B. (2019). Some Developments and New Insights into Environmental Problems and Deep Mining Strategy for Cleaner Production in Mines. *Journal of Cleaner Production*, *210*, 1562–1578. https://doi.org/10.1016/j.jclepro.2018.10.291.

Eddy, T. (2021). Management Of Natural Resources Based On Local Wisdom By Traditional Law Communities. *International Journal of Educational Research & Social Sciences*, *2*(6), 1535–1543. https://doi.org/10.51601/ijersc.v2i6.190.

Elyta, Ahmad, M. Z., Jamaliah, Mujiono, D. I. K., Islam, R., & Daud, R. (2023). Impacts of the COVID-19 pandemic on export commodity trading. *Journal of Governance & Regulation*, *12*(3), 274–284. https://doi.org/10.22495/jgrv12i3siart9.

Endrico Putri, V. S. (2021). Analisis Pemidanaan Terhadap Tindak Pidana Pertambangan Batubara Tanpa Izin Usaha Pertambangan Studi Kasus Di Kutai. *JISIP (Jurnal Ilmu Sosial Dan Pendidikan)*, *5*(1), 469-480. https://doi.org/10.36312/jisip.v5i1.1754.

Fahmi, M., Djawas, M., Sumardi, D., & Husna, A. (2024). Islamic Jurisprudence and Local Wisdom in the Humanitarian Protection of Rohingya Refugees by Acehnese Figures. *El-Mashlahah*, *14*(2), 323–342. https://doi.org/10.23971/el-mashlahah.v14i2.8958

Franco, G. H., Mero, P. C., Carballo, F. M., Narváez, G. H., Bitar, J. B., & Torrens, R. B. (2020). Strategies for the Development of the Value of the Mining-Industrial Heritage of the Zaruma-Portovelo, Ecuador, in the Context of a Geopark Project. *International Journal of Energy Production and Management*, *5*(1), 48–59. https://doi.org/10.2495/eq-v5-n1-48-59.

Girgibo, N. W. (2022). Seaside Renewable Energy Resources Literature Review. *Climate*, *10*(10), 153. https://doi.org/10.3390/cli10100153.

Hanis, R. N., Bargawa, W. S., & Ernawati, R. (2021). Biaya Reklamasi dan Revegetasi Lahan Bekas Tambang Batubara di Kalimantan Timur. *Prosiding Nasional Rekayasa Teknologi Industri dan Informasi XIII*, 324–329. https://journal.itny.ac.id/index.php/ReTII/article/view/2687.

Hindersah, R., Handyman, Z., Indriani, F. N., Suryatmana, P., & Nurlaeny, N. (2018). Azotobacter Population, Soil Nitrogen and Groundnut Growth in Mercury-Contaminated Tailing Inoculated with Azotobacter. *Journal of Degraded and Mining Lands Management*, *5*(3),

1269-1274. https://doi.org/10.15243/jdmlm.2018.053.1269.

Hudalah, D. (2023). Building a Capital City, Carving Out a Megaproject Legacy? *Habitat International*, *141*, 102933. https://doi.org/10.1016/j.habitatint.2023.102933.

Hutahaean, M. (2017). The Implication of A Divided or Unified Government for Public Policy Making: Indonesia During the Democracy Transition. *Jurnal Ilmiah Peuradeun*, *5*(3), 387-400. https://doi.org/10.26811/peuradeun.v5i3.180

Icaza-Alvarez, D., Jurado, F., Tostado-Véliz, M., & Arevalo, P. (2022). Decarbonization of the Galapagos Islands. Proposal to transform the Energy System into 100% Renewable by 2050. *Renewable Energy*, *189*, 199–220. https://doi.org/10.1016/j.renene.2022.03.008.

Islam, R., Herlan, Elyta, Daud, R., Fakhrorazi, A., & Sultana, S. (2023). Analysis of the Impact of COVID-19 on the Global Political Economy. *Corporate & Business Strategy Review*, *4*(3), 127–138. https://doi.org/10.22495/cbsrv4i3art13.

Lathifah, A., Wati, B. E., Waeduereh, M., & Phudaro, N. (2025). Inheritance Law Politics: The Implementation in Muslim-Nonmuslim Families in Southern Thailand. *El-Mashlahah*, *15*(1), 189–212. https://doi.org/10.23971/el-mashlahah.v15i1.9970

Manan, A. M. bin A., & Suprayitno, H. (2020). Preliminary Overview of Several Capital Relocations in Relationship with a Plan of Indonesian Capital Relocation. *Journal of Infrastructure & Facility Asset Management*, 2(1), 73–90. https://doi.org/10.12962/jifam.v2i1.6966.

