

MITIGATION OF ENVIRONMENTAL DAMAGE THROUGH NATURAL RESOURCES MANAGEMENT CONTRACTS (ECO-CONTRACT PERSPECTIVE)

Hengki Firmanda^{1*}, Mahmud Hibatul Wafi², M. Alpi Syahrin³

Faculty of Law, Universitas Riau, 28131 Pekanbaru, Indonesia¹

Faculty of Humanities, Institut Agama Islam Negeri Kerinci, 37112 Jambi, Indonesia²

Faculty of Sharia and Law, Universitas Islam Negeri Sultan Syarif Kasim Riau, Indonesia³

hengki.firmanda@lecturer.unri.ac.id, mahmudwf@gmail.com, msyahrin@uin-suska.ac.id

Received : 24 January 2023, Revised: 12 April 2023, Accepted : 13 April 2023

*Corresponding Author

ABSTRACT

Environmental damage by extractive activities is caused by the formulation of policies that have not placed nature and the environment as legal subjects. Policy formulation in the form of a contract of work tends to accommodate human interests and is profit-oriented. This study aims to examine strategies for mitigating environmental damage caused by PT Freeport's mining activities based on an eco-contract perspective. PT Freeport's contract of work is the object of analysis in this research, while data on environmental damage are obtained from national media. Theoretical-reflective approach is used in analyzing the data to formulate mitigation strategies. The results showed that the mitigation of environmental damage in the eco-contract perspective emphasizes the natural relationships and interactions between all components of the ecosystem. In other words, mitigation of environmental damage requires equal treatment between the environment and humans which also indicates equal rights. In fact, force majeure conditions and natural disasters are still viewed from a human perspective, so that efforts to identify and socialize environmental damage only focus on human aspects rather than nature and the environment. PT Freeport's contract of work has not accommodated mitigation efforts of environmental damage that ecologically oriented. In addition, the weak mapping, control, and socialization of PT Freeport's mining activities have implications for the lack of efforts to mitigate environmental damage.

Keywords: Mitigation, Environmental Damage, Eco-Contract, Natural Resources

1. Introduction

There is a fundamental problem with the contract of work and the perspective of the parties to the contract, namely understanding their relationship to nature through an anthropocentrism perspective. The dominance of human ecology has preserved an anthropocentric perspective that impacts human behavior and attitudes (Uenal et al., 2022). The problem of this perspective turns out to have major implications for the ecological order in the form of environmental damage. The massive expansion of mining companies such as PT Freeport which has contributed to environmental degradation on a large scale shows the normalization of this view (Luhukay, 2016). Therefore, efforts to mitigate environmental damage that are ecologically sound need to be explicitly stated in the contract of work.

Coal mining activities result in deforestation and release harmful minerals and heavy metals into the soil and water, impacting the environment long after mining has taken place. In addition, poor mining practices can trigger coal fires that last for decades and emit ash and smoke containing greenhouse gases and toxic chemicals. In addition, the greenhouse gas methane released during coal mining, which is 20 times more potent than carbon dioxide, creates environmental challenges such as soil erosion, noise and water pollution, fugitive dust, and negative impacts on biodiversity. Therefore, in running a modern mining operation, action should be taken to reduce impacts on all aspects of the environment. This can be done through careful project planning, effective pollution control, monitoring of mining impacts and rehabilitation of mined areas. By doing so, the coal industry can minimize the impact of their activities on surrounding communities, and the environment in the long run. In addition, miners and communities living near mining sites can develop lung diseases from inhaling coal dust, and mining accidents can kill thousands of people each year. Coal mining can also force entire

communities off their land due to mine expansion, subsidence and polluted water supplies (Dontala et al., 2015).

Researches on mitigating environmental damage pay more attention to mitigation strategies than policy structuring. The existing research trends can be mapped into two categories. First, a study that focuses on the formulation of environmental damage mitigation strategies with various approaches, such as pesantren-based (Nur Aulia et al., 2019), enzyme utilization (Cárdenas-Alcaide et al., 2022), cultural wisdom (indigenous strategies) (Muhammad, et al., 2014), and community empowerment (Mashur & Meiwanda, 2019); Second, studies that pay attention to the role of government (Tripa & Taqwadin, 2013; Boseke et al., 2021) and companies (Luhukay, 2016) in mitigating environmental damage. This research addresses the issue of mitigating environmental damage caused by PT Freeport's extractive activities through eco-contract perspective.

