

An Environmental Ethics Review of the Moral Dilemma Faced by Colored Stone Miners on Kolbano Beach

Vera Velwyati ^{a,1*}, Irene Ludji ^{a,2}

^a Universitas Kristen Satya Wacana, Indonesia

¹ velwyativera15@gmail.com*

* Corresponding author

Article History

Received: 27 September 2025;

Revised: 13 June 2026;

Accepted: 22 June 2026.

Keywords:

Moral dilemmas;
environmental ethics;
kolbano;
miner;
moral reasoning.

: ABSTRAK

The moral dilemma faced by colored stone miners on Kolbano Beach, South Central Timor (TTS), East Nusa Tenggara (NTT), arises from tension between economic necessity and environmental sustainability. Excavating land for colored stones remains their main livelihood, despite damaging the coastal ecosystem. With no equally profitable alternative, mining continues until today. This study describes the factors behind this moral dilemma and analyzes it through an environmental ethics lens. The method used is qualitative research with a narrative-descriptive approach. Drawing on Larry Rasmussen's environmental ethics and Sallie McFague's distributive justice, humans are urged to pursue sustainable life for all creation. As moral beings relating to nature, miners must love nature as themselves and treat it as a moral subject rather than an object of exploitation. Humans are also called to justify their moral decisions through critical reasoning, shaping humility and justice toward creation.

ABSTRACT

Kata-kata kunci:

Dilema moral;
etika lingkungan hidup;
kolbano;
penambang;
penalaran moral.

Tinjauan Etika Lingkungan terhadap Dilema Moral yang Dihadapi Penambang Batu Warna di Pantai Kolbano. Dilema moral penambang batu warna di Pantai Kolbano, Timor Tengah Selatan (TTS), Nusa Tenggara Timur (NTT), muncul akibat ketegangan antara kebutuhan ekonomi dan kelestarian lingkungan. Penggalian tanah untuk memperoleh batu warna menjadi sumber penghidupan utama, meskipun praktik tersebut merusak ekosistem pantai. Ketiadaan alternatif pekerjaan yang setara membuat aktivitas penambangan terus berlangsung hingga kini. Penelitian ini bertujuan mendeskripsikan faktor-faktor penyebab dilema moral para penambang serta menganalisisnya dari perspektif etika lingkungan hidup. Metode yang digunakan adalah penelitian kualitatif dengan pendekatan naratif-deskriptif. Berlandaskan etika lingkungan Larry Rasmussen dan keadilan distributif Sallie McFague, manusia didorong mengusahakan kehidupan berkelanjutan bagi seluruh ciptaan. Sebagai makhluk moral yang berelasi dengan alam, penambang dituntut mengasihi alam layaknya diri sendiri dan memperlakukannya sebagai subjek moral, bukan sekadar objek eksploitasi. Manusia juga diarahkan mempertanggungjawabkan keputusan moralnya melalui penalaran kritis, sehingga karakter kerendahan hati dan keadilan terhadap ciptaan dapat terbentuk secara berkelanjutan.

Copyright © 2026 (Vera Velwyati et al.). All Right Reserved

How to Cite : Velwyati, V., & Ludji, I. (2026). An Environmental Ethics Review of the Moral Dilemma Faced by Colored Stone Miners on Kolbano Beach. *Jurnal Moral Kemasyarakatan*, 11 (1), 84-93. <https://doi.org/10.21067/jmk.v11i1.12946>



This work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/). Allows readers to read, download, copy, distribute, print, search, or link to the full texts of its articles and allow readers to use them for any other lawful purpose. The journal hold the copyright.

Introduction

East Nusa Tenggara (NTT) is a province located in eastern Indonesia. The province holds potential economic sectors such as mining and quarrying (Directorate General of Treasury of NTT Province, Ministry of Finance, 2020), which together cover an area of 456,902.56 hectares spread across 22 regencies and cities in NTT (Kause et al., 2020). Available commodities include limestone, manganese rock, sand, river stone, copper, gold, marble, and colored stone. Since 1984, colored stone mining has drawn public attention in the area around Kolbano Beach, Kolbano Village, Kolbano District, South Central Timor Regency (BW, personal communication, November 4, 2022). Smooth, multicolored stones cover the Kolbano coastline in various shapes, including oval, flat, semi-round, and round (Patti et al., 2021). The stones vary in color: white, brown, red, green, yellow, black, and stones with a mix of black, red, and cream. These stones are known as Kolbano stones.

People use Kolbano stones to decorate houses, gardens, aquariums, and hotel walls. Because of this demand, many residents who once worked as farmers have shifted to mining. About 90 percent of residents in Kolbano District, which includes the villages of Kolbano, Oetuke, Spaha, Nununamat, and Noesiu, now rely on mining as their main livelihood (BW, personal communication). Every day, miners collect Kolbano stones and sell them to collectors, who then ship them to Kupang City. Traders then sell the stones to other islands such as Jakarta and Surabaya. The price of Kolbano stones depends on size and color. Stones with brighter colors, smoother surfaces, and flatter shapes sell for higher prices. A stone measuring 23 cm sells for Rp 8,000 (Hernisu, 2017), while a stone of at least 18 cm sells for Rp 14,000 (BW, personal communication). To obtain these stones, miners must dig through soil or sand. The stones cost more because they require excavation, their patterns rarely appear along the shoreline, and they are a type of ornamental coral stone.

Mining activity has raised the economic standing of the Kolbano community. Families with limited income have managed to build houses and send their children to school (BW, personal communication). At the same time, this activity counts as the exploitation of nature. It causes abrasion and poses a serious risk, as rising sea levels could endanger nearby residents and destroy settlements (YKA, personal communication). The beauty of Kolbano Beach has also faded as holes have appeared along the shore from stone excavation. These holes measure about 4 to 6 meters in diameter and 1 to 2 meters deep, and they continue to shift 50 to 60 meters toward residential areas (Penambangan Tidak Dikendalikan di Kolbano-TTS, 2015). This situation has pushed the government to hold outreach sessions for the community at both the district and regency levels, informing residents about the negative impacts of mining (BW, personal communication).

Natural resources support human survival, but excessive use of these resources amounts to exploitation. To meet daily needs and seek comfort, people continue to use nature's resources as much as possible, even though they also have a duty to protect nature and prevent its destruction. This is the moral dilemma facing the Kolbano community. They know that nature needs protection, but they do not know where else to find work to earn a living (YKA, personal communication). A moral dilemma occurs when an agent holds a moral obligation to perform two actions but cannot complete both at the same time (Mendonca, 2008). The dilemma arises

when a moral agent must choose between two alternatives, neither of which carries less weight or importance (Mendonca, 2008). Verne H. Fletcher explains that a moral dilemma does not always call for prioritizing duty. Some actions, though considered unacceptable, may still need to take place to prevent a worse outcome (Fletcher, 2007). A moral dilemma can also reach a point where no solution exists. At that point, the issue no longer concerns choosing the right action to correct a wrong or the wrong action to prevent a crime. Instead, no action remains possible because the situation has reached a complete impasse (Fletcher, 2007).

On the matter of nature conservation and the environment, every person needs to recognize that future environmental conditions depend on present human behavior toward the welfare of nature. As part of nature, humans cannot separate their actions from their identity as moral beings (Rasmussen, 2010). The issue of colored stone mining on Kolbano Beach shows that the relationship between humans and the environment is inseparable from questions of value and moral responsibility. The community's choice to continue mining places it in a dilemma. At this point, human decisions about using natural resources depend on practical considerations as well as the ability to understand values, weigh long-term consequences, and balance personal interest with shared interest. These decisions stem from critical thinking about ethics and moral values, which enables a person to make fair and responsible moral choices regarding oneself, others, and the natural world. In this context, the research problem becomes a moral lesson in which individuals, including miners and communities, learn to resolve moral dilemmas. Through this process, moral reasoning and judgment improve (see and compare the explanation in Yaqin, 2020).

Protecting nature begins with the awareness that the authority to manage nature does not place humans above other creatures. The environment exists not only for human benefit but for all forms of life (Safii, 2004). Environmental ethics offers guidance for human behavior in practical efforts to build environmental morality. It helps people balance their rights and obligations and directs them toward self-control. Environmental ethics examines the connected relationship between humans and the environment, with attention to sustainable management of natural resources for the benefit of present and future generations (Damanhuri et al., 2025). For this reason, this study applies environmental ethics to analyze the moral dilemma of colored stone miners on Kolbano Beach, South Central Timor, drawing on a Christian approach based on the theories of Larry L. Rasmussen and Sallie McFague.

First, Rasmussen, a professor of Social Ethics at Union Theological Seminary in New York, explains that the environment exists as a world separate from humans. However, problems in that world also become problems within humans themselves (Rasmussen, 2010). The identity of humans as the image of God requires proper understanding, with an emphasis on the human task of reflecting God's way of life and serving as mediators for all creation before God (Widjaja, 2018). Based on this view, the key condition for bringing justice to all of God's creation, both human and natural, depends on the sensitivity and awareness of moral beings to correct their attitudes for the sake of an ordered community of life. Rasmussen calls this an expression of divine creativity and goodness (Rasmussen, 2010).

Second, McFague, a professor of Theology at Vanderbilt University in the United States, proposes an idea about another way to live abundantly on a fragile planet (McFague, 2001).

Based on her observation of North American Christian life, McFague notices that a high-consumption lifestyle damages nature because it carries greed, indifference, and pride. This self-centered attitude creates injustice toward other creatures, yet most people do not admit it. They choose to deny this attitude because they love their way of life, and their economic and governmental systems work with society to support it (McFague, 2001). Christians, therefore, need to change their way of thinking and recognize their identity and purpose as responsible stewards of the Earth.

Several earlier studies addressed related topics separately. First, Hajeng Pandu Nagari conducted research titled "Ecofeminist Social Movement Against Marble Mining in Mount Mutis, East Nusa Tenggara." This study examines the strong rejection by the Mollo community of mining on their customary land, as mining harms nearby residents, particularly women, and damages the environment (Nagari, 2020). Second, a thesis by Windynia Givens G. Se'u titled "Community Perception and Attitude Toward Manganese Mining (A Case Study of Supul Village, South Central Timor Regency, East Nusa Tenggara)" explains that manganese mining in Supul Village, Kuantana District, South Central Timor, produces mixed perceptions among residents. Some accept it, some accept it reluctantly, and others take part in it (Se'u, 2013). This acceptance stems from severe economic pressure (Se'u, 2013). Third, a study by Kalis Stevanus titled "Nature Conservation as an Expression of the Development Mandate: An Ethical-Theological Study" concludes that humans serve as stewards of nature, and nature conservation expresses love for others. The study argues that nature requires responsible management to secure the survival of future generations (Stevanus, 2019).

No previous study has focused on the environmental crisis from an ethical perspective that addresses the moral dilemma of miners in the context of Kolbano Beach, South Central Timor. This study therefore offers a new contribution by explaining the moral dilemma in environmental management. It shows that the exploitation of nature results not only from low ecological awareness but also from the complexity of moral considerations shaped by socioeconomic conditions among vulnerable communities. Conceptually, this study extends the field of environmental ethics by treating decisions about natural resource use as a process of moral reasoning in a context of conflict. Empirically, this study presents a new context, colored stone mining on Kolbano Beach, South Central Timor, to understand the relationship between humans, nature, and moral responsibility.

Based on this background, this study addresses the following research questions: 1) What factors cause the moral dilemma among colored stone miners on Kolbano Beach, South Central Timor? 2) How does environmental ethics explain the moral dilemma of colored stone miners on Kolbano Beach, South Central Timor? This study aims to 1) describe the factors that cause the moral dilemma among colored stone miners on Kolbano Beach, South Central Timor, and 2) analyze the moral dilemma of colored stone miners on Kolbano Beach, South Central Timor, from the perspective of environmental ethics.

Method

This study took place at Kolbano Beach, South Central Timor, and employed a qualitative, narrative-descriptive approach. Data collection relied on in-depth interviews and document analysis. The researchers selected informants through purposive sampling, involving ten

informants who met the following criteria: (1) work as colored stone miners who face a moral dilemma, and (2) serve as pastors or church council members of the Evangelical Christian Church in Timor (GMIT) who have witnessed the phenomenon and can provide information relevant to the study. The researchers analyzed interview data using thematic analysis. The analysis process included transcribing the interviews, reading the transcripts repeatedly to understand context, conducting initial coding, and grouping data into main themes. Each theme received critical interpretation based on the environmental ethics perspectives of Larry Rasmussen and Sallie McFague. The researchers tested data validity through three criteria within the trustworthiness framework: credibility, dependability, and confirmability. Credibility was established through source triangulation, comparing information from different informants and matching interview results to supporting documents. Dependability relied on documentation of every research stage, from data collