



Inclusive approaches in energy transition mainstreaming GEDSI for ecological justice

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ABSTRACT

Background: Environmental management in Indonesia is currently facing complex challenges arising from dependence on fossil fuels, the impacts of climate change, and persistent social inequalities experienced by vulnerable groups. This study aims to evaluate the extent to which environmental values can be integrated into community empowerment programs in the environmental sector, with a particular focus on the context of a just energy transition. **Methods:** This study employs a descriptive qualitative design using statutory and conceptual approaches to examine inclusivity in Indonesia's energy transition, drawing on interviews, policy and legal document analysis, and secondary literature, with data analyzed through manual thematic coding, deductive reasoning, and triangulation to ensure credibility while acknowledging limitations in scope, legal coverage, and data availability. **Findings:** The findings indicate that although national and local policies have begun to emphasize inclusivity and community-based approaches, their implementation faces persistent structural barriers. These barriers include institutional limitations, insufficient inter-agency coordination, and restricted access to capacity-building resources especially for persons with disabilities who often encounter physical, technical, and informational obstacles in participating fully in environmental programs. Moreover, current policy frameworks still lack strong mechanisms to ensure meaningful involvement from marginalized groups rather than symbolic participation. **Conclusion:** A just energy transition in Indonesia requires the integration of GEDSI-responsive indicators through a participatory approach that ensures inclusive involvement of vulnerable groups in energy policy and decision-making processes. **Novelty/Originality of this study:** This research highlights that the integration of gender equality, disability inclusion, and broader social inclusivity is not merely an additional component but a fundamental prerequisite for achieving fair community empowerment and sustainable environmental development.

KEYWORDS: energy transition; gender equality; sustainability.

1. Introduction

The energy transition can be defined as the shift of an energy system based on fossil energy to renewable energy (Imelda, 2023; O'Neill et al., 2021). At present, most of the energy sources in Indonesia still come from fossil energy such as coal and gas. In 2023, the national primary energy mix was supplied by coal at 40.46%, oil at 30.18%, and natural gas at 16.28%, while new and renewable energy was only 13.09%. The energy transition is indeed catalyzed by the country's commitment to reducing greenhouse gas emissions, replacing conventional energy sources with more environmentally friendly alternatives, such as the utilization of natural resources, sunlight, wind, ocean, and water (Palmer & Engel, 2007; Silalahi, 2002). There are several fundamental principles in the planning and

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implementation of the Just Energy Transition (JET) in Indonesia (Julian, 2023; United Nations Development Programme–Indonesia, 2022). The main principles include justice, legal certainty, usefulness, the fulfillment of human rights, environmental protection, sustainable natural resource management, efficiency, and energy independence (IESR, 2021). Another set of principles embedded in Indonesia's constitutional foundation consists of transparency, public participation, access to information, and the formulation of collaborative regulatory policies (European Commission, 2022; IRID, 2022; Wardana, 2022; Widiati, 2018). From these two sets of principles, gender equality has not yet emerged as a fundamental principle. The following is a tabulation of principles and scores of Indonesia's energy transition as presented in the *Indonesia Energy Transition Outlook 2022*. Thus, this commitment to a green industry builds a national strategy in achieving sustainable goals, by utilizing natural potential as renewable energy in Indonesia. In recent years, advancements in technology in the energy transition subsector have contributed to progress in the energy transition, where the contribution of renewable energy power plants at the national level continues to increase every year (Agrawal et al., 2023; Sunarto, 2016).

However, behind these technological and innovation advancements related to the energy transition to support success in development, another vital aspect is the social factor related to GEDSI (Gender Equality, Disability, and Social Inclusion), diversity, and inclusivity. At present, the principles of GEDSI in the energy transition sector have not been fully implemented optimally as a framework for social safeguards in this energy transition process. For example, vulnerable groups such as women often experience inequality of access in the energy sector compared to men (UNDP, 2017; UNDP Indonesia, 2022). As a result, women's control and participation in this energy transition remain very minimal, so they have not yet fully benefited from the energy transition. In fact, most of them live in areas with abundant natural energy resources. The principles of diversity and inclusivity have also not been applied optimally in the energy sector.

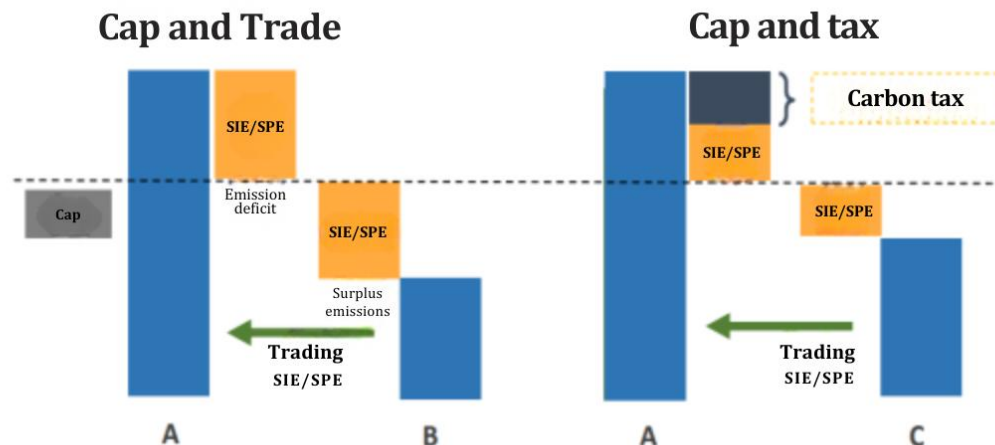


Fig. 1. Carbon pricing framework as defined by the Ministry of Finance of Indonesia (IESR, 2021)

Such conditions are marked by vulnerable groups such as the elderly, children with disabilities, indigenous peoples, and the poor who have limited access, control, and participation in the energy sector, where at the regional scale, the lack of involvement of indigenous communities can eliminate their potential for utilizing renewable energy that is useful to accelerate the energy transition. In the principle of gender equality, diversity, and inclusivity in the energy transition, it is very important for society in the process of comprehensive energy transformation, thus the importance of implementing GEDSI (Gender Equality, Disability, and Social Inclusion) (Asshiddiqie, 2020). Because the energy transition has the potential to create different impacts on men, women, persons with disabilities, vulnerable groups, and indigenous groups, these implementations not only

address inequality in the energy sector, but also ensure that vulnerable groups have equal access and control.

To achieve meaningful participation in this energy transition, from these conditions, we can guarantee that no individual is left behind, no particular group is left behind in all stages of this energy transition. Thus, the implementation of the energy transition does not only focus on the development of infrastructure and technology aspects, but also ensures the development of social aspects, where the application of gender equality, diversity, and inclusivity principles can ensure that the energy transition can be felt by all parties. The global movement toward low-carbon development has placed energy transition at the center of climate action discourse (Hilhorst, 2013; McCauley & Heffron, 2018). Indonesia, as one of the largest developing countries, aims to achieve 23% renewable energy in its national mix by 2025. However, the process of transitioning to cleaner energy faces structural disparities, especially in ensuring equal access and representation for vulnerable groups such as women, youth, persons with disabilities, and Indigenous peoples. Climate justice frameworks emphasize three main dimensions: distributive justice, procedural justice, and recognition justice (Fraser, 2009; Heffron, 2024; Schlosberg, 2013). When these dimensions are linked to GEDSI, the gaps become apparent: unequal distribution of energy benefits, weak representation in decision-making processes, and limited recognition of the unique needs of vulnerable groups. Despite increasing awareness, many national energy policies still lack disaggregated data on gender and disability. As a result, programs labeled “inclusive” often remain symbolic, providing participation on paper rather than meaningful agency. Without structural integration of GEDSI, Indonesia risks repeating patterns of socio-environmental exclusion within its energy transition. This study is essential because it explores how an inclusive approach can serve as a foundational pillar of ecological justice while also identifying gaps that remain unaddressed in Indonesia’s policy landscape.

2. Methods

The research conducted from this article is included in descriptive research, in which this descriptive research provides a clear picture of a situation or condition specifically in the form of social aspects or relationships in society. The data analysis method used in this research is qualitative analysis. Qualitative data analysis is a series of processes of analyzing secondary data used from field processes into a complete explanation, interpretation, and understanding of the studied subject. Data analysis begins with reduction, sequencing, and formulation of relevant findings (Budianto, 2023a). Data triangulation is also used to validate the findings in order to reduce potential bias. In this research, the author uses two methodological approaches, namely the statutory approach, in which the author examines various existing laws and regulations related to the legal issues being studied. This study uses a conceptual approach, which uses document studies in the collection of legal materials to be used in this research. These legal materials are then analyzed using an analysis in the form of a deductive offering that draws conclusions from something general to something specific (Marzuki, 2010). The author also realizes that there are several research limitations, including the limitation of scope, in which the scope of this research only covers several cases or indigenous communities, so the results cannot be generalized. During the interviews, the atmosphere was made as relaxed as possible. The conversations were not strictly structured because this study wanted to let the informants speak freely, to share their honest thoughts, feelings, and experiences. Sometimes the talk went beyond the initial questions, touching on personal reflections about work, family, or social life and those moments actually gave deeper insights about the real challenges faced by women in the energy sector. This study also took notes about the non-verbal expressions, the pauses, the smiles, or the silence when the informants tried to find the right words. Those details matter because they reflect the emotional side of their experiences. The qualitative approach allows these small but meaningful aspects to be seen and respected (Kumar et al., 2021; Lenton & Scheffer, 2024). In the end, all the collected data were coded and organized into several main themes, such as gender participation, institutional barriers, cultural

perceptions, and policy implementation (UN Energy, 2021). The analysis process was done manually, with reflection and comparison between the literature and the field findings. The goal is not to generalize, but to understand to give a human voice to what is often discussed only in policy documents. Through this descriptive and qualitative approach, this study hopes to bring out a more complete picture of how women and other vulnerable groups navigate their place in Indonesia's energy transition. It is not just about collecting information, but also about listening, empathizing, and trying to connect stories from different perspectives into a meaningful understanding. To ensure the credibility of the results, data triangulation was employed. Triangulation is crucial in qualitative research because it reduces potential biases arising from single data sources or one-sided perspectives. In this research, triangulation was conducted by comparing interview findings, secondary data, policy documents, and existing literature from various international and national institutions. By validating data through multiple sources, this study strives to maintain objectivity and reliability, ensuring that the conclusions are grounded in both empirical and conceptual evidence. Two methodological approaches were also applied, namely the statutory approach and the conceptual approach. The statutory approach examines laws, regulations, and policy documents that shape Indonesia's environmental governance and energy transition agenda. This includes laws related to environmental protection, disability rights, gender equality, customary communities, and renewable energy development. By reviewing these regulations, this study seeks to identify gaps, inconsistencies, and opportunities for strengthening inclusivity in policy implementation.

Meanwhile, the conceptual approach is used to analyze academic literature, theories, and conceptual frameworks that support the research. These include theories on climate justice, social inclusion, gender mainstreaming, and participatory development (UNCC, 2021; UNIDO, 2016). Together, these approaches provide a multidimensional understanding of the legal and social context of the energy transition (Nugroho et al., 2018). The legal materials analyzed are interpreted through deductive reasoning, where conclusions are drawn from general legal norms and applied to specific cases observed in the field. The interview process was designed to allow maximum openness and comfort for the informants. The atmosphere was intentionally relaxed to reduce social pressure and encourage honest storytelling. The conversations were semi-structured, meaning that although there were predetermined questions, the discussion frequently expanded beyond the initial topics. This flexibility was essential because many informants shared personal reflections on their work, family life, cultural expectations, and experiences navigating gender roles within the energy sector. These spontaneous insights often revealed deeper structural challenges that formal questions alone might not uncover. This study also observed non-verbal expressions that accompanied the interviews such as pauses, changes in tone, moments of silence, and emotional reactions. These subtle cues provided additional layers of understanding, especially when discussing sensitive issues involving discrimination, exclusion, or institutional barriers. The qualitative approach values these non-verbal elements because they reflect the emotional dimensions of the participants' lived experiences.

After completing data collection, all information was coded manually and organized into several themes: gender participation, institutional barriers, cultural perceptions, accessibility for persons with disabilities, community empowerment processes, regulatory gaps, and challenges in policy implementation. The analysis involved continuous comparison between field findings and theoretical insights. Instead of aiming for broad generalizations, the purpose was to construct a nuanced understanding of how different social groups particularly women, youth, Indigenous peoples, and persons with disabilities navigate their roles in Indonesia's energy transition agenda. The research acknowledges several limitations. The first limitation is the scope of the study. The cases and communities examined do not represent all regions in Indonesia; therefore, the findings cannot be fully generalized. Indonesia's cultural diversity, vast geography, and varying governance capacities mean that the experiences of one community may differ significantly

from others. Future research should consider a broader range of case studies to enrich comparative analysis.

