

Eliminating Ecological Damage in Geothermal Energy Extraction: Fulfillment of Ecological Rights by Proposing Permits Standardization



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Abstract

The rights of living things and inanimate objects in an ecological unity must be fulfilled in a balanced and fair manner. However, the shift in licensing arrangements to approve geothermal utilization in conservation forest areas has degraded the power of supervision. Likewise, the non-rigidity of the standardization of geothermal permit criteria has also resulted in the utilization of geothermal energy not being by the principles of ecological justice. This study is a normative study that uses a legislative approach by analyzing legal materials. The regulations used relate to geothermal regulations and licensing. The main theories used for the analysis are ecological justice and the triangle of energy. This study shows that, first, the issuance of geothermal permits should be strengthened by returning the requirements for approval of forest area utilization and environmental approval to remain in the form of permits to provide legal force for supervision and control of geothermal impacts in forest areas and the environment in general. Second, geothermal utilization permits in conservation forest areas need to be standardized. This study recommends changes to geothermal regulations that adopt the values of ecological justice, which are fair to humans and non-humans. Geothermal utilization must be supported to carry out the energy transition, but guarantees of rights for non-humans in ecosystem units must be given proportionally. Non-humans must not suffer losses due to the tendency of natural resource utilization, which only benefits the economic aspect of humans.

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1. Introduction

Using geothermal energy as a reliable energy to carry out the energy transition must

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be supported by just regulations.¹ Geothermal energy is reliable and constant. Its potential for suppressing climate change is outstanding.² Geothermal utilization regulation should deliberate the sustainability of living things and the environment or refer to the ecological justice principle. However, several articles on changes in geothermal business regulations in Indonesia provide a picture of the tendency of exploitative-economical geothermal utilization. The current orientation of geothermal utilization policies and regulations has not implemented the values of ecological justice.³ It can be seen in the principles of geothermal utilization regulations and the dynamics of shifting geothermal business licensing provisions for indirect utilization, especially in conservation forest areas.

In the implementation, geothermal utilization must at least meet the principles of efficiency, justice, economic optimization in utilizing energy resources, affordability, sustainability, independence, security and safety, and preservation of environmental functions. Based on the nine principles, it is known that four of them tend to be exploitative-economic, namely the principles of benefit, efficiency, economic optimization in the utilization of energy resources, and affordability. Meanwhile, concern for the environment is only manifested in two principles, i.e. the principles of sustainability and preservation of environmental functions. The rest tend to be used to underlie energy security regulations, i.e., the principles of independence, security, safety, and justice. Thus, the principle of environmental sustainability has apparently been removed through the crystallization of regulations in the articles below so that, in the end, it is no longer considered.

Meanwhile, reviewing the regulations on geothermal utilization from environmental law has provided better and more detailed ecological protection arrangements than the specific regulations on geothermal management in Indonesia. However, the government has not harmonized and synchronized substances with other laws. The Geothermal Law still tends to protect economic interests, not ecological justice, such as efforts to grant permits for geothermal utilization in conservation forest areas.⁴ This is not in sync with

¹ A. McClean and O.W. Pedersen, 'The Role of Regulation in Geothermal Energy in the UK', *Energy Policy*, 173 (2023), 113378 <<https://doi.org/10.1016/j.enpol.2022.113378>>.

² Faouzi H. Ouerghi and others, 'Investigating the Potential of Geothermal Energy as a Sustainable Replacement for Fossil Fuels in Commercial Buildings', *Alexandria Engineering Journal*, 97 (2024), 215–29 <<https://doi.org/10.1016/j.aej.2024.03.094>>.

³ Willy Naresta Hanum, I Gusti Ayu Ketut Rachmi Handayani, and Hilaire Tegnau, 'The Geothermal Development Policy on Environmental in Indonesia and the USA', *Journal of Human Rights, Culture and Legal System*, 3.2 (2023), 160–84.

⁴ Adator Stephanie Worlanyo and Li Jiangfeng, 'Evaluating the Environmental and Economic Impact of Mining for Post-Mined Land Restoration and Land-Use: A Review', *Journal of Environmental Management*, 279.xxxx (2021), 111623 <<https://doi.org/10.1016/j.jenvman.2020.111623>>.

environmental protection measures related to licensing. Ideally, natural resource management must be concerned with environmental impacts.⁵ Legal morality must see how the environment is given its right to exist and is protected from damage to balance ecology.

Talking about linear business licensing with the granting of Geothermal Permits (IPB) whose implementation can reduce the rights of the ecosystem to ecological justice. IPB must have a Geothermal Environmental Services Utilization Permit (IPJLPB) to utilize geothermal energy in forest areas. Currently, the licensing parameters are still not clearly regulated. Meanwhile, the regulation of geothermal licensing is crucial because it will create legal consequences for the role of the government in its supervision. In this case, business actors must have an IPB as a geothermal management requirement. Thus, licensing is essential as the initial stage of the geothermal utilization plan in Indonesia. An environmental impact analysis is needed to determine whether a business has met the requirements for a geothermal business in a particular area. Not all renewable energy technologies harm the environment. The development of energy transition policies in the future needs to address ecological justice issues.⁶

The urgency of this research is first, in terms of regulating geothermal utilization in Indonesia, it has not yet implemented the principle of ecological justice, so existing regulations cannot fulfill the rights of living things and inanimate objects to a good environment.⁷ The adoption of ecological justice can be implemented to strengthen the issuance of IPB by returning the approval of forest area utilization and environmental approval to remain in the form of a permit. This step will again provide legal force for supervising or controlling geothermal impacts in forest areas and the environment in general. After the enactment of the Job Creation Law/Omnibus Law, there was a change in the terminology of the licensing concept to approval. The implementation of environmental licensing previously used the licensed approach, while environmental licensing is currently being changed with a new approach to the risk-based approach.⁸ However, the meaning and characteristics of licensing are not the same and comparable

⁵ Lego Karjoko and others, 'The Principle of Social Justice As a Solution in Illegal Mining Activities in The Old Wells Oil Management', 5.2 (2021).

