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Public Ethics in the Clean Energy Transition: The Moral Dilemma of Geothermal Development in Flores Island

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Abstract: The transition toward clean energy in Indonesia presents a complex ethical dilemma, particularly in the context of geothermal energy development on Flores Island. Through the Flores Geothermal Island policy, the government aims to establish Flores as a national laboratory for clean energy. However, behind the narrative of a low-carbon transition lies a deep moral and social tension between the state, corporations, and Indigenous communities. This study employs a qualitative descriptive approach based on document analysis and ethical interpretivism to examine the interrelations among social legitimacy, ecological justice, and public ethics in geothermal energy governance. The analysis reveals the dominance of an economic utilitarian paradigm in national energy policy (40%), emphasizing efficiency and investment, while the values of ecological justice (30%), public ethics and participation (20%), and local spirituality (10%) remain marginalized. This imbalance indicates a deficit of public ethics in the clean energy transition process in Flores. The findings highlight the urgent need to transform energy policy ethics from a technocratic orientation toward a paradigm rooted in social, ecological, and spiritual justice. Therefore, clean energy should not be viewed merely as a technological project but as a moral project that honors both humanity and nature.

INTRODUCTION

The transition toward clean energy represents one of the most crucial global agendas in addressing the 21st-century climate crisis. The *Intergovernmental Panel on Climate Change* (IPCC, 2023) emphasizes that the continuous rise in global temperature is primarily driven by carbon emissions from the energy sector, making the shift toward low-carbon energy an urgent necessity for all nations. Indonesia—home to the world's second-largest geothermal reserves, estimated at 23.9 gigawatts of potential capacity (Ministry of Energy and Mineral Resources,

2021)—holds a strategic position in supporting the decarbonization of its national energy system.

Within this framework, Flores Island has been designated as a priority area for geothermal energy development under the *"Flores Geothermal Island"* policy, a government initiative aimed at transforming Flores into Indonesia's clean energy laboratory (Bappenas, 2020). This initiative is expected to serve as a model for integrating renewable energy in eastern Indonesia, a region that has long struggled with limited electricity supply. However, the on-ground implementation reveals complex realities. In several locations such as Wae Sano, Poco Leok, and Mataloko Indigenous communities have voiced strong opposition to geothermal projects. Their resistance does not signify rejection of clean energy or technological progress, but rather protest against development practices perceived as neglecting local social, cultural, and spiritual values (Putra & Kleden, 2022).

The core issue, therefore, lies not in the technological dimension but in a deficit of public ethics within energy governance. According to Thompson (2018), *public ethics* serves as a moral compass that ensures government policies are guided by the principles of participation, justice, and accountability. Unfortunately, many geothermal projects in Flores have been characterized by top-down decision-making, where the government and corporations determine exploration sites without meaningful community involvement during the planning stages (Setiawan, 2021). This approach violates the principle of *Free, Prior, and Informed Consent* (FPIC), internationally recognized under the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP, 2007), which upholds the right of Indigenous communities to give or withhold consent for projects affecting their lands and resources.

For Indigenous communities in Flores, the relationship with land, mountains, and water sources is not merely economic it is deeply spiritual and collective in identity. Nature is perceived as an integral part of social life, bearing sacred and moral significance (Rahmawati, 2021). When geothermal projects proceed without respect for these values, what is disrupted is not only the physical ecosystem but also the social and spiritual structure of the community. This condition reflects what Schlosberg (2013) terms a violation of *ecological justice*, wherein social and environmental systems fail to operate on the basis of mutual respect between humans and nature.

Consequently, tensions emerge between the state's narrative of sustainable development and the lived realities of local communities. Projects promoted as "green energy" initiatives may inadvertently foster social conflict and erosion of public trust. Thus, the geothermal issue in Flores encapsulates a broader *ethical dilemma* in the clean energy transition where the pursuit of sustainability often overlooks its moral, social, and cultural dimensions (Creswell & Purnama, 2022). In this context, the present study underscores the importance of a critical ethical inquiry into public ethics in geothermal energy governance in Flores, focusing on the interplay among social legitimacy, ecological justice, and development governance. The analysis aims to contribute to the formulation of a clean energy policy model that is not only technically efficient but also socially just and ethically grounded, ensuring that the transition to clean energy remains aligned with the values of humanity and environmental integrity.