The second limitation relates to legal coverage. This study does not address every legal aspect related to the integration of local knowledge or GEDSI principles in the energy transition. Instead, the focus is on selected legal norms and policy instruments that are most relevant to the research question. This selective approach may overlook additional legal perspectives that could further strengthen the analysis. Strengthening cross-sector legal analyses especially involving energy, environment, Indigenous rights, and disability inclusion would be beneficial for future studies. Another limitation involves the availability and quality of secondary data. In some cases, statistical information on gender, disability, or social inclusion in the energy sector is incomplete or outdated. Several policy documents and legal sources may contain inherent biases, particularly those produced without participatory processes. Such documents sometimes reflect institutional perspectives rather than the lived realities of vulnerable communities. To mitigate this concern, this study applied source triangulation and compared multiple viewpoints including civil society reports, academic studies, and international best practices. Despite these limitations, this research aims to provide both academic and practical contributions by offering an integrated perspective on how GEDSI principles can strengthen the fairness and effectiveness of Indonesia's energy transition. The combination of descriptive and qualitative methods, supported by legal and conceptual analysis, allows the research to highlight real-world challenges and opportunities. Ultimately, this study hopes that this study will encourage policymakers, practitioners, and community leaders to adopt more inclusive approaches, ensuring that Indonesia's shift toward renewable energy benefits all citizens equitably and sustainably (Yang & Callahan, 2007).

This study does not cover all legal aspects related to the integration of local knowledge in the energy transition. In addition, there are also limitations in the availability of secondary data, which have not fully described the social and legal dynamics in the field. Some sources of literature and legal documents, as well as legislation used, may have a certain perspective approach toward relevant legal norms, so caution is needed in analyzing them. Therefore, the author strives to maintain objectivity by conducting source triangulation and comparing various perspectives and government policies. Thus, the results of this research are still expected to provide both academic and practical contributions to the development of law in supporting a GEDSI responsive energy transition in Indonesia.

3. Results

3.1 *Arameters and indicators of GEDSI responsive just energy transition*

Based on the results of the United Nations High-Level Dialogue on Energy in September 2021, it produced a joint commitment called the Energy Compact, which contains a cross-agenda obligation to achieve Sustainable Development Goal number 7, namely to achieve affordable, reliable, modern, and sustainable energy for all. And Sustainable Development Goal number 5, which is Responsive GEDSI in the energy transition, namely the role of women, persons with disabilities, and social inclusion. Importantly, the aspect of energy GEDSI also reaches gender equality in the context of renewable energy, energy efficiency, and circular economy initiatives. In the adoption of the GEDSI concept from the Energy Compact dialogue agreement, it has not yet been carried out in a structured and comprehensive manner in Indonesia. This is reflected from the results of a literature study conducted by the author himself that the concept of energy GEDSI which fully reflects the objectives of the Energy Compact has not yet been found. The author's findings show that there is still a strategy that energy is considered men's business, while women are better off at home or in regulatory bodies. To be able to adopt GEDSI in the roadmap of a just energy transition in Indonesia, which in this case reflects the objectives of the Energy Compact, Indonesia needs to exert influence through the equalization of the gender-energy concept.

Thus, the gender-energy concept in Indonesia should take the form of equalizing its parameters into the energy transition in Indonesia.

Based on the parameters of a GEDSI-responsive just energy transition in Indonesia, there must be four assessment indexes as indicators, namely politics, regulation, technology, economy, investment and finance, as well as social aspects. Meanwhile, the parameters in the GEDSI indicators in Indonesia consist of four indexes, namely political empowerment, financial economy, health and survival, and educational attainment. Therefore, by combining these four indexes, the gender-energy parameter in Indonesia cannot only be said to have implemented the Energy Compact concept but can also be principled as generic, sourced from the distinctive Indonesian parameters themselves. Although formally, the Government of Indonesia has declared its commitment to sustainable development, particularly in pursuing a just and inclusive energy transition that is responsive to GEDSI principles (Gender Equality, Disability, and Social Inclusion), the implementation of these principles has not yet been optimized either at the policy level or in practical fieldwork. The analysis of national energy policies, such as the *National Energy General Plan (RUEN)* and the draft of the *New and Renewable Energy Bill*, shows that GEDSI aspects have not yet become a core indicator in the processes of planning, implementation, and evaluation of energy policies in Indonesia. This reality demonstrates that gender inclusivity has not been positioned as a fundamental element in the national energy framework, even though it is essential for ensuring fair and sustainable transitions.

Table 1. GEDSI paramaters

Dimension	Indicator	Example of Implementation
Gender	Representation	Women leading solar energy cooperatives
Disability	Accessibility	Technical training for disabled youth
Social Inclusion	Participation	Inclusive public consultation mechanisms

(WEF, 2023)

In practice, the proportion of women involved in the energy sector remains low. Most of them occupy non-strategic positions such as administration, communication, and operational support. Meanwhile, women's roles in energy research, decision-making, and technical project management are still minimal. Such patterns reflect the structural barriers that continue to marginalize women's voices in Indonesia's energy discourse. For a long time, energy issues in Indonesia have been perceived mainly through a technocratic and economic lens, rather than from a social and equality-oriented perspective. This reinforces the notion that the country's energy transition is still far from being fully responsive to GEDSI principles and does not yet embody inclusivity as a social value embedded in energy governance (Kumar et al., 2021). Based on the author's findings, this situation reflects the ongoing dominance of a patriarchal mindset in policymaking and industrial practice. While Indonesia's commitment to sustainability is evident in international forums, such as through the *Energy Compact Commitment* following the United Nations High-Level Dialogue on Energy (2021), the local integration of gender-sensitive policies remains weak. Many regulations still focus on infrastructure, efficiency, and investment targets, while the social dimension of the energy transition, including gender empowerment, is often treated as a secondary issue rather than a structural priority. The representation of women in policy-making institutions also remains low. According to the *Global Gender Gap Report (2023)*, women's representation in Indonesia's parliament is only around 20.9%, with even fewer women involved in committees directly linked to energy, technology, and environmental affairs. The lack of female voices at the decision-making level directly impacts how policies are designed and whose interests they serve. As a result, national energy planning processes are still largely dominated by technocratic and male-centered approaches, leaving minimal space for gender inclusivity or local participation (Ministry of Energy and Mineral Resources, 2023)

The study also found that gender-responsive facilities within the energy sector remain significantly limited. Several energy companies, including those involved in renewable

projects, have not yet provided lactation rooms, adequate health facilities, or safe workspaces for women. Interviews with field practitioners indicate that such facilities are often considered “non-essential” due to budget limitations or lack of awareness from management. Consequently, many female workers face barriers that restrict their full participation in the workforce. Furthermore, women who are involved in community-based energy projects often work in informal or voluntary capacities, without structural recognition or access to formal employment benefits.

3.2 The social impact of gender inequality on the energy transition

The indicators of GEDSI equality toward the energy transition in Indonesia, this can actually be assessed through three major indexes: the political index, the regulatory index, and the social index. Therefore, the combination of these three indexes is actually the function of the legislative body in Indonesia, while the execution body ensures the implementation. These three indicators can actually be led by Commission VIII of the House of Representatives (DPR RI), whose scope of duties includes religion, social affairs, women’s empowerment, and child protection, in collaboration with Commission VII of the DPR RI, which oversees energy, technology, environment, and research. Thus, the mainstreaming of the political and regulatory index includes two sub-indexes of the energy transition: willingness and commitment, and the quality of the regulatory and political framework (Soekanto & Mamuji, 2007; Soekanto, 2010). When these are correlated, the GEDSI sub-index in social empowerment can be strengthened by increasing the quota of women’s involvement in political empowerment roles in Indonesia. By increasing the ratio of women participating in the energy transition, the political empowerment score in the Global Gender Gap Report can also be improved. In fact, Indonesia needs to enhance and encourage women’s participation in parliamentary and ministerial positions because the proportion of women occupying parliamentary seats is only around 20 %. This statement is supported by research and literature reviews showing that, despite the improvement in the quality of girls and youth, women’s participation in Indonesia remains below 30 percent. In this regard, the energy transition highlights the importance of increasing women’s participation to ensure more accumulative and substantial decision-making. Strong efforts and commitments from the government should realize equitable GEDSI welfare so that women’s involvement in parliament increases and gender inequality in the energy transition can be reduced. In the social index, there is a sub-index of the energy transition related to human resources, which is combined with women’s health, survival, and educational attainment in Indonesia.

The principle of safeguarding and ensuring women’s survival in Indonesia should be implemented by guaranteeing facilities and rights for female workers in various energy transition sectors. Based on Law No. 13 of 2003 concerning Manpower and key information from government sectors, private industries, and community organizations, the majority responded that GEDSI-responsive supporting facilities have not yet been fulfilled (Steinberg, 2021; Walker et al., 2010). There are still no special facilities for female workers such as lactation rooms due to the lack of budget allocation for such infrastructure (Nugraheni, 2023). In this case, health service centers are not always on standby, and if someone falls ill, they are usually referred to hospitals. Therefore, based on these secondary findings, it can be concluded that special facilities for women such as lactation rooms, health services, counseling services, places of worship, and women-only toilets are essential to be fulfilled. Unfortunately, findings from the International Renewable Energy Agency (IRENA) in 2019 showed that the energy sector in Indonesia is still dominated by men at 68%, compared to women at only 32%. Moreover, women involved in the energy transition sector are mostly in non-strategic positions such as administration. From the results of the discussion in this study, it actually shows that Indonesia often uses responsiveness without regulating community involvement in national development. In this case, the work of energy transition, both at the level of laws and at the level of implementing regulations. On the other hand, Indonesia, as one of the countries that has ratified national development,