Marquardt, J., & Delina, L. L. (2019). Reimagining Energy Futures: Contributions from Community Sustainable Energy Transitions in Thailand and the Philippines. *Energy Research and Social Science*, *49*, 91–102. https://doi.org/10.1016/j.erss.2018.10.028.

Mert, Y. (2019). Contribution to sustainable Development: Re-development of post-mining brownfields. *Journal of Cleaner Production*, *240*, 118212. https://doi.org/10.1016/j.jclepro.2019.118212.

Mohamad Muslim, H. F., Yahya, N. A., Numata, S., & Hosaka, T. (2017). Ethnic Differences in Satisfaction with the Attractiveness of Tropical Urban Parks. In *Sustainable Future for Human Security: Society, Cities and Governance,* pp. 147-159. https://doi.org/10.1007/978-981-10-5433-4_10.

Newman, N., Fletcher, R., Robertson, C. T., Eddy, K., & Nielsen, R. K. (2022). *Reuters Institute Digital News Report 2022*. https://reutersinstitute.politics.ox.ac.uk/digital-news-report/2022.

Nisa, N., & Syari, M. (2021). Perlindungan Hukum Terhadap Anak pada Lingkungan Pasca Aktivitas Tambang Batubara di Kota Samarinda. *QONUN: Jurnal Hukum Islam dan Perundang-undangan*, *5*(1), 40-46. https://doi.org/10.21093/qonun.v4i1.1998.

Nurdin, N. (2021). Employing Online and Offline Qualitative Interpretive Case Studies in Understanding E-Procurement Effectiveness. *International Journal of Quantitative and Qualitative Research Methods*, *9*(1), 23–41. https://ssrn.com/abstract=3799200.

Nurida, N. L., Mulyani, A., Widiastuti, F., & Agus, F. (2020). Potensi dan Model Agroforestry untuk Rehabilitasi Lahan Terdegradasi di Kabupaten Berau, Paser dan Kutai Timur, Provinsi Kalimantan Timur. *Jurnal Tanah Dan Iklim*, *42*(1), 13-26. https://doi.org/10.21082/jti.v42n1.2018.13-26.

Nyman, E., Galvao, C. B., Mileski, J., & Tiller, R. (2020). The Svalbard Archipelago: an Exploratory Analysis of Port Investment in the Context of the New Arctic Routes. *Maritime Studies*, *19*(1), 1–13. https://doi.org/10.1007/s40152-019-00143-4.

Ogundipe, A. A., Mobolaji, O., & Ogundipe, O. M. (2021). An Analysis of the Effect of Human Capital Investment on Economic Development in Nigeria: Does a New Indicator Alter Existing Evidence? *Asian Economic and Financial Review*, *11*(1), 17–29. https://doi.org/10.18488/journal.aefr.2021.111.17.29.

Phillips, M., & Lu, J. (2018). A Quick Look at NVivo. *Journal of Electronic Resources Librarianship*, *30*(2), 104–106. https://doi.org/10.1080/1941126x.2018.1465535.

Pouresmaieli, M., Ataei, M., Nouri Qarahasanlou, A., & Barabadi, A. (2023). Integration of Renewable Energy and Sustainable Development with Strategic Planning in the Mining Industry. *Results in Engineering*, *20*, 101412. https://doi.org/10.1016/j.rineng.2023.101412.

Pratiwi, P., Narendra, B. H., Siregar, C. A., Turjaman, M., Hidayat, A., Rachmat, H. H., Mulyanto, B., Suwardi, S., Iskandar, I., Maharani, R., Rayadin, Y., Prayudyaningsih, R., Yuwati, T. W., Prematuri, R.,

& Susilowati, A. (2021). Managing and Reforesting Degraded Post-Mining Landscape in Indonesia: A Review. *Land*, *10*(6), 658. https://doi.org/10.3390/land10060658.

Rahardian Dewantoro, S., I Kadek Suryana, Desak Putu Nita Suadnyani, & Arif Devi Dwipayana. (2023). Optimization of Public Transportation Noses in the Implementation of Electric Vehicle-Based Green Infrastructure to Realize a Green City in the Nusantara Capital Region through Implementation of Renewable Energy. *International Journal Engineering And Applied Technology (IJEAT)*, *6*(2), 87–97. https://doi.org/10.52005/ijeat.v6i2.93.

Rahmadi, S., Matius, P., Priahutama, A. A., Ramadani, D. N., Munawarah, J., Maharani, R., & Rayadin, Y. (2022). Variasi Umur Tanaman Reklamasi terhadap Struktur dan Komposisi Vegetasi di Areal Reklamasi Tambang PT Kideco Jaya Agung, Paser, Kalimantan Timur. *Jurnal Ilmu Lingkungan*, *20*(1), 13–21. https://doi.org/10.14710/jil.20.1.13-21.

Rodríguez-Urrego, D., & Rodríguez-Urrego, L. (2018). Photovoltaic Energy in Colombia: Current Status, Inventory, Policies and Future Prospects. *Renewable and Sustainable Energy Reviews*, *92*, 160–170. https://doi.org/10.1016/j.rser.2018.04.065.

Rosadi, S. (2022). *Korban Tewas di Lubang Bekas Tambang di Kaltim Genap 40 Orang*.

Ruggerio, C. A. (2021). Sustainability and Sustainable Development: A Review of Principles and Definitions. *Science of The Total Environment*, *786*, 147481. https://doi.org/10.1016/j.scitotenv.2021.147481.

Ryszawska, B., Rozwadowska, M., Ulatowska, R., Pierzchała, M., & Szymański, P. (2021). The Power of Co-Creation in the Energy Transition—Dart Model in Citizen Energy Communities Projects. *Energies*, *14*(17), 5266. https://doi.org/10.3390/en14175266.

Sánchez, A. S., Junior, E. P., Gontijo, B. M., de Jong, P., & dos Reis Nogueira, I. B. (2023). Replacing Fossil Fuels with Renewable Energy in Islands of High Ecological Value: The Cases of Galápagos, Fernando de Noronha, and Príncipe. *Renewable and Sustainable Energy Reviews*, *183*, 113527. https://doi.org/10.1016/j.rser.2023.113527.

Sembiring, S. B. (2022). Analisis Dinamika Sosio-Demografi sebagai Acuan untuk Mewujudkan Rencana Pemindahan Ibu Kota Negara yang Smart, Green, Beautiful dan Sustainable. *Bappenas Working Papers*, *5*(1), 120–137. https://doi.org/10.47266/bwp.v5i1.122.

Shah, M., Prajapati, M., & Sircar, A. (2023). A Comprehensive and Systematic Study of Geothermal Energy-Based Desalination Systems for Sustainable Development. *Geothermics*, *115*, 102829. https://doi.org/10.1016/j.geothermics.2023.102829.

Sonny, S., & Wardhana, I. (2020). Pertambangan Dan Deforestasi: Studi Perizinan Tambang Batubara di Provinsi Kalimantan Timur. *Jurnal Renaissance*, *5*(2), 681-690. https://doi.org/10.53878/jr.v5i2.120.

Surya, B., Saleh, H., Hamsina, H., Idris, M., & Ahmad, D. N. A. (2021). Rural Agribusiness-Based Agropolitan Area Development and Environmental Management Sustainability: Regional Economic Growth Perspectives. *International Journal of Energy Economics and Policy*, *11*(1), 142–157. https://doi.org/10.32479/ijeep.10184

Surya, B., Suriani, S., Menne, F., Abubakar, H., Idris, M., Rasyidi, E. S., & Remmang, H. (2021). Community Empowerment and Utilization of Renewable Energy: Entrepreneurial Perspective for Community Resilience Based on Sustainable Management of Slum Settlements in Makassar City, Indonesia. *Sustainability (Switzerland)*, *13*(6), 1–37. https://doi.org/10.3390/su13063178.

Tan, H., & Zhou, G. (2022). Gentrifying Rural Community Development: A Case Study of Bama Panyang River Basin in Guangxi, China. *Journal of Geographical Sciences*, *32*(7), 1321–1342. https://doi.org/10.1007/s11442-022-1999-0.

Thamrin, L., Ghasya, D. A. G., & Pranata, R. (2023). the Practicality of Developing a Multi-Split Model Based on the Hands-on-Mind Approach As a Reconstruction of Basic Literacy and Character Values. *Jurnal Ilmiah Peuradeun*, *11*(3), 949–964. https://doi.org/10.26811/peuradeun.v11i3.905.

Tian, A., Zünd, D., & Bettencourt, L. M. A. (2021). Estimating Rooftop Solar Potential in Urban Environments: A Generalized Approach and Assessment of the Galápagos Islands. *Frontiers in Sustainable Cities*, *3*, 632109. https://doi.org/10.3389/frsc.2021.632109.

Tzaninis, Y., Mandler, T., Kaika, M., & Keil, R. (2021). Moving Urban

Political Ecology Beyond the 'Urbanization of Nature'. *Progress in Human Geography*, *45*(2), 229–252. https://doi.org/10.1177/0309132520903350.

Ulum, K. M., & Ulum, M. K. (2023). Screening Standards in Sharia Capital Market Investor Legal Protection. *El-Mashlahah*, *13*(1), 77–91. https://doi.org/10.23971/el-mashlahah.v13i1.5791

Worlanyo, A. S., & Jiangfeng, L. (2021). Evaluating the Environmental and Economic Impact of Mining for Post-Mined Land Restoration and Land-Use: A Review. *Journal of Environmental Management*, *279*, 111623. https://doi.org/10.1016/j.jenvman.2020.111623.