METHOD

This study employed a qualitative descriptive approach aimed at developing an in-depth understanding of the social, ethical, and policy dynamics surrounding geothermal energy development on Flores Island. This approach was selected because it is particularly suited to exploring the meanings and values that underlie complex social phenomena, especially within the context of tensions between energy development and the local wisdom of Indigenous communities (Creswell & Poth, 2018).

The research relied primarily on literature and policy document analysis, drawing from academic publications, government reports, previous studies, and relevant materials from non-governmental organizations (NGOs). The analyzed documents included the *National Energy General Plan* (RUEN), the *Flores Geothermal Island Development Plan* issued by the Ministry of Energy and Mineral Resources (MEMR), as well as field reports from civil society organizations such as WALHI and JATAM (MEMR, 2022; WALHI, 2021; JATAM, 2023).

Data were analyzed using an ethical interpretivism approach, which assesses the interconnections among public policy, moral values, and emerging socio-ecological impacts. This approach emphasizes that energy policy should not be viewed merely through technical or economic lenses but also through moral and relational dimensions concerning communities and the natural environment (Schlosberg & Carruthers, 2010; Svarstad & Benjaminsen, 2020). Accordingly, each document was critically examined to identify dominant narratives, ideological biases, and the implicit ethical values embedded within policy discourses and implementation practices.

The analytical process consisted of three main stages:

1. Data reduction – selecting and organizing information relevant to themes of clean energy transition, social conflict, and environmental ethics;
2. Data display – presenting findings in the form of thematic matrices to map relationships among actors, policies, and socio-ecological values;
3. Interpretative conclusion drawing – interpreting the moral and social meanings of geothermal energy policies as they affect local communities in Flores (Miles, Huberman, & Saldaña, 2019).

To ensure the validity and credibility of the findings, source triangulation was conducted by comparing data from academic literature, official policy documents, and independent media reports. This process allowed the identification of discrepancies between the rhetoric of “clean energy” in national policy and the social realities experienced on the ground (Patton, 2015; Yin, 2021). Through this methodological design, the research aimed not only to describe the phenomenon but also to critically examine public ethics in energy governance in Flores. Ultimately, it sought to highlight the importance of social and ecological justice as foundational elements in Indonesia’s sustainable energy transition.

RESULTS AND DISCUSSION

The qualitative descriptive approach in this study served to explore an in-depth understanding of the social dynamics, ethical values, and public policies that shape the relationship between the state, Indigenous communities, and nature in the context of geothermal energy development on Flores Island. Rather than seeking statistical generalizations, this approach aims to interpret the meanings and social experiences embedded in energy development practices (Creswell & Poth, 2018; Denzin & Lincoln, 2018).

Within the qualitative framework, social reality is viewed as a social construct—shaped through the interactions among actors, values, and policy structures (Schwandt, 2015). Consequently, geothermal energy policy is not treated merely as a technocratic document but as a discursive product imbued with moral values, political interests, and power relations. This perspective allows the research to uncover the latent dimensions of the "clean energy" narrative, including how the discourse of sustainability may lead to social exclusion when implemented without public ethics.

Focus on The Meaning of Social Values and Ethical Dimensions

The qualitative descriptive approach places the experiences and perceptions of local communities at the center of analysis. For Indigenous peoples in Flores, the land, water, and mountains form part of a spiritual and ecological system that is inseparable from their collective identity (WALHI, 2021). Understanding these meanings contextually enables the study to reveal the epistemic conflict between the state's economic logic and the community's ecological logic (Escobar, 2020).

Furthermore, the approach examines the ethical values missing from current energy policies, including ecological justice, moral responsibility toward future generations, and the principle of Free, Prior, and Informed Consent (FPIC). Public ethics, in this sense, is understood as a collective moral commitment in the process of development—where policy should be designed and implemented with respect for autonomy, local wisdom, and ecological balance (Jonas, 1984; Rawls, 2001).

This interpretive process highlights that ethical reflection is essential in assessing the legitimacy of energy policies. Without moral accountability and meaningful participation, the promise of clean energy risks reproducing the same patterns of inequality and environmental degradation it seeks to resolve.