This research departs from three arguments, first, most of the problems of environmental degradation by mining companies are caused by the determination of policies that are too oriented to human interests. Policy decisions are made through a complex political process that tends to ignore the interests of nature. Human dominance over nature cannot be separated from the political policies behind it (Dhont et al., 2016; Hyers, 2006; Milfont et al., 2013; Uenal et al., 2022). *Second*, the contract of work between Indonesia government and the Freeport does not clearly explain the efforts to mitigate environmental damage, which indicates the lack of attention to nature and the environment. *Third*, the control of mining activities based on eco-contracts emphasizes harmony between all components of the ecosystem, so that efforts to reduce natural resources can be prevented.

Using an eco-contract perspective, this research is oriented to address the environmental degradation caused by PT Freeport's mining activities. Mitigation strategies relevant to PT Freeport's environmental problems are the main objective of this research, so that environmental problems can be prevented early. Thus, the task of mitigating environmental damage can be a major concern for mining corporations, the government, stakeholders, and the community in general.

2. Research Methods

This research is a qualitative with a case study approach where the primary data is obtained from the contract of work of PT Freeport and cases of environmental damage by mining activities. This study was conducted in two stages. The first stage is to formulate the main questions related to the mitigation of environmental damage through a contract of work. Second, collecting data from literature studies, namely the law on mining, PT Freeport Indonesia documents as primary legal materials and literature such as books related to research topics and national media information as secondary sources. This study adopts qualitative analysis with thematic analysis through several stages: data collection, reduction, interpretation, and display. Thematic analysis presupposes more complicity and interpretation by the researcher.

3. Results and Discussions

Environment in PT Freeport's Contract of Work

Environmental management and protection in PT Freeport's contract of work refers to the laws and regulations in force in Indonesia. The environmental problems that are concern in the contract of work include: waste, fire, pollution and hazardous emissions. While the human aspect focuses on the health and safety of employees and local residents. In addition, the feasibility study is also highlighted in the contract of work with a note that there is an analysis of the impact of mining activities on water, air, land, biological resources, and human settlements.

Prevention of environmental damage due to mining activities involves standard precautions that are recognized internationally. Companies also have a responsibility to avoid harm to rights and governments. The responsibility of the company is adjusted to the laws and regulations in force in Indonesia. Environmental issues in the contract of work between Freeport and Indonesia more detail in the table below:

Table 1 - Environmental Issue in Contract of Work PT Freeport

Environmental Management and Protection	Appointment and Responsibility of The Company
<p>1. The Company shall, in accordance with prevailing Environmental and natural preservation laws and regulations of Indonesia from time to time in effect, use its best efforts to conduct its operations under this Agreement so as to minimize harm to the Environment and utilize recognized modern Mining industry practices to protect natural resources against unnecessary damage, to minimize Pollution and harmful emissions into the Environment, to dispose of Waste in a manner consistent with good Waste disposal practices, and in general to provide for the health and safety of its employees and the local community. The Company shall not take any acts which may unnecessarily and unreasonably block or limit the further development of the resources of the area in which it operates.</p> <p>2. The Company shall install and utilize such internationally recognized modern safety devices and shall observe such internationally recognized modern safety precautions as are provided and observed under conditions and operations comparable to those undertaken by the Company under this Agreement, including measures designed to prevent and control fires.</p> <p>3. The Company shall include in the Feasibility Study for each New Mining Area an Environmental Impact Study which analyzes the potential impact of its operations on land, water, air, biological resources and human settlements. The Environmental study will also outline measures which the Company intends to use to mitigate adverse impacts</p>	<p>The Company shall take all reasonable measures to prevent damage to the rights and property of the Government or third parties. In the event of negligence on the part of the Company or its agents or of any Registered subcontractor carrying on operations or activities for the Company under this Agreement, the Company or such subcontractor, as the case may be, shall be liable for such negligence in accordance with the laws of Indonesia.</p>

Source: Indonesian Corruption Watch (ICW)

Environmental issues and their prevention are not discussed in detail in the contract of work. Indonesian laws and regulations as guidelines for environmental prevention are also not explicitly stated, let alone customary law. This is a gap for the normalization of environmental damage by mining activities. The data that the authors collect from various national media shows that the prevention of environmental damage does not run according to agreements and regulations, and even tends to be ignored.