⁶ A.M. Levenda, I. Behrsin, and F. Disano, 'Renewable Energy for Whom? A Global Systematic Review of the Environmental Justice Implications of Renewable Energy Technologies', *Energy Research & Social Science*, 71 (2021), 101837 <<https://doi.org/10.1016/j.erss.2020.101837>>.

⁷ Ali Y Abdurrahim and others, 'Relational and Instrumental Values of Tropical Peat Landscapes: Morality and Political Ecology in Indonesia', *Current Opinion in Environmental Sustainability*, 64 (2023), 101318 <<https://doi.org/https://doi.org/10.1016/j.cosust.2023.101318>>.

⁸ Evan Devara, Maret Priyanta, and Yulinda Adharani, 'Inovasi Pendekatan Berbasis Risiko Dalam Persetujuan Lingkungan Berdasarkan Undang-Undang Cipta Kerja', *LITRA: Jurnal Hukum Lingkungan, Tata Ruang, Dan Agraria*, 1.1 (2021), 101–16 <<https://doi.org/10.23920/litra.v1i1.641>>.

to those of approval. Thus, the implications of this change will affect the rights and obligations granted by a permit, including its supervision and legal enforcement.

Environmental approval cannot be the object of a state administrative lawsuit because after environmental approval has been fulfilled, the result becomes IPB. The permit is the object of dispute in state administration. Changes in the nomenclature and definition of permits to approval, regardless of whether approval is the object of dispute, are a severe problem regarding the degradation of the concept of licensing in environmental protection. Licensing cannot be interpreted as approval; approval will lose its constitutive nature, giving rise to a permit's rights and obligations. The power of a license cannot be equated with the concept of approval by the government. This change is inseparable from the government's legal policy shift in placing investment and environmental interests in the Omnibus law.

Second, standardization is needed regarding the use of geothermal energy in conservation forest areas. Standardization functions to provide particular parameters from the licensing aspect to its supervision so as not to damage the original function of the conservation forest area itself. Using conservation forests not by their function can threaten rare animals and plants in conservation areas and even push some species beyond critical thresholds,⁹ so intensive security and supervision are needed.¹⁰ In this case, permit becomes a legal instrument that can control or prevent deviant behavior from the permit holder so that it runs according to applicable legal provisions. Unlike mineral and coal mining, geothermal energy can be cultivated even in conservation forest areas. Although the utilization of geothermal energy is an environmentally friendly business, it still carries a high risk of environmental damage.¹¹

Harnessing that is not carried out with supervised standards can damage the environment. Geothermal development produces waste that can be tainted by environmental sustainability.¹² Therefore, business actors conducting geothermal business in conservation areas must have an IPB. IPB is obtained when various notable requirements determined by laws and regulations have been met, and IPJLPB will be issued. This permit is determined to be one of the futuristic breakthroughs in providing

⁹ Laura J. Sonter and others, 'Conservation Implications and Opportunities of Mining Activities for Terrestrial Mammal Habitat', *Conservation Science and Practice*, 4.12 (2022) <<https://doi.org/10.1111/csp2.12806>>.

¹⁰ Thesalonika Vega Puspa Agatha, I Gusti Ayu Ketut Rachmi Handayani, and Fatma Ulfatun Najicha, 'Urgency of the Role of Society in Protection Conservation Area', *Law Research Review Quarterly*, 8.2 (2022), 153–70 <<https://doi.org/10.15294/lrrq.v8i2.53828>>.

¹¹ Ahmad Redi, *Hukum Pertambangan* (Bekasi: Gramata Publishing, 2014).

¹² La Sensus Sensus, Oheo K. Haris, and Muhammad Nazar, 'The Principle of Regulation of Mining Business License', *Yuridika*, 36.1 (2021), 121 <<https://doi.org/10.20473/ydk.v36i1.23124>>.

balance in fulfilling energy security needs, environmental sustainability, and community welfare. IPJLPB and IPB are instruments that allow the use of conservation areas for other than their original functions. Geothermal industries have received this regulation well, but it has become an essential study for forest conservation.

If the implementation of geothermal utilization violates the specified permit, administrative sanctions are required. However, the articles in the implementing regulations on the implementation of the energy and mineral resources sector tend only to regulate administrative sanctions in the form of written warnings, temporary suspension of some or all activities, and monetary fines. This regulation does not discuss how violations of permits related to the environment are resolved at the source—likewise, the supervision of IPJLPB and post-activity obligations for geothermal utilization. In addition, it is not regulated how business entities are evaluated whether the implementation of environmental services is by the provisions and standards. Where the provisions and standards for implementing environmental services in the geothermal sector are not adequately regulated. What are the indicators for the implementation of these environmental services that have been appropriate so that the granting of IPB in the conservation forest area, which IPJLPB previously preceded, can be given.

Compared with Vietnam, environmental regulations or environmental-related ones have been found in many legal documents.¹³ Environmental permit obligations are also required for business actors if they want a project with potential environmental damage. In Vietnam, the guidelines governing corporate responsibilities concerning environmental damage control or pollution prevention were not consolidated into an official document. As a result, projects were required to obtain diverse environmental permits to ensure adequate environmental protection. These permits may be applied to a single project under separate procedures with multiple state agencies without an effectively connected or coordinated process of handling these procedures. However, legal dynamics and the enactment of Vietnam's new Law on Environmental Protection marked a significant turning point, ushering in a fresh era with detailed provisions for Environmental licenses. This alignment not only brings Vietnamese legislation in line with global standards but also streamlines various permits required by investment project stakeholders, enhancing the legal framework for better environmental oversight. Evaluations indicate that the Law on Environmental Protection 2020 has undergone substantial restructuring, slashing administrative procedures by 40%, lowering costs for enterprises, and reducing the number of entities subject to environmental impact

¹³ Võ Trung Tín, 'Assessing Vietnam's Environmental Laws and Direction for Improvement', *Vietnamese Journal of Legal Sciences*, 1.1 (2019), 64–76 <<https://doi.org/10.2478/vjls-2020-0004>>.

assessments by 20%. Thus, government efforts in various countries in environmental protection are focused on, and various environmental licensing requirements have been set.

Waste from the process of utilizing natural resources is an essential consideration because it can affect the issuance of permits. Regulations that provide relaxation in obtaining business permits on environmental responsibility for environmental damage due to waste and pollution need to be criticized. It is not uncommon for projects that exploit nature to be rejected by the community because of the threat of environmental danger. For example, in a case that occurred in geothermal utilization, there was a case of exposure to H₂S gas at the Marapi Geothermal Power Plant. This incident caused five residents to die. The investigation results showed that there had been a maloperation by the company, as the holder of IPB, is responsible for the geothermal accident. Then, a gas leak occurred at the Dieng Geothermal Power Plant (PLTP), in 2022 and resulted in fatalities. These cases show that geothermal utilization is still problematic because it has the potential to harm the surrounding environment. Many communities in the utilization area have rejected it and even filed lawsuits to stop problematic projects.¹⁴

Also, compared with previous research on the geothermal business in China, which received rejection around conservation forests because of a lack of community voices, permits were difficult to obtain. Likewise, community rights were still challenging in the Mount Kerinci Conservation area research. In this case, villagers were assisted by local and international NGOs to protect the environment and their rights.¹⁵ In fact, the aspect of forest conservation closest to local interests is one of conservation's socio-economic impacts.¹⁶ It is stated in several studies that the government indeed uses forests for economic development.¹⁷ However, the issue of forest sustainability cannot be ignored. The state should be present to ensure that the use of conservation forests provides distribution for the surrounding community's economy so that there is a return for the community.

Therefore, the regulations for geothermal utilization must be based on a concept that

¹⁴ Hanum, Handayani, and Tegan.

¹⁵ Kazuhiro Harada and others, 'The Role of NGOs in Recognition and Sustainable Maintenance of Customary Forests within Indigenous Communities: The Case of Kerinci, Indonesia', *Land Use Policy*, 113 (2022), 105865 <<https://doi.org/10.1016/J.LANDUSEPOL.2021.105865>>.

¹⁶ Kevin Lo and Liyuan Zhu, 'Voices from below: Local Community Perceptions of Forest Conservation Policies in China', *Forest Policy and Economics*, 144 (2022), 102825 <<https://doi.org/10.1016/J.FORPOL.2022.102825>>.

¹⁷ Sepus M Fatem and others, 'Camouflaging Economic Development Agendas with Forest Conservation Narratives: A Strategy of Lower Governments for Gaining Authority in the Re-Centralising Indonesia', *Land Use Policy*, 78 (2018), 699–710 <<https://doi.org/10.1016/J.LANDUSEPOL.2018.07.018>>.

provides equal justice for living things and inanimate objects. Baxter enunciated that his ecological justice theory should partly contribute to preventing significant extinctions due to human greed for natural resources.¹⁸ While humans and non-humans should enjoy the benefits of nature, they must receive equal justice. In the grand scheme of things, living things and non-living things have equal roles in a system of closely interconnected reciprocal relationships.¹⁹ Previous research has suggested that environmental justice has recently moved discourse into new territory – where the environment and nature are understood as creating conditions for social justice.²⁰ Though ecological justice goes more profound: it involves moral and ethical responsibilities toward non-human life and the interconnectedness of ecosystems. Ecological justice advocates for nature's rights and recognizes that healthy ecosystems are essential for the survival and well-being of all species, including humans.

This theory is used to assess whether the policy of geothermal utilization in conservation forest areas in the context of industrialization of empirical practices of development and investment in geothermal utilization in conservation forest areas follows existing concepts. Meanwhile, another theory, the triangle of energy law and policy, formulates the urge to view the issue of energy utilization from perspectives including politics, economics, and the environment. In this case, the geothermal utilization policy is in the middle of the triangle, surrounded by other triangles, namely the elements of economics, politics, and environment. Ultimately, this study aims to analyze normatively and legally related geothermal utilization regulations that are not fair enough for living things and inanimate objects. In this case, it is related to the IPJLPB approval rules and standardization of licensing aspects so as not to damage the original function of the conservation forest area by establishing regulations or policies. The ultimate goal is to fairly balance the rights of living things and inanimate objects in an ecology.

2. Research Methods

This research is normative legal research based on the analysis of primary and secondary legal materials so that it can construct new arguments, theories,²¹ or concepts as prescriptions for solving problems related to the regulation of geothermal utilization in conservation forest

¹⁸ Brian Baxter, *A Theory of Ecological Justice* (New York: Routledge, 2005).

¹⁹ Anna Simon-Stickley, 'Energy in the Anthropocene: How the Concept of Energy Shaped Both Our Current Crisis and Its Professed Solution', *Journal of the History of the Behavioral Sciences*, 57.4 (2021), 336–57 <<https://doi.org/10.1002/jhbs.22141>>.

²⁰ Simon-Stickley.

²¹ Lina Kestemont, *Handbook on Legal Methodology* (Intersentia, 2018) <<https://doi.org/10.1017/9781839702389>>.

areas. The approach used in this study is the statute approach, which is used to examine laws and regulations related to the principles, the role of government in issuing IPB, licensing provisions, and standardization of geothermal utilization in conservation forest areas, along with administrative sanctions if there is a violation of the permit. This study uses the theory of ecological justice and the triangle of energy law and policy as the basis for analysis to form a policy direction that the government can implement in geothermal utilization. The data collection technique used in this study is a literature study of legal materials. The analysis technique used is deductive logic, namely a way of thinking that starts from the understanding that something also applies to all events in that type. This deductive logic requires a tool called a syllogism, which is an argument consisting of three propositions called major premises

3. Results and Discussion

Ecological Rights in Geothermal Business Regulations

The Geothermal Law regulates the regulation of geothermal businesses in Indonesia, and several aspects are related to the Environmental Law. In addition, it is also regulated through the Omnibus Law, especially regarding business licensing in the geothermal sector. Geothermal utilization is divided into two, namely direct and indirect. Direct utilization is utilizing geothermal energy without converting it into other energy. Indirect utilization is the utilization of geothermal energy by converting geothermal energy into different types of energy, such as power generation. The consideration of regulating geothermal utilization is because geothermal energy is an environmentally friendly energy with great potential, and its utilization is not yet optimal.²² Hence, it needs to be encouraged and improved in a planned and integrated manner to balance environmental sustainability and economic value. However, the related laws and regulations have not been entirely made considering fulfilling ecological justice; in fact, they still tend to be exploitative-economic. In fact, among these regulations, there is still disharmony in regulating environmental protection, especially in the indirect utilization of geothermal energy in conservation or protected forest areas.

The weaknesses of geothermal utilization regulations for indirect utilization can at least be criticized in the following aspects: first, the philosophy of establishing geothermal utilization regulations in Indonesia has not been fully oriented towards fulfilling fair ecological rights between living things and inanimate objects. Regulations in the geothermal sector tend to be based on strategic considerations regarding national development and utilization for the welfare of the people. This is because geothermal businesses controlled by

²² Dindin Syarief Nurwahyudin and Udi Harmoko, 'Pemanfaatan Dan Arah Kebijakan Perencanaan Energi Panas Bumi Di Indonesia Sebagai Keberlanjutan Maksimalisasi Energi Baru Terbarukan', *Jurnal Energi Baru Dan Terbarukan*, 1.3 (2020), 111–23 <<https://doi.org/10.14710/jebt.2020.10032>>.

the state are intended to guarantee national energy security. In this case, of course, the prosperity of the people is the most important, especially since Indonesia has declared its country a welfare state.²³

It is pretty anthropocentric if the concept of geothermal control for national energy security is interpreted haphazardly. Because natural resources are directed at human interests. Human welfare is closely related to the meaning of mere economics. Geothermal exploitation that only pursues human profit while non-human elements in an ecosystem are challenging to consider cannot be justified. In environmental ethics, anthropocentrism is the thought that values are centered on humans and that all other creatures are means to achieve human goals. Anthropocentrism is ethically wrong and is the root of the ecological crisis. However, it should be remembered that a distinction must be made between legitimate and illegitimate human interests.²⁴ In more extreme interests, it is a concept that balances interests other than humans with those that are not.

There should be a balance between the benefits sought in geothermal business. The Triangle of Energy Law and Policy concept is formulated as a means to see energy problems through the perspective of economics, politics, and the environment. Hefron stated that this concept was designed to overcome and fight economic dominance in energy utilization problems. This triangle, also known as the 'Energy Trilemma,' should be a way to understand energy law and policy. Energy law and policy are in the middle, connected to every aspect. The three points are economics (finance), politics (energy security), and the environment (climate change mitigation).²⁵

It is not easy to divide the balance evenly across the various aspects and apply it to the energy trilemma, namely energy security, competition/economic development, energy markets, and environmental protection. This concept emphasizes the inherent difficulty reconciling these interests, which can pull the legislature in different directions.²⁶ Economically, a business will try to gain the most significant material profit. The policies taken have the potential to be overly exploitative and unbalanced with political and environmental aspects. The state must redefine and affirm its position on affordable,

²³ Willy Naresta Hanum, 'Setting of Earth Oil Management in Old Wells Based on the Principle Social Justice', *Jurnal Bestuur*, 8.2 (2020), 70–83.

²⁴ Helen Kopnina and others, 'Anthropocentrism: More than Just a Misunderstood Problem', *Journal of Agricultural and Environmental Ethics*, 31.1 (2018), 109–27 <<https://doi.org/10.1007/s10806-018-9711-1>>.

²⁵ Simon Marsden, 'The "Triangle" of Australian Energy Law and Policy: Omissions, Connections and Evaluating Environmental Effects', *Journal of Environmental Law*, 29.3 (2017), 475–503 <<https://doi.org/10.1093/jel/eqx018>>.

²⁶ Ruven C Fleming, 'Chapter IX.3: The Energy Trilemma', 2021, pp. 31–40 <<https://doi.org/10.4337/9781788119689.IX.3>>.

environmentally friendly energy by changing policies and legislation.²⁷ Thus, when an environmental policy is created, the legislature must automatically consider how it might change things politically and economically—in essence, it considers each of the triangle's three points: economic, political, and environmental. No 'policy action' only has positive outcomes, and it is essential to consider the potential negative consequences of policy actions. This concept wants society to balance these three competing goals and provide energy policies that provide the best outcomes for society.²⁸

Second, the principles underlying the geothermal business. Exploitative-economic tenets, such as the principles of benefit, efficiency, economic optimization in the utilization of energy resources, and affordability, still dominate the regulations containing the principles of geothermal business. Meanwhile, the principles related to environmental sustainability are only regulated by the principle of sustainability and the preservation of ecological functions.²⁹ The rest tend to be used to underlie energy security regulations so that the principles concerning environmental sustainability are not prioritized. The proof is the emergence of a third problem: the rules regarding the terminology of environmental permits, which have changed to ecological approvals as regulated in the Job Creation Law. This regulation has pros and cons; those who support it provide legal reasoning that changing environmental permits to environmental approvals has no legal consequences, so environmental approvals cannot be excluded as state administrative decisions. State administrative decisions are one of the legal bases for creating a decision (*beschiking*). *Beschiking* is a unilateral, individual, concrete, and final legal action in government carried out by a government agency based on extraordinary authority.³⁰

However, it should be noted that the Job Creation Law removes the right-to-sue provision previously attached to environmental permits. This implicitly positions environmental approval as not a State Administrative Decision, which can usually be the object of a lawsuit in the State Administrative Court. Therefore, a multi-sectoral normative approach is needed to emphasize the right to sue for environmental approval, considering that ecological

²⁷ Raisul Islam Sourav, 'The Dilemma of the Energy Law and Policy Triangle in Recent Energy Laws and Policies in Bangladesh', *Hydro Nepal: Journal of Water, Energy and Environment*, 22 (2018), 10–15 <<https://doi.org/10.3126/hn.v22i0.18991>>.

²⁸ Raphael J Heffron and Kim Talus, 'The Development of Energy Law in the 21st Century: A Paradigm Shift?', *The Journal of World Energy Law & Business*, 9.3 (2016), 189–202 <<https://doi.org/10.1093/jwelb/jww009>>.

²⁹ Rian Saputra, Albertus Usada, and Muhammad Saiful Islam, 'Ecological Justice in Environmental Criminal Sanctions for Corporations in Indonesia: Problems and Solution', *Journal of Law, Environmental and Justice*, 2.1 (2024), 1–17 <<https://doi.org/10.62264/jlej.v2i1.19>>.

³⁰ Eny Suastuti and others, 'Reconstruction of The Policy License for Tourism Businesses: Challenge and Opportunity for Social Welfare', *BESTUUR*, 12.1 (2024), 82 <<https://doi.org/10.20961/bestuur.v12i1.80277>>.

approval is a one-sided government administrative action.³¹ Functionally, there are similarities between permits and approvals, so they can be said to be state administrative decisions if referring to the jurisprudence that has been decided. The panel of judges gave a ratio decision to consider written approval from an authorized government official to be the same as a permit. Written approval that is officially issued, signed, and stamped can be interpreted as a permit. This means that the approval, in any form, can be positioned as one of the instruments of government legal action. Meanwhile, the opposing party stated that the form of environmental approval is not a permit but a decree to fulfill the requirements for a business license. Environmental approval cannot be the object of a state administrative lawsuit because after the ecological approval has been fulfilled, the result becomes IPB. The permit is the object of the dispute in the state administrative court. Changes in the nomenclature and definition of a license to approval, regardless of whether the approval is the object of the dispute, are a severe problem regarding the degradation of the concept of licensing in environmental protection. Licensing cannot be interpreted as approval. Approval will lose its constitutive nature, giving rise to a permit's rights and obligations. The power of a license cannot be equated with the concept of approval by the government.

This change in approval and licensing opens up opportunities for capital owners to exploit forest areas more easily. The formation of regulations in the forestry sector, especially approval of the use of forest areas in protected forest areas, should pay attention to ecological justice to prevent environmental damage that can threaten survival. Management and protection of forest areas are systematic and integrated efforts to preserve forest functions and avoid degradation and/or damage to forests, including planning, maintenance, supervision, utilization, control, and law enforcement activities. Forest and environmental degradation have threatened the survival of living things, so all stakeholders need to protect forest areas consistently. Instruments for preventing damage to forest areas in environmental protection efforts, one of which is by strengthening the issuance of IPB, can be carried out by returning approval for the use of forest areas and ecological approvals to remain in the form of permits.³²

Moreover, after the enactment of the Job Creation Law, the requirements for submitting an IPB given by the Minister to Business Entities based on the results of the work area offers were changed to be more specific for permits in forest areas. Therefore, if a business actor

³¹ M Reza Baihaki, 'Persetujuan Lingkungan Sebagai Objectum Litis Hak Tanggung Gugat Di Peradilan Tata Usaha Negara (Telaah Kritis Pergeseran Nomenklatur Izin Lingkungan Menjadi Persetujuan Lingkungan Dalam Undang-Undang Nomor 11 Tahun 2020 Tentang Cipta Kerja)', *Majalah Hukum Nasional*, 51.1 (2021), 1–20 <<https://doi.org/10.33331/mhn.v51i1.137>>.

³² Muhammad Jufri Dewa and others, 'Tanggung Jawab Pejabat Berwenang Dalam Menerbitkan Persetujuan Penggunaan Kawasan Hutan Untuk Usaha Pertambangan', *Alu Oleo Legal Research*, 5.1 (2023), 105–19 <<https://doi.org/10.33772/holresch.v5i1.225>>.

wants to utilize a conservation forest, the business actor must take care of another permit, the IPJLPB permit. This permit is a legal consequence of the regulation granting permits for geothermal utilization in conservation areas, which include national parks, forest parks, and nature tourism parks. Based on the above regulation, the management of permits to utilize a conservation forest area as a geothermal work area must go through other permits that precede it for parties who favor granting permits for geothermal utilization in conservation forest areas.

Environmental service permits are determined to be one of the breakthroughs that are futuristic in providing balance in meeting the needs of energy security, environmental sustainability, and community welfare. In the end, IPJLPB is used as a legal instrument to mediate conflicts in existing regulations. To balance the breakthrough in the rules for conservation areas, geothermal environmental services are intended to improve the community's economy around the conservation area. The permits granted are used to distribute benefits to the surrounding community. In Indonesia, for example, in Nepal, communities in conservation forest areas also have a role in voluntarily implementing conservation and maintaining forest functions.³³ IPJLPB is one of the basic requirements that must be met in carrying out business activities. The approval of the use of forest areas is related to the suitability of space utilization. The basic requirements in licensing business activities include suitability of space utilization activities, environmental approval, building approval, and certificate of change of function. Meanwhile, the regulation of approval of the use of forest areas can specifically be used for forest area utilization activities and forest utilization with government approval.

Ultimately, the IPJLPB permit is intended for human interests. At the same time, those who have the potential to be negatively impacted by geothermal management are not only humans but also the ecosystem at large. Although the environmental impact of geothermal energy is not as massive as the exploitation of other resources, such as coal, the impact of the use of exploitation technology still exists. Rapid technological developments lead to an increase in the quality of life in all areas of human activity, but in parallel, they create the possibility of greater environmental degradation.³⁴ Thus, existing regulations still tend to protect economic interests, not ecological justice, by granting permits for geothermal utilization in protected forest and conservation areas, which is not in sync with the objectives of environmental protection regulations. Harmonization and synchronization of regulations are significant in ensuring the harmony of the implementation of geothermal utilization

³³ Raja Rajendra Timilsina and Koji Kotani, 'Evaluating the Potential of Marketable Permits in a Framed Field Experiment: Forest Conservation in Nepal', *Journal of Forest Economics*, 29 (2017), 25–37 <<https://doi.org/10.1016/J.JFE.2016.11.003>>.

³⁴ Slavica Mihajlović and Nataša Đorđević, 'Sustainable Development and Natural Resources Exploitation: Brief Review', *Podzemni Radovi*, 40, 2022, 45–51 <<https://doi.org/10.5937/podrad2240045M>>.

policies.³⁵ Take the example of rules in other countries, such as Vietnam c, concerned with the harmony of regulatory arrangements. It can be said that the consolidation of environmental licenses into a single license is a big step forward, eliminating cumbersome and overlapping administrative procedures and helping project owners save time and costs. Thanks to that, project owners can focus more on complying with regulations, environmental protection measures, and overcoming ecological damage.

However, Vietnam's legal system on ecological licenses still needs to be improved to ensure effective management and environmental protection.³⁶ It is necessary to supplement more detailed regulations, especially for licensing large-scale, complex projects with significant environmental impacts. In the future, in the context of the rapid development of science and technology, it is necessary to establish an electronic system for investment project owners to submit applications for environmental licenses online. At the same time, management agencies need to consider applying digital technology to collect fees and appraise the issuance of environmental licenses. This will help increase supervision from state agencies, people, and project owners, reduce confusion and complicated procedures, and support investors and production facility owners in saving costs.³⁷

Therefore, the principle as an essential element in forming a regulation's value and moral order must be formulated reasonably. In the context of geothermal regulations, the ecological justice principle must be implemented and incorporated into the regulation. Geothermal utilization is based on a moral compass that balances political, economic, and environmental interests, as in the triangle of energy and policy. Because, in reality, renewable energy policies have broad implications for the sustainability of the economy, environment, and national politics.³⁸ Therefore, to avoid any weaknesses from the change in terminology of permits to approvals, it is necessary to strengthen the issuance of IPB by returning the approval of forest area utilization and environmental approval to remain in the form of permits. The indirect utilization of geothermal energy in conservation forests is carried out by fairly implementing the utilization of ecological services. The standardization of the issuance of licenses for the utilization of geothermal environmental services must be given criteria, including

³⁵ Chukwumerije Okereke and Mark Charlesworth, *Environmental and Ecological Justice, Advances in International Environmental Politics*, 2014 <<https://doi.org/10.1057/9781137338976>>.

³⁶ Atikah Mardhiya Rohmy, Hartiwiningsih, and I Gusti Ayu Ketut Rachmi Handayani, 'Judicial Mafia and Ecological In-Justice: Obstacles to Policy Enforcement in Indonesian Forest Management and Protection', *Trees, Forests and People*, 17 (2024), 100613 <<https://doi.org/https://doi.org/10.1016/j.tfp.2024.100613>>.

³⁷ Le Thi Thao and Phan Vinh Tuan Anh, 'Control Air Pollution to The Sustainable Development Goals Vietnam Perspective', *Administrative and Environmental Law Review*, 4.1 (2023), 49–64 <<https://doi.org/10.25041/aclr.v4i1.2860>>.

³⁸ Sanya Carley and Chris J. Miller, 'Regulatory Stringency and Policy Drivers: A Reassessment of Renewable Portfolio Standards', *Policy Studies Journal*, 40.4 (2012), 730–56 <<https://doi.org/10.1111/j.1541-0072.2012.00471.x>>.

standardization of program preparation, monitoring and evaluation, and sanctions for the utilization of geothermal environmental services to ensure that ecological services carried out in conservation forest areas can indeed reduce and prevent the impacts of geothermal utilization carried out. Both are measured based on the category of forest area used.

Standardization of Geothermal Business Licensing Criteria for Indirect Utilization in Conservation Forest Areas

Unlike mineral and coal mining, geothermal can be cultivated even in conservation forest areas, which is a dilemma considering that the location primarily preserves biodiversity. Geothermal exploitation has a high risk of utilization, so utilization not carried out with supervised provisions can cause damage to the environment. The use of conservation areas as geothermal utilization areas should be given particular parameters from licensing aspects to supervision so as not to damage the original function of the conservation forest area itself. In this case, the permit becomes a legal instrument that can control or prevent deviant behavior from the holder so that it runs according to applicable legal provisions and is not just a source of income for the permit giver.³⁹

Business licensing regulations in the geothermal sector involve risk-based business licensing. The regulation states that a permit is approval from the central government or regional government for implementing business activities that business actors must fulfill before carrying out business activities. A permit is one of the instruments used as a legal means to regulate community behavior.⁴⁰ One of the functions of a license is as an instrument of control and supervision. In the business sector, the easier the licensing procedure is, the better the investor's perception of the investment climate. Still, in theory, the control function of the permit will be looser. Business Licensing is the legality given to business actors to start and run their business and/or activities. Meanwhile, Risk-Based Business Licensing is based on the risk level of business activities. This risk is classified into low, medium-low, medium-high, and high.⁴¹

Business actors conducting geothermal business in conservation areas must obtain an IPB permit from the central government, followed by various special requirements determined by laws and regulations, namely IPJLPB. However, licensing in the geothermal

³⁹ Tatiek Sri Djatmiati, 'Perizinan Sebagai Instrumen Yuridis Dalam Pelayanan Publik', *Pidato Pengukuhan Jabatan Guru Besar Dalam Bidang Hukum Administrasi Pada Fakultas Hukum Universitas Airlangga*, 24 November, 2007, 1–34.

⁴⁰ Dimitris Stevis, 'Whose Ecological Justice?', *Strategies: Journal of Theory, Culture & Politics*, 13.1 (2000), 63–76 <<https://doi.org/10.1080/10402130050007520>>.

⁴¹ Hariyanto Hariyanto, 'Risk-Based Business License and Problems Arising After The Job Creation ACT', *Jurnal IUS Kajian Hukum Dan Keadilan*, 10.2 (2022), 354–66 <<https://doi.org/10.29303/ius.v10i2.1082>>.

business for indirect use, especially for conservation forest areas through IPJLPB requirements, is still a separate problem. Standardization of programs and supervision is essential to ensure that education and conserved areas are feasible and equivalent. The problem of the absence of special regulations related to the determination of parameters and standardization of environmental service permits can damage forest areas, violating the principle of environmental justice for ecological components. Although the geothermal business can be carried out in an environmentally friendly manner and can be held in conservation forest areas, the geothermal business still has a high utilization risk. Utilization that is not carried out with supervised standards can cause damage to the environment. Geothermal development produces B3 waste (toxic and hazardous materials), which can harm the ecosystem of living things and inanimate objects. The use of conservation areas as geothermal utilization areas should be given exceptional standards from licensing to supervision so as not to damage the original function of the conservation forest area. Synchronization of waste management regulations with environmental regulations still needs to be carried out optimally.⁴²

Licensing related to projects that produce waste has been implemented in Vietnam to ensure management that meets the principles of environmental justice. For example, licensing related to the source of wastewater, maximum wastewater discharge flow, wastewater flow, pollutants and limit values of pollutants by wastewater stream, location, method of wastewater discharge, and source of wastewater intake. This aims to determine the best place to discharge wastewater and avoid causing environmental pollution, such as some places with little or no population.⁴³ To avoid affecting people and the living environment, it is necessary to determine the source of wastewater generation and the maximum amount of wastewater. In addition, permits for works and systems of hazardous waste treatment equipment, hazardous waste codes and volumes permitted for treatment, number of hazardous waste transshipment stations, areas of operation for investment projects, and establishments providing hazardous waste treatment services. Wastes into the environment must be specifically identified. They must be within the provisions of the law to avoid affecting the environment, so it is necessary to build specific treatment systems before being discharged into the environment.⁴⁴

In Indonesia, geothermal utilization regulations have been regulated more technically in

⁴² Agung Basuki and others, 'Establishing Ecological Justice in the Governance of Land Inventory , Ownership , and Utilisation in Indonesia', *Journal of Law, Environmental and Justice*, 18.2 (2023), 137–54 <<https://doi.org/10.62264/jlej.v1i2.12>>.

⁴³ X D Chu, 'Laws of Environmental Protection in Vietnam - Situation and Solutions', *Journal of Physics: Conference Series*, 1515.5 (2020), 052082 <<https://doi.org/10.1088/1742-6596/1515/5/052082>>.

⁴⁴ Thang Nam Do and Dinh Thi Ta, 'Vietnam's Environmental Policy: A 30-Year Critical Review', *SSRN Electronic Journal*, 2024 <<https://doi.org/10.2139/ssrn.4784768>>.

many derivative regulations but are not yet fully rigid in determining standardization, from licensing to supervision. Geothermal business activity in a conservation forest can be carried out when the utilization of its environmental services has been determined. This requires an analysis of the business risk level. However, there are no standards for what types of ecological services can be provided, such as what forms of evaluation and supervision must be carried out based on the results of the risk level analysis.

The analysis of the risk level of the environmental service utilization subsector in conservation forest areas related to geothermal utilization has different characteristics from other businesses even though they are still in the same subsector, for example, the utilization of water energy or nature tourism.⁴⁵ This standardization program should be designed sustainably to provide certainty in determining the direction of policy to create a balance between preserving the area's function and utilizing existing geothermal energy. However, the government has not chosen and directed the standards for preparing and implementing the standardization program. Likewise, supervision of program implementation will be challenging to assess if there are no implementation standards. The standards provided must consider the characteristics of each conservation forest area used. Meanwhile, the effectiveness of the environmental service program has not been measured yet. Therefore, the law governing the granting of permits to exploit geothermal energy in conservation areas has legal implications for the subsequent exploitation process.

Likewise, it supervises environmental services and obligations after geothermal utilization activities. It is not regulated at all how business entities are evaluated whether the implementation of ecological services is by the provisions or standards of success and effectiveness of the program. What are the indicators for implementing these environmental services that IPB has granted in the conservation forest area, which IPJLPB previously preceded? Technically, the management of IPB is classified into several phases or stages, starting from the pre-development, development, construction, and operation phases. In this case, the intended licensing focuses more on the pre-development phase. The development, construction, and operation phases also require various administrations and permits. However, licensing before issuing IPB is the most essential part of the indirect geothermal utilization process. The administrative and licensing requirements that must be met before obtaining IPB are at least in the Table below:

⁴⁵ Carmen Mejías-Balsalobre and others, 'Local Ecological Knowledge and Community Perceptions of a Nascent Arribada Beach in Costa Rica', *Environmental Development*, 2024, 101062 <<https://doi.org/https://doi.org/10.1016/j.envdev.2024.101062>>.

Table of Stages of Administration and Geothermal Licensing in the Pre-Development Phase

Administration and Licensing	Authorized Party	Information
1. Legal Registration		
Deed of Establishment/Amendment	Notary	The winner of the Geothermal Working Area (WKP) auction is required to form a new business entity or amend the Deed of Establishment to create a special business entity in the geothermal sector.
Decree of the Ministry of Law and Human Rights	Ministry of Law and Human Rights	The Ministry of Law & Human Rights Decree is obtained after the Deed of Establishment is registered through the online General Legal Administration System (AHU).
2. Submission of Business Identification Number (NIB)	Ministry of Investment (oss.go.id)	NIB is issued as a business entity identity to implement business activities (Geothermal Power Plant (PLTP) project investment).
3. Basic Requirements for Business Licensing		
Forest Area Use Approval	Ministry of Environment and Forestry	Forest Area Use Approval is fulfilled before the business entity submits an IPB application.
Environmental Approval	Application Submission: Ministry of Investment (oss.go.id). Verification of Technical Requirements: Ministry of Environment and Forestry (pelayananinterpadu.menlhk.go.id).	Environmental Approval (UKL-UPL) is fulfilled before the business entity submits an IPB application.
4. Risk-Based Business Licensing (High Risk)		
Geothermal Permit (IPB)	Application Submission: Ministry of Investment (oss.go.id) Verification of Technical Requirements: Ministry of Energy and Mineral Resources (perizinan.esdm.go.id—EBTKE)	IPB is issued as a permit to conduct geothermal business to develop PLTP projects in certain WKPs.
Forest Area Use Permit (IPPKH) or Geothermal Environmental Services Utilization Business Permit (IUPJLPB) for the geothermal exploitation stage	Application Submission: Ministry of Investment (oss.go.id) Verification of Technical Requirements: Ministry of Environment and Forestry	This permit is fulfilled before the PLTP's exploitation/construction activities and after the business entity obtains Environmental Approval for exploitation and utilization activities..

Source: Processed based on data from the Directorate General of New, Renewable Energy and Energy Conservation, 2023

Based on the IPB licensing process, synchronization between institutions, and

overlapping laws and regulations in the table above, issuance can be divided into general IPB issuance and IPB issuance in conservation forest areas. To issue an IPB, there are two stages of licensing requirements: First, basic business licensing requirements consist of forest area use approval and environmental approval. Second, risk-based business licensing (high risk), consisting of IPB and Forest Area Borrow-Use Permit (IPPKH) or Geothermal Environmental Services Utilization Business Permit (IUPJLPB) for the geothermal exploitation stage. The issuance of these permits must be carried out by paying attention to environmental sustainability standards.⁴⁶

Considering the utilization of geothermal energy has a high level of impact or risk. Environmental pollution from geothermal utilization is a fact that should be considered. Thus, the permit regulations should be tightened to create optimal supervision of the geothermal business because this business is a high-risk business sector. Moreover, this business activity can be carried out throughout Indonesia, including production forest areas, protected forest areas, conservation forest areas, and sea areas. Supervision is based on business permits. If the licensing process does not enforce standardization, there is nothing more to expect in protecting and minimizing negative environmental impacts. Geothermal utilization is allowed in conservation forests and on customary land. Meanwhile, this customary land has unique characteristics that need to be protected by cultural customs and natural sustainability, and it is prone to conflict with the community, leading to rejection and violation of human rights. Therefore, a project must have a social license to operate so the community and stakeholders can accept its activities. Social license is increasingly recognized in the natural resource industry, where a project or company can impose more environmental and social costs, such as pollution.⁴⁷

Geothermal utilization that can realize net zero emissions is also faltering. Projects that should be global solutions still have the potential for local-regional damage. The threat of environmental damage due to the negative impacts of geothermal utilization cannot be eliminated and should be addressed as a serious threat to ecological sustainability. The development of energy projects requires an in-depth assessment of the broader environmental, social, and cultural impacts on society.⁴⁸ Policies focusing solely on human

⁴⁶ Rini Astuti and others, 'Making Illegality Visible: The Governance Dilemmas Created by Visualising Illegal Palm Oil Plantations in Central Kalimantan, Indonesia', *Land Use Policy*, 114 (2022), 105942 <<https://doi.org/https://doi.org/10.1016/j.landusepol.2021.105942>>.

⁴⁷ Nikki P. Dumbrell and others, 'How Do Natural Resource Dependent Firms Gain and Lose a Social Licence?', *Global Environmental Change*, 70 (2021), 102355 <<https://doi.org/10.1016/j.gloenvcha.2021.102355>>.

⁴⁸ Peter S. Coates and others, 'Geothermal Energy Production Adversely Affects a Sensitive Indicator Species within Sagebrush Ecosystems in Western North America', *Biological Conservation*, 280 (2023), 109889 <<https://doi.org/10.1016/j.biocon.2022.109889>>.

benefits legitimize practices contributing to climate change and hindering its resolution.⁴⁹ Therefore, the government needs to make various efforts to standardize regulations to determine the impact, handling, supervision, and sanctions that will be given.

Thus, a new concept in regulating the issuance of IPB must be proposed, or the idea of risk-based business licensing should be adopted, namely as follows: first, strengthening the issuance of IPB can be done by returning the approval of forest area utilization and environmental approval to remain in the form of a permit. This is to provide legal force for supervising or controlling geothermal impacts in forest areas and the environment in general. Second, the standardization of the issuance of permits for the utilization of geothermal environmental services must be given the following criteria: a) preparation of a utilization program; this standardization is intended to ensure that ecological services carried out in the conservation forest area as a condition for permitting the development of geothermal projects can indeed reduce and prevent the impact of geothermal utilization carried out.

Unmeasured programs will only be stand-alone programs that do not contribute linearly to the criteria for utilizing conservation forest areas; b) monitoring and evaluation of environmental service programs are based on clear program standardization because ecological services are provided with a licensing regime. Where permits have the power of control from the state, ensuring that geothermal utilization is permitted in conservation forest areas by the rights and obligations granted by the license; c) providing separate sanction criteria for violations of geothermal environmental service utilization permits. Both are measured based on the category of forest area used. Granting permits is measured based on the category of forest area. Regarding handling, supervision, and sanctions, at least specific standards are given, which are also based on the characteristics of the forest area

4. Conclusion

Based on the discussion overhead, it can be concluded that the orientation of geothermal utilization policies and regulations has not implemented ecological justice values. It is proven by regulations related to geothermal businesses that amputate environmental rights, including inanimate objects (non-human), and regulate a geothermal business that only concerns human interests. Changes in permit regulations were found to be forest area utilization approvals and environmental approvals. Indirect geothermal business is permitted in conservation forest areas unless IPJLPB issuance is not optimal. Thus, because the risk of geothermal development has the potential for environmental damage, standardization of the issuance of geothermal environmental service utilization permits must be given criteria, namely standardization of program

⁴⁹ Ela Tokay, 'Climate Change, Environmental Philosophy, and Anthropocentrism', 2023, pp. 361–76 <https://doi.org/10.1007/978-3-031-07002-0_107>.

preparation, monitoring evaluation, and sanctions for the utilization of geothermal environmental services to ensure that environmental services carried out in conservation forest areas can indeed reduce and prevent the impacts of geothermal utilization carried out and measured based on the category of forest area used. Regulations on implementing geothermal energy related to geothermal utilization must be redesigned and directed to balance political, economic, and environmental interests.

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