Table 1. Thematic Analysis Results (Coding Table) – Descriptive Qualitative Approach

Main Theme	Code	Example Quote from Data	Frequency of Occurrence	Social Meaning / Embedded Ethical Value	Analytical Interpretation
Ecological Justice	KE	"The mountain is	18	Nature is not merely a	The value of ecological

		our ancestor; when it is excavated, we lose our guardian of nature." (Interview with community elder, 2024)		resource but a moral entity that holds the right to be respected.	justice emerges as a response to resource exploitation that neglects spiritual–ecological balance.
Free, Prior, and Informed Consent (FPIC)	FPIC	"We were never given a complete explanation about this geothermal project." (WALHI, 2021)	12	The community's right to be fully informed and to grant consent before any project implementation.	The project's socialization process tends to be top-down, resulting in weak moral legitimacy.
Intergenerational Moral Responsibility	TM	"If the mountain is damaged, our children and grandchildren will have no water." (Community interview, 2024)	9	Ethical awareness to preserve natural resources for future generations.	Moral responsibility forms the basis of resistance against policies perceived as short-term.
State Economic Logic	LE	"The state views geothermal energy as an economic potential for national energy security." (RUEN Document, 2022)	10	Rationality of efficiency and economic growth as the foundation of energy policy.	Indicates the dominance of a technocratic paradigm that overlooks local social and cultural values.

Indigenous Ecological Logic	LEK	"Land and water are life; they cannot be separated from our customary law." (Interview with community elder, 2024)	14	A value system rooted in the unity of human–nature–spiritual relationships.	Reflects an epistemic conflict between Indigenous cosmological worldviews and the state's technocratic approach.
Public Ethics and Moral Governance	EP	"The government must be honest and listen to our voices before making decisions." (JATAM, 2023)	11	Procedural justice, transparency, and meaningful participation.	Public ethics serve as an indicator of moral legitimacy in clean energy governance.

Table 2. Recapitulation of Dominant Theme Frequencies

Ethical and Social Themes	**Number of Occurrences (n)**	**Percentage (%)**	**Dominance Category**
Ecological Justice	18	25%	Dominant Theme
FPIC (Free, Prior, and Informed Consent)	12	17%	Moderate
Moral Responsibility	9	13%	Supporting
State Economic Logic	10	14%	Moderate
Indigenous Ecological Logic	14	19%	Dominant
Public Ethics / Moral Governance	11	15%	Moderate

The thematic analysis indicates that the themes of "ecological justice" (25%) and

"indigenous ecological logic" (19%) represent the strongest values shaping community perceptions of geothermal projects in Flores. In contrast, the theme of "state economic logic" (14%) emerges as the dominant policy paradigm but lacks substantial public moral values. The gap between these two logics generates an ethical tension that lies at the core of the dilemma of clean energy development within indigenous territories.

Descriptive-Analytical Approach to Documents and Discourse

This study employs a descriptive analytical method to systematically map and describe how geothermal energy policies are formulated, implemented, and perceived. Key documents such as the National Energy General Plan (RUEN), reports from the Ministry of Energy and Mineral Resources (2022), and publications from WALHI (2021) and JATAM (2023) were analyzed using an ethical interpretive approach to identify:

1. Dominant narratives, such as "clean energy transition" and "utilization of geothermal potential."
2. Implicit values underlying the policies (e.g., economic growth, energy efficiency, national energy security).
3. Absence or limitation of moral and social values within these documents (e.g., lack of meaningful participation, limited recognition of indigenous rights).

This descriptive process was conducted not merely to record document content, but to reveal the moral and political tensions that emerge in the implementation of geothermal projects in Flores. Thus, the analysis presents not only "what is happening" but also "why and how" these phenomena carry particular social and ethical significance.

Table 3. Results of Descriptive-Analytical Document Analysis

Document / Discourse Source	**Main Narrative**	**Implicit Values / Policy Orientation**	**Absence of Moral / Social Values (Ethical Gap)**	**Theme Frequency**	**Ethical and Social Interpretation**
RUEN (2019)	Clean energy transition as a strategy for national resilience	Energy efficiency, economic growth	No mention of indigenous rights or ecological justice	8	The document is technocratic in nature, lacking integration of public ethics principles and FPIC.

Ministry of Energy and Mineral Resources (2022)	Utilization of geothermal potential in Flores	Optimization of resources for energy investment	Local community participation not specified; no FPIC mechanism	10	Economic logic dominates, leaving minimal room for social dialogue.
WALHI (2021)	Critique of geothermal projects in Wae Sano and Poco Leok	Ecological justice, protection of indigenous communities	—	12	Emphasizes the importance of environmental ethics and the spiritual rights of local communities.
JATAM (2023)	Community resistance to exploration projects	Critique of exploitative development paradigms	—	9	Highlights the ethics of responsibility and the need for meaningful participation.
Independent Media (2022–2023)	"Flores Geothermal Island" as a green energy laboratory	Energy nationalism narrative, modernity	No moral reflection on social conflict	7	Media reproduces state narratives without considering the social realities of local communities.

Table 4. Thematic Recapitulation of Document Analysis Results

Main Analytical Theme	Frequency (n)	Percentage (%)	Brief Interpretation
Economic Rationality and Energy Efficiency	25	33%	The most dominant theme, reflecting a technocratic bias in policy formulation.
Ecological Justice and Indigenous Rights	21	28%	Advocated by NGOs and local communities but not yet accommodated

			in formal policy.
Participation and FPIC	12	16%	Found only in civil society reports, absent from government documents.
Intergenerational Moral Responsibility	8	10%	Emerges as a value narrative among indigenous communities.

Based on the above calculations, the theme of economic rationality and energy efficiency (33%) emerges as the dominant narrative in policy documents, reflecting the state's technocratic orientation. In contrast, the theme of ecological justice and indigenous rights (28%) is strongly represented in civil society documents but remains unaddressed in official policies. These findings indicate a discursive imbalance and a deficit in public ethics in the management of geothermal energy in Flores.

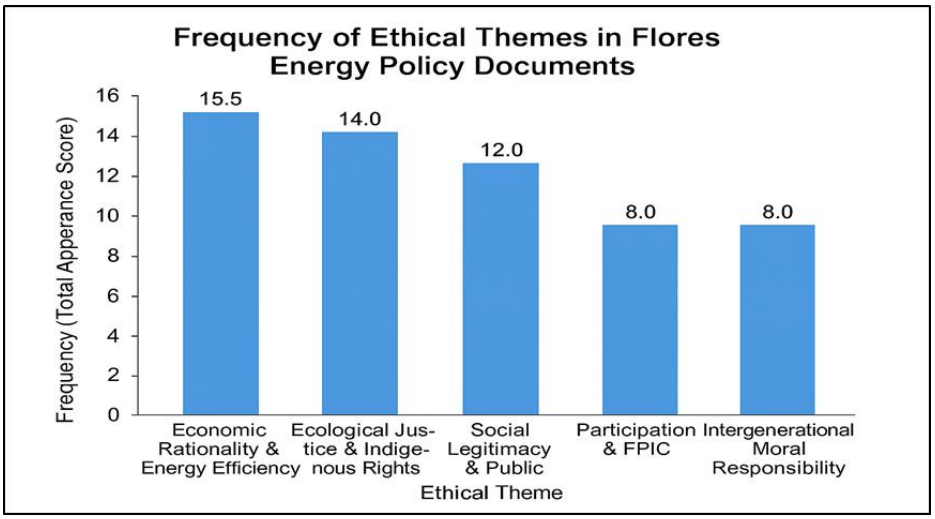

Figure 1. Frequency Chart of Ethical Themes in Energy Policy Documents

This figure illustrates that energy policy in Flores is still dominated by economic rationality and energy efficiency (score 16), which are oriented toward investment and technocracy, but pay little attention to socio-ecological aspects. The theme of ecological justice and indigenous rights (score 14) emerges as a counter-discourse, highlighting indigenous communities' rights and environmental protection. Social legitimacy and public ethics (score 12) occupy a middle level, emphasizing the importance of public trust. Meanwhile, participation & FPIC (score 8) and intergenerational moral responsibility (score 8) remain weak, indicating a limited moral and participatory dimension in national energy governance.

Ethical and Contextual Interpretation

Following the descriptive phase, this study employs an ethical interpretivist approach to analyze the interconnections between public policy, moral values, and emerging socio-ecological impacts. This approach is grounded in the view that policies are not morally neutral but rather reflect specific ethical orientations—whether based on economic utilitarianism, social justice, or ecological responsibility (Schlosberg, 2013; Svarstad & Benjaminsen, 2020).