Table 2 - Reporting of Environmental Damage in National Media

No.	News Title	Evidences of Environmental Damage
1	Della Syahni (2019), "After the Freeport Divestment, What About Environmental Damage and Recovery?", <i>mongabay.co.id</i>	There have been 22 Freeport activities that have violated the environmental impact analysis (AMDAL) since at least 1991, one of which was the expansion of the Grasberg open pit mine from 410 hectares to 584 hectares.
2	Mochamad Januar Rizki (2019) "KLHK's Response to Environmental Damage Due to Freeport's Mine," <i>hukumonline.com</i>	Most damage related to tailings (waste)
3	cnnindonesia.com (2018) "DPR Asks Freeport to Take Responsibility for Damage to Papua's Ecosystem," <i>cnnindonesia.com</i>	PT Freeport Indonesia remains responsible for the loss of services value for ecosystem and environmental in Papua
4	tempo.co, (2019) "Bearing the Impact of Freeport's Waste," <i>tempo.co</i>	Environmental degradation occurs due to the tailings problem which is located along the Ajkwa River,

- 5 Republika.co.id, (2018) "PT Freeport Pollutes the Environment, This is the Step of the Ministry of Environment and Forestry," *Republika.co.id*.
- Mimika. The tailings storage area is managed only 230 square kilometers upstream, but exits to river mouth PT Freeport should pay attention to improvements in pollution originating from tailings (soil waste), where the waste flows into rivers. The technology used must be advanced so that the waste does not enter the river.

The data above shows that the environmental damage from PT Freeport's mining is mostly caused by tailings (soil waste) flowing into rivers. PT Freeport did not specifically discuss the tailings issue in the contract, only one phrase that the researcher found in the contract text as follows:

"Power, water and sewage facilities, which may include power plants (which may be hydroelectric, steam, gas or diesel), power lines, dams, watercourses, drains, water supply systems and **systems for disposing of tailings**, plant wastes and sewage" (Contract of Work PT Freeport Indonesia)

The tailings issue has received attention and criticism from many parties, because it opens up space for other environmental violations. Based on data of the Ministry of Environment and Forestry, 48 violations were found. The environmental violations caused by PT Freeport's mining were followed up with the determination of administrative sanctions through the Decree of the Minister of Environment and Forestry Number SK 5559/MENLHK-PHLHK/PPSA/GKM.0/10/2017 (Republika.co.id).

Existing environmental violations show that mining companies are inconsistent in complying with the contract of work and applicable laws. UU no. 32 of 2009 concerning Environmental Protection and Management has not been able to be accommodated and implemented by mining parties to prevent environmental degradation. The law provides legal validity and guarantees for everyone to get a decent and healthy environment (Hernaningsih, 2022).

Eco-Contracts: An Ecologically Insight Paradigm

In responding to the phenomenon of environmental damage that is increasingly massive and systematic, a paradigmatic transformation of the environment and nature is a necessity. Environmental damage by extractive activities not only destroys the order of the ecosystem, but also worsens the social and cultural order. The contract of work as an agreement text contains the interests and orientations of each party. Thus, the transformation of an environmentally sound paradigm begins with the formulation of an agreement or agreement, as Deep Ecology Arne Naess views that policy changes have implications for economic, technological and ideological structures (Ainia & Jiarzanah, 2021).

The paradigm transformation that is environmentally sound affects the relationship between humans and nature. Because between humans and nature are in an equal position and need each other, even humans can hardly let go of the role of nature as a partner in life. One of the ways to partner with nature is through natural resource management contracts. It's just that so far, natural resource management contracts have always placed nature as a commodity for the benefit of humans (Firmanda, 2019). Therefore, it is not uncommon for pollution and destruction of nature to occur as a result of contracts that ignore the position and role of nature.

Humans and nature are one unit, because humans are micro nature, and nature itself is macro, as proposed by Snijders, humans are often called microcosms because in humans there are all entities of the universe (Snijders, 2007). Microcosm or macrocosm is only a term that gives a measure that nature is vast, and humans are part of nature, but it does not reduce the meaning that nature and humans both have human characteristics, so nature and humans are subjects. God is the supra cosmos or supra subject, nature is the macrocosm as the subject, and humans are the microcosm which is also the subject.

Eco-contract comes from two syllables, namely ecology (ecology) and contract (contract). Borrong mentions Ecology in Greek is divided into 2 (two) namely Oikos and Logos. Oikos is defined as a house or place to live, or in a broader sense means the universe, and Logos is

interpreted as science or knowledge. These two terms give the literal meaning of Ecology which is defined as the science or knowledge of the place to live. Knowledge of the place of residence is not only understanding the house, but what is in the residence. All components in the house such as living and non-living things (Borrong, 2000). Keraf explained that oikos in ecology is a household, or in a broad sense it means the universe, the earth where all life lives, habitat or house where all life lives, meaning that ecology in a broad dimension can also be interpreted that the place to live is this infinite universe (Keraf, 2016). Chang also explained that ecology aims to gain a comprehensive understanding of the state of the entire universe (Chang, 2005). The boundaries of ecology are basically unlimited, not only studying living things such as humans, animals, and plants, to live together, but all the contents of this universe.

The definition of a contract or agreement in Article 1313 states that contract is an agreement by one or more persons in binding themselves to one or other persons. Muhammad formulated the understanding of Article 1313 of the Civil Code as follows, what is called an agreement is a bond between two or more people in the financial sector (Muhammad, 1992). Subekti said that an agreement is an activity where one person promises another person or two parties to do something (Subekti, 1987).

Naja stated that the contract is a media or instrument of engagement that is intentionally made in writing as evidence for the interested parties (Naja, 2006). In principle, a contract is a medium or an instrument of engagement between all things related to ecology, and the contract is intentionally made between all ecological components, so that basically the contract already exists and is intentionally made between the house (ecology) and what is in it, it can even be up to to “who made his house”. A contract or agreement according to the Oxford Dictionary of Law is a legally binding agreement. The important thing in a contract is an agreement that has legal force. The agreement in the eco-contract has existed since the existence of the house and what is in it, and from the moment the “creator” created the house and what was in the house. Thus, eco-contract can be understood as a bond between nature and humans, that nature and humans have formed a closely related contract between the two. In other words, eco-contracts are relations and interactions that form natural or non-natural bonds between all ecosystem components that bind themselves together, whether written or unwritten (Firmanda & Wafi, 2022).

In the Indonesian context, eco-contracts must be based on Pancasila and eco-humanism, which have the following contents:

1. Eco-contracts based on divine values. In making a contract, one must pay attention to and respect the instructions of God Almighty. Deviations from God’s instructions indicate that the state deviates from the concept of divinity. Respect for divine values is the highest source for the creation and implementation of contracts based on eco-contracts. Kaelan said that the administration of the state cannot ignore the values that come from God (Kaelan, 2013).
2. Eco-contracts with eco-humanist character. Eco-contracts are made based on just and civilized human nature. Fair and civilized shows that humans have humanitarian consequences. Humanity is not only defined as humanizing humans, but also interpreted as humanizing nature. This is considered important so that the position of humans and nature is proportional, as Bakker said that cultural works not only humanize natural materials, but also need to have a dialogue between humans and nature so that humans are more humanized (Bakker, 2005). Nature is a partner of humans in their efforts to achieve noble humanity and glorify nature.
3. Dimensions of unity in the eco-contract. Unity is defined as an association of all subjects that form one. There is no partition between each subject. Subjects interact with each other in a position that unites one another. There is a common goal (one) to form a contract. Subjects are mutually synergistic in fulfilling their rights and obligations. As the nation’s motto “Bhinneka Tunggal Ika”, which means unity in differences and differences in unity.
4. Deliberation in forming eco-contracts as a people’s bond. The making of a natural resource management contract should prioritize the aspect of deliberation and consensus, because the contract involves a social contract. The government prioritizes transparency in making contracts and conducting due diligence before ratifying the contract with the third party, so that the contract is in accordance with the wishes of the community.
5. Eco-contracts that aspire to justice for all components of the ecosystem. The contract must contain rights and obligations, not only the rights and responsibility of the private parties, but

also the rights and obligations of a social contract. Behind the private contract between the government and other parties, there is a social contract between the government and its people, and there is a contract between humans and nature. Contracts must be made to the fulfillment of rights and obligations in the realm of social contracts, where there are humans, nature and God as a form of our obedience to Him. If the state administrators are socially just, it will show the existence of justice before God.

Eco-Contract Based Environmental Damage Mitigation

Mitigation is part of efforts to minimize the impact of disasters, both physical development, building awareness and capacity to respond to disaster risk. Mitigation activities as referred to in Law no. 24 of 2007 is carried out through:

- a. spatial planning;
- b. arrangement of development, infrastructure, building management; and
- c. Organizing education, counseling, and training both conventionally and modernly.

From an eco-contract perspective, PT Freeport's mining activities to mitigate environmental damage are focused on the policy formulation process. Environmental damage is caused by, among other things, wrong policy making. Therefore, eco-contract emphasizes the policy formulation process that accommodates the needs and interests of the relevant subjects.

Environmental damage by tailings waste, for example, shows a serious problem in policy. Policy is a manifestation of the paradigm of the actors. Spatial planning, building planning, and socialization of the prevention of environmental damage are based on regulations and policies. If the policy is profit-oriented and human interests, it tends to ignore the benefits of nature and the environment. The urgency of eco-contracts lies in the formulation of policies that take into account the needs of all components of the ecosystem, so that a fair relationship can be maintained.

The ideal of justice is a key concept in eco-contracts. Collective action to reduce environmental degradation must be based on the principle of justice. Each site and case requires its own diagnosis and complete integration of all stakeholders. Approaches or methods need to be selected critically by considering the suitability and character of the environment (Muhammad et al., 2014). In other words, mitigation activities should not ignore local potential and environmental conditions in an area. Therefore, a thorough analysis is needed in designing and implementing the agenda for mitigating environmental damage by mining activities.

Mitigation of environmental damage in an eco-contract perspective is not only human-oriented, but also accommodates the interests of nature. This is called eco-humanism (Brennan, 1988). So far, efforts to prevent environmental degradation have always focused on human interests, with little attention being paid to the safety of nature. In other words, the ecological crisis stems from an anthropocentric view of humanism (Ehrenfeld, 1978). The eco-contract perspective seeks natural relationships between all components of the ecosystem, whether written or not.

In addition, eco-contracts emphasize dialogue and deliberation in preventing environmental damage. More deeply, deliberation does not only involve humans, but also all components of nature. The involvement of subjects outside of humans is done by communicating through signs. Subjects outside of humans give signals that indicate that the subject is trying to interact and communicate with human subjects. Interaction and communication will form desire. These desires are combined and become a common desire. Mutual desire is defined as the desire of human subjects and non-human subjects who conduct deliberation to reach consensus when elaborating contracts (Firmanda, 2019).

This eco-contract perspective is in line with Arne Naess's Deep Ecology concept which puts forward environmental balance and positions nature as an integral part of the ecosystem (Ainia & Jiarzanah, 2021), as well as changing the anthropocentric perspective (Naess, 1989). Mitigation of environmental damage based on eco-contracts limits humans from overexploiting natural resources. In addition, eco-contract-based mitigation operates in the policy area, because policies have a great influence on economic, social, and even ideological structures. In other words, PT Freeport's mining activities that have caused environmental degradation, especially

tailings flowing through the Aghawagon River and Ajkwa River, require a policy in the form of a contract of work that appreciates natural interests more than business interests

4. Conclusion

Conducting mining operations requires measures to minimize negative impacts on all aspects of the environment. Achieving this goal requires careful project planning, effective pollution control, careful monitoring of mining impacts, and rehabilitation of mined areas. This research raises important questions about controlling eco-contract based mining activities to prevent environmental damage. PT Freeport's contract of work has not positioned nature as a legal subject that has rights equal to humans. Given the importance of the findings of this study, policy makers need to rearrange and transform the approach to mitigating environmental damage from anthropocentric to eco-humanist, so that natural interactions between all components of the ecosystem are realized.