should firmly regulate the concept of GEDSI so that the process of identifying gender, disability, and social inclusion responsiveness in the energy transition, as well as indigenous peoples and customary territories, will help the government and development project parties to obtain consent in the development of energy transition projects (Zhao & Zhang, 2023).

In the context of vulnerable communities, women, people with disabilities, and indigenous populations actually possess tremendous potential as agents of change, particularly in developing community-based renewable energy initiatives. However, the findings from this study show that these groups are rarely included in technical training programs or small-scale energy projects. Several factors contribute to this exclusion, such as limited access to education, lack of gender-sensitive training opportunities, multiple domestic burdens, and persistent social perceptions that categorize energy-related work as a “male domain.” As a result, women often become passive beneficiaries rather than active participants in the energy transition process. This imbalance creates a structural paradox in Indonesia’s energy transition. While the nation aspires to achieve a *just energy transition*, the very actors who should be central to ensuring justicewomen and marginalized communities remain at the periphery of the process. The situation is not merely a technical gap but reflects deeper socio-cultural hierarchies and institutional inertia that resist transformation. Hence, achieving a gender-responsive energy transition in Indonesia requires not only new policies but also a cultural shift in how society perceives energy, gender, and sustainability. To address these challenges, this study adopts a participatory and independent research framework inspired by the principles of the International Association for Public Participation (IAP2).

This framework emphasizes a spectrum of participation that includes inform, consult, involve, collaborate, and empower. Applying the IAP2 approach to Indonesia’s energy transition process can strengthen stakeholder engagement and ensure that the voices of women and vulnerable groups are meaningfully integrated into decision-making mechanisms. At the inform stage, the study found that many women working in energy projects lacked sufficient access to policy updates, training opportunities, and regulatory information. Transparent communication from institutions is crucial to bridge this gap. At the consult stage, public consultations often appeared as formalities rather than genuine participatory spaces. In many cases, women’s feedback was collected but not incorporated into final policy drafts. To make consultation meaningful, the government should implement inclusive dialogue models, such as community forums or focus group discussions that are gender-sensitive and accessible to local actors. At the involve and collaborate stages, the research revealed successful examples of gender-inclusive practices in community-based energy projects, particularly in Sulawesi and Nusa Tenggara. These projects, which actively engaged women in managing micro-hydro and solar initiatives, demonstrated that female participation significantly enhanced operational sustainability and social cohesion (Lena et al., 2022). When women were given roles in financial management, community coordination, or maintenance training, the sense of ownership among community members increased, resulting in longer project lifespans.

The empower stage represents the pinnacle of participatory engagement. Empowerment in this context means ensuring that women are not merely present but have real authority in energy governance. It requires systematic investment in capacity building, leadership development, and access to funding for women entrepreneurs in the renewable energy sector (Budianto, 2023b). Empowerment also entails transforming workplace culture to eliminate gender bias and promoting equal pay and career advancement opportunities (Ministry of Education and Culture, 2018). From a broader perspective, the implementation of GEDSI-responsive energy governance contributes not only to gender justice but also to national economic development. According to McKinsey (2018), increasing women’s participation in the workforce could boost Indonesia’s GDP by up to USD 135 billion by 2030. This underscores that empowering women in the energy sector is not a social expense it is an economic investment. Moreover, integrating gender perspectives leads to more resilient energy policies, as women often bring unique insights

related to household energy consumption, local resource management, and community resilience. However, the research also found that institutional challenges persist. Bureaucratic fragmentation, limited data on gender participation in energy, and inconsistent monitoring mechanisms hinder the mainstreaming of GEDSI across ministries and local governments. Even when gender mainstreaming policies exist, they are often implemented symbolically without measurable indicators of success. Therefore, one of the key findings of this study is the urgent need for a *gender-energy monitoring framework* that includes both quantitative and qualitative indicators such as representation ratios, access to resources, leadership positions, and perceptions of inclusivity at the community level. Another crucial insight from the research is the importance of integrating local and indigenous knowledge in gender-energy initiatives. Many indigenous communities in Indonesia have long practiced sustainable energy traditions rooted in collective values and ecological respect (Mahaswa, 2023; Mahaswa & Dharmayasa, 2021). Recognizing these local wisdom systems not only strengthens environmental sustainability but also aligns with the principles of procedural and restorative justice. By combining modern renewable energy technology with indigenous values of balance and harmony, Indonesia can build an energy transition model that is both equitable and culturally grounded. Overall, the findings of this study lead to a comprehensive conclusion that the mainstreaming of the Gender-Energy concept in Indonesia is still at a formative stage and requires stronger policy integration, institutional support, and participatory mechanisms. The energy transition must not only be measured by technological achievements or carbon reduction targets but also by how inclusive and equitable it becomes for all segments of society. The inclusion of women and vulnerable groups in this process is not merely symbolic; it is a transformative pathway toward achieving true sustainability.

Thus, gender mainstreaming in Indonesia's energy transition is not just an agenda of equality but a foundation for national progress. The energy sector must evolve from being an exclusive field dominated by technical and economic rationalities into a collaborative ecosystem that recognizes human dimensions as equally vital. Through participatory, inclusive, and empowering approaches, the future of Indonesia's energy transformation can reflect not only environmental resilience but also social justice and human dignity. In conclusion, this research affirms that Indonesia's path toward a just and GEDSI-responsive energy transition depends on how effectively the country integrates gender perspectives into every layer of policy and practice. Only by ensuring that no one is left behind—neither women, people with disabilities, nor indigenous communities—can Indonesia truly claim that its transition to clean energy is not only green but also fair, inclusive, and humane.

The most appropriate and rightful groups are the most vulnerable communities, indigenous peoples who control customary lands (Nidasari, 2014). When vulnerable communities decide to accept development projects in this case, a just energy transition—the result of that decision—is documented as proof that the indigenous peoples indeed agree to the development of projects within the energy transition, with certain conditions that must of course be fulfilled by the project holder (Ministry of Energy and Mineral Resources, 2023). Lastly, during the implementation of national development projects until their completion, monitoring and evaluation must be carried out to ensure whether there are violations and provisions that may harm or threaten indigenous peoples and other vulnerable groups. Procedural justice examines how a policy is implemented and how various stakeholders are involved in the decision-making process in the development of gender-responsive energy in Indonesia. Meanwhile, recognition justice seeks to acknowledge all individuals and communities affected by changes in the energy system and to appreciate the understanding of social and cultural impacts of energy policies and decisions on all people. Thus, procedural justice goes hand in hand with recognition justice, in which local community knowledge is able to actively involve the participation of indigenous peoples. Therefore, justice in Indonesia related to the energy transition is restorative justice, which involves aspects where vulnerable communities must receive fair compensation for losses caused by energy transition projects or damages resulting from

excessive change. This ensures whether there are violations of regulatory provisions that have been mutually agreed upon (ACDP Indonesia, 2013).

Therefore, transparency regarding the losses caused by renewable energy is needed, which then determines the amount of compensation that must be provided to the local communities. If this is implemented properly, it gives indigenous peoples a very significant power compared to the state and industry partners. Thus, communities have a strong bargaining position to conduct negotiations regarding the Standard Operating Procedures (SOP) for renewable energy development projects in a fair and equal manner. This ensures that vulnerable communities do not lose control over their lands and natural resources. This can demonstrate development activities that are aligned with priority needs and the rights of the people (BPS, 2021). In this study, it can be done by including a proposed article as follows: to ensure that regulations in the Just Energy Transition Law are implemented effectively. Therefore, there is an effort to integrate local community knowledge with the Just Energy Transition plan, and this study recommends including communities within the scope of gender, women, and disability. This is to ensure that their rights and participation are generally recognized.

This situation can potentially create debates or even disagreements among stakeholders about what kind of participation can be considered meaningful and effective. For instance, while one group may view participation as a process of consultation, another may expect a stronger position in the decision-making stage. This shows that participation cannot simply be measured by attendance or involvement, but also by the degree of influence people have on policies that affect their lives. Another limitation of this study is related to the strength and authority of the judiciary in ensuring the protection of public rights within the framework of public participation in environmental governance. Until now, there are still many cases that show the government's lack of compliance with court rulings, especially in the formation and implementation of environmental policies. This has raised another layer of concern about whether the judicial system truly has the power to advocate for the people's interests and to balance the authority of the government in the field of environmental management and energy transition agendas. These two limitations the absence of standardized participation indicators and the weak enforcement of judicial power represent potential areas of discussion in their respective fields. The first issue, about indicators of public participation, could be further developed into a separate legal research focusing on legislative studies (Putri et al., 2022; Suboticki et al., 2023). Such a study could contribute valuable insights for both the government and the public to design and develop a more standardized and reliable framework for measuring the effectiveness and appropriateness of public participation in lawmaking processes. The second issue, regarding the judiciary and environmental governance, could be expanded into another research focus within the field of environmental law. It could explore the extent of government compliance with judicial decisions and examine how court rulings are followed up in practice, particularly when they relate to community rights and environmental protection. By conducting such research, scholars and policymakers could better understand the dynamics between the executive and judicial branches in realizing environmental justice and ensuring that public aspirations are genuinely reflected in environmental policies. Moreover, the researcher also realizes that this study was conducted in a limited scope and context. The findings are primarily based on qualitative data, which, although rich in meaning, cannot fully represent all dimensions of public participation and justice in Indonesia's energy transition process. However, qualitative research offers depth it reveals what numbers cannot say, the emotions, challenges, and small victories behind every voice. Therefore, the limitation here is not a weakness, but rather an opening for others to expand the narrative with broader data and different methodological perspectives. Future studies could combine qualitative insights with quantitative analysis to provide a more comprehensive understanding of how participation works in practice. It would also be interesting to explore how local wisdom and indigenous community knowledge could be integrated into public policy, especially in energy and environmental sectors, where local people are often the most affected but least heard.

Finally, the researcher believes that the findings in this study should not be seen as a final conclusion, but as a starting point for continuous reflection and improvement. The issues of justice, inclusivity, and participation are dynamic they change along with political, social, and technological developments. Therefore, research like this must keep evolving, following the rhythm of society and the challenges of the time. In the end, the limitations of this study serve as a gentle reminder that every piece of research is part of a larger conversation. The researcher hopes that this study can inspire more discussions, more collaborations, and more explorations that bring us closer to a just and inclusive energy transition in Indonesia one that truly gives space and voice to everyone, especially the most vulnerable communities who have long been standing at the margins of development.

4. Conclusions

A responsive energy transition in Indonesia is a serious step toward achieving justice and supporting the energy compact goals promoted by the Indonesian state. The adoption of GEDSI has not yet been fully structured and still has significant homework that needs to be addressed very seriously. One approach that can be implemented in Indonesia is to integrate GEDSI-responsive indicators into energy transition parameters to create a gendered energy concept in Indonesia. The mainstreaming of the GEDSI energy concept in Indonesia should be designed with a participatory approach. This approach always involves vulnerable groups such as women, persons with disabilities, the elderly, indigenous peoples, and socially inclusive communities who work directly in the energy transition sector in the process of decision-making and policy formulation. Furthermore, this participatory approach will reflect a transparent commitment from stakeholders to ensure that all the needs of women and all the needs of vulnerable communities working in the energy transition sector can be inclusively fulfilled. When we talk about participation, it's not only about inviting people to meetings or consultations. It's about building trust, ensuring representation, and giving real space for voices that have been unheard for too long.

This participatory process also reflects a transparent commitment from stakeholders from government, private sectors, and civil society to make sure that the needs of women and all vulnerable groups working in the energy transition sector can be fulfilled inclusively. In practice, this means giving equal opportunities in training, employment, leadership, and even in the ownership of renewable energy initiatives. For instance, when communities in rural areas are involved in solar panel or micro-hydro projects, women should be there not only as users but also as managers, technicians, or local leaders. They can contribute more if the system allows them to. But in reality, many projects still treat women as "beneficiaries," not as active agents. This mindset needs to be changed. The success of energy transition cannot only be measured by how much electricity is generated from renewable sources or how much emission is reduced, but also by how fair and inclusive the process is. If the transition only benefits the same group who already have access and power, then it is not a just transition it is just another shift of inequality in a different form. It is also important to understand that this research has several limitations. Within these limitations, however, there are opportunities that can be explored further through future studies. One of the main limitations of this research lies in the complexity of determining indicators that can truly measure whether a legislative process has accommodated public participation and their real interests. This challenge arises because there is no single, universally accepted standard that can be used as a reference. Each segment of society carries its own interests, perspectives, and priorities, especially when it comes to the issue of energy transition itself.

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During the preparation of this work, the author used Grammarly to assist in improving grammar, clarity, and academic tone of the manuscript. After using this tool, the author(s) reviewed and edited the content as needed and took full responsibility for the content of the publication."

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