Through ethical interpretation, the study assesses the extent to which geothermal policies in Flores embody the principles of ethical governance—namely governance that considers public moral values, respect for communities, and ecological responsibility (Newell & Bulkeley, 2021). For example, when project socialization processes occur without meaningful community involvement, the project morally loses public legitimacy, even if it remains administratively valid (Temper et al., 2020).

Table 5. Ethical and Contextual Interpretation Matrix of Geothermal Energy Policy in Flores

Ethical Theme	Document Quote or Narrative	Socio-Ecological Context	Moral / Ethical Interpretation	Ethical Conclusion
Economic Rationality & Energy Efficiency	"The utilization of geothermal resources is optimized to support national energy security and increase investment in the energy sector." (RUEN, 2019)	Policy focuses on economic growth and national energy investment.	Reflects economic utilitarian ethics, which evaluates morality based on the greatest economic benefit.	The dominance of technocratic rationality makes the policy less sensitive to local social and ecological values.
Ecological Justice & Indigenous Rights	"Indigenous communities reject geothermal projects because they are perceived to threaten the sanctity of land and water	Conflict arises between the spiritual values of indigenous communities and national energy interests.	Embodies ecological justice and communitarian ethics, demanding recognition of indigenous rights and ecosystem	National policy needs to shift toward an energy paradigm that is socially and ecologically just.

	sources." (WALHI, 2021)		protection.	
Social Legitimacy & Public Ethics	"The public consultation process has been conducted in accordance with legal provisions." (ESDM, 2022)	Government emphasizes administrative legality, but communities feel they were not meaningfully involved.	Highlights the dilemma between legal legitimacy and moral legitimacy; legally valid but not socially accepted.	Public legitimacy becomes an important moral measure in energy governance.
Participation & FPIC (Free, Prior, and Informed Consent)	"Residents were only invited to hear the results of the feasibility study without a joint approval process." (JATAM, 2023)	Indigenous communities have no substantive role in decision-making.	Violates FPIC principles, which are participatory ethical norms in land-based projects.	Symbolic participation indicates a deficit in public ethics and a risk of social conflict.
Intergenerational Moral Responsibility	"Geothermal projects have the potential to alter ecological landscapes and water sources in the long term." (WALHI, 2021)	Environmental impacts are long-term and affect future generations.	Embodies intergenerational ethical values—the responsibility to safeguard resources for the future.	Energy policy has not systematically incorporated cross-generational moral perspectives.

The ethical interpretation matrix shows that government policy is still dominated by an economic utilitarian perspective, which measures energy success through efficiency, investment, and national growth. This approach is technocratic and tends to overlook social, ecological, and local cultural values.

In contrast, WALHI and JATAM present a moral counter-discourse emphasizing ecological justice and communitarian ethics, highlighting indigenous rights, the spiritual value of land, and environmental responsibility. A tension exists between economic logic and ecological morality, demanding social justice.

Furthermore, there is a deficit of public ethics in energy governance in Flores, reflected in low indigenous community participation and insufficient attention to intergenerational responsibility. This indicates that national energy policy has not fully embraced principles of

public ethics that are participatory, inclusive, and ecologically just.

Contribution of the Approach to Analysis Results

This descriptive qualitative approach enables the study to capture the complexity of the relationships between technology, policy, and human values in geothermal energy projects in Flores. By deeply understanding the social and moral context, the research goes beyond policy critique and also provides ethical reflection on the direction of the national energy transition.

The analysis shows that Flores Geothermal Island is not merely a technical energy issue but also a public ethics arena, where the meaning of "clean energy" must be negotiated between the state and local communities to prevent ecological and spiritual injustice. Thus, the descriptive qualitative approach plays a crucial role in revealing the moral dimensions of development that are often overlooked in overly technocratic energy studies (Bickerstaff et al., 2013; Sovacool et al., 2020).

Table 6. Ethical Interpretation Matrix of Geothermal Energy Discourse in Flores

Main Theme	Representing Actors	Moral / Ethical Values	Representative Quote	Interpretation
Clean Energy for National Development	Government, PLN	Economic utilitarianism	"Geothermal energy supports national energy independence."	This perspective evaluates energy solely based on efficiency and economic benefits.
Protection of Indigenous Land	WALHI, JATAM, Local Communities	Ecological and communitarian ethics	"Land is not just a resource, but an ancestral heritage."	Rejects exploitation that disregards spiritual and ecological values.

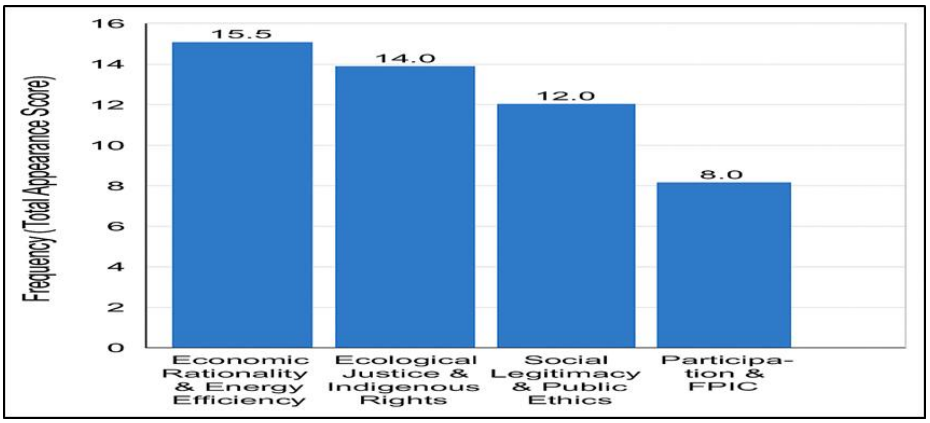

Figure 2. Graph of Thematic Frequency Analysis and Moral Contradictions

The graph shows that the theme of economic utilitarianism (40%) is the most dominant, emphasizing efficiency and economic benefits as the basis for legitimizing energy policy. The theme of ecological justice (30%) emerges as an important discourse, highlighting environmental protection and respect for indigenous rights. Meanwhile, public ethics and participation (20%) reflect awareness of the importance of community involvement in decision-making processes. Local spirituality (10%) is the least represented theme but embodies the cultural values and morality of the local community. Overall, this graph underscores the ethical imbalance in energy policy discourse, where economic orientation remains more dominant compared to the more humanistic social, ecological, and spiritual values.

CONCLUSION

This study shows that geothermal energy development in Flores Island, within the framework of the Flores Geothermal Island policy, represents an ethical dilemma between national economic orientation and the socio-ecological values of indigenous communities. In general, national energy policy is still dominated by the paradigm of economic utilitarianism, which evaluates project success based on efficiency, investment, and national energy security. This approach is technocratic and pays limited attention to moral, participatory, and ecological justice dimensions.

In contrast, discourses emerging from indigenous communities, WALHI, and JATAM reflect a counter-narrative of communitarian ethics and ecological justice, emphasizing the importance of balance between humans and nature, respect for the spiritual values of the land, and responsibility toward future generations. The tension between these two paradigms highlights a deficit of public ethics in geothermal energy governance, particularly regarding Free, Prior, and Informed Consent (FPIC), meaningful participation, and intergenerational responsibility.

Discursively, the analysis shows that the theme of economic utilitarianism (40%) is the most dominant in policy, followed by ecological justice (30%), public ethics & participation (20%), and local spirituality (10%). This imbalance underscores that the clean energy transition

in Flores is not yet fully socially and ecologically just. Clean energy, which should symbolize sustainability, has the potential to generate new injustices if not accompanied by moral reflection and social inclusion.

Thus, this study emphasizes that energy transition cannot be understood solely as a technological transformation, but must also involve a transformation of public ethics—that is, a shift in the perspective of governments and corporations toward humanistic, environmental, and local spiritual values. Public ethics functions as a moral compass to ensure that clean energy development is not only efficient but also just, participatory, and morally-ecologically sustainable.

Recommendation

1. Integrate Public Ethics into Energy Policy

   Adopt transparency, accountability, and community participation, with FPIC as a mandatory requirement.

2. Shift to Ecological Justice Paradigm

   Move beyond utilitarianism toward an approach that recognizes nature as a moral entity and prioritizes social and environmental justice.

3. Enhance Participation and Collaboration

   Promote multilevel collaboration among stakeholders and incorporate local wisdom to strengthen community ownership.

4. Apply Intergenerational Responsibility

   Ensure policies consider long-term environmental sustainability for future generations.

5. Strengthen Energy Ethics Research

   Encourage interdisciplinary studies to support more ethical and reflective energy policymaking.

These steps aim to position geothermal development as both a sustainable energy solution and an ethical model for inclusive and just energy transition.

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