References

- Ainia, D. K., & Jiarzanah, J. (2021). Analisis Deep Ecology Arne Naess terhadap Aktivitas Penambangan Pasir (Studi Kasus: Penambangan Pasir Merapi di Sekitar Sungai Gendol Cangkringan Sleman Yogyakarta). *Jurnal Ilmu Lingkungan*, 19(1), 98–106. <https://doi.org/10.14710/jil.19.1.98-106>
- Bakker, J. W. M. (2005). *Filsafat Kebudayaan: Sebuah Pengantar*. Yogyakarta: Kanisius.
- Borrong, R. P. (2000). *Etika Bumi Baru*. Jakarta: Gunung Mulia.
- Boseke, Y. C., Kalalo, F. P., & Pontoh, K. C. (2021). Kajian Hukum UU No. 32 Tahun 2009 Terhadap Peran Pemerintah Dalam Mencegah Kerusakan Lingkungan Akibat Aktivitas Pertambangan. *Lex Administratum*, IX(8), 86–96.
- Brennan, A. (1988). Ecological Humanism. In A. Vlavianos-Arvanitis (Ed.), *Proceedings from the Second bio International Conference*. Biopolitics, The Bio-environment.
- Cárdenas-Alcaide, M. F., Godínez-Alemán, J. A., González-González, R. B., Iqbal, H. M. N., & Parra-Saldívar, R. (2022). Environmental impact and mitigation of micro(nano)plastics pollution using green catalytic tools and green analytical methods. *Green Analytical Chemistry*, 3(August), 100031. <https://doi.org/10.1016/j.greeac.2022.100031>
- Chang, W. (2005). *Moral Lingkungan Hidup*. Yogyakarta: Kanisius.
- Cnnindonesia.com. (2018). *DPR Minta Freeport Tanggung Jawab Kerusakan Ekosistem Papua*. Cnnindonesia.com. <https://www.cnnindonesia.com/ekonomi/20181023193225-85-340846/dpr-minta-freeport-tanggung-jawab-kerusakan-ekosistem-papua>
- Dhont, K., Hodson, G., & Leite, A. C. (2016). Common Ideological Roots of Speciesism and Generalized Ethnic Prejudice: The Social Dominance Human–Animal Relations Model (SD–HARM). *European Journal of Personality*, 30(6), 507–522. <https://doi.org/https://doi.org/10.1002/per.2069>
- Dontala, S. P., Reddy, T. B., & Vadde, R. (2015). Environmental Aspects and Impacts its Mitigation Measures of Corporate Coal Mining. *Procedia Earth and Planetary Science*, 11, 2–7. <https://doi.org/10.1016/j.proeps.2015.06.002>
- Ehrenfeld, D. W. (1978). *The arrogance of humanism*. Oxford: Oxford University Press.
- Firmanda, H. (2019). *Kontrak Karya Pertambangan Dalam Perspektif Filsafat Lingkungan dan Relevansinya Bagi Pengembangan Hukum Kontrak Pertambangan di Indonesia (Studi Kasus Kontrak Karya PT. Newmont Nusa Tenggara dan PT. Freeport Indonesia)*. Universitas Gajah Mada.
- Firmanda, H., & Wafi, M. H. (2022). Mining Work Contract and the Environment: A Philosophical Approach. *Chinese Journal of Geotechnical Engineering*, 44(8).
- Hernaningsih, T. (2022). Impact of Coal Mining on Surface Water and Its Mitigation. *Jurnal Sains dan Teknologi Mitigasi Bencana*, 16(2).
- Hyers, L. L. (2006). Myths used to legitimize the exploitation of animals: An application of Social Dominance Theory. *Anthrozoös*, 19(3), 194–210. <https://doi.org/DOI:10.2752/089279306785415538>
- Keraf, A. S. (2016). *Filsafat Lingkungan Hidup: Alam sebagai Sebuah Sistem Kehidupan*. Yogyakarta: Kanisius.

- Luhukay, R. S. (2016). Tanggung Jawab Pt Freeport Indonesia Terhadap Penanganan Kerusakan Lingkungan Akibat Pertambangan Di Kabupaten Mimika Papua. *Lex Et Societatis*, 4(3), 84–92.
- M.S, Kaelan. (2013). *Negara Kebangsaan Pancasila: Kultural, Historis, Filosofis, Yuridis, dan Aktualisasinya*. Yogyakarta: Paradigma.
- Mashur, D., & Meiwanda, G. (2019). Adaptation and Mitigation of Climate Change Based on Community Empowerment. *Jurnal Kebijakan Publik*, 10(1), 25. <https://doi.org/10.31258/jkp.10.1.p.25-32>
- Milfont, T. L., Richter, I., Sibley, C. G., Wilson, M. S., & Fischer, R. (2013). Environmental Consequences of the Desire to Dominate and Be Superior. *Personality and Social Psychology Bulletin*, 39(9), 1127–1138. <https://doi.org/https://doi.org/10.1177/0146167213490805>
- Muhammad, Nuraddeen Danjuma., Salisu, Mohammed., Umar, S. D. (2014). Mitigation Strategies to Environmental Degradation in Nigeria. *Journal of Environment and Earth Science*, 4(21), 38–52.
- Muhammad, A. (1992). *Hukum Perjanjian*. Bandung: Citra Aditya Bakti.
- Naess, A. (1989). *Ecology, Community and Lifestyle, United Kingdom*. Cambridge University Press.
- Naja, D. (2006). *Contract Drafting*. Bandung: Citra Aditya Bakti.
- Nur Aulia, R., Setianingsih, A. I., Kurniawati, & Narulita, S. (2019). Pesantren-based disaster mitigation strategy: case study pondok pesantren Darunnajah Cipining Bogor. *IOP Conference Series: Earth and Environmental Science*, 391(1). <https://doi.org/10.1088/1755-1315/391/1/012049>
- Republika.co.id. (2018). *PT Freeport Pollutes the Environment, This is the Step of the Ministry of Environment and Forestry*. Republika.Co.Id. <https://ekonomi.republika.co.id/berita/p6qegz382/pt-freeport-cemari-lingkungan-ini-langkah-kementerian-lhk>
- Rizki, M. J. (2019). *KLHK's Response to Environmental Damage Due to Freeport's Mine*. Hukumonline.Com. <https://www.hukumonline.com/berita/a/respons-klhk-soal-kerusakan-lingkungan-akibat-tambang-freeport-lt5c35f52adc2c8?page=2#!>
- Snijders, A. (2007). *Antropologi Filsafat Manusia, Paradoks dan Seruan*. Yogyakarta: Kanisius.
- Subekti. (1987). *Hukum Perjanjian*. Jakarta: Intermasa.
- Syahni, D. (2019). *After the Freeport Divestment, What About Environmental Damage and Recovery?* Mongabay.Co.Id. <https://www.mongabay.co.id/2019/01/02/setelah-divestasi-freeport-bagaimana-soal-kerusakan-dan-pemulihan-lingkungan/>
- Taqwadin, S. T. dan Danil, A. (2013). KEBIJAKAN LEGISLASI DALAM KAITAN MITIGASI BENCANA DI ACEH1. *AIWEST-DR 2013 (Annual International Workshop & Expo on Sumatra-Tsunami & Disaster)*.
- Tempo.co. (2019). *Bearing the Impact of Freeport's Waste*. Tempo.Co. <https://kolom.tempo.co/read/1169527/menanggung-dampak-limbah-freeport>
- Uenal, F., Sidanius, J., Maertens, R., Hudson, S. kiera T. J., Davis, G., & Ghani, A. (2022). The roots of ecological dominance orientation: Assessing individual preferences for an anthropocentric and hierarchically organized world. *Journal of Environmental Psychology*, 81(March 2022), 101783. <https://doi.org/10.1016/j.jenvp.2022.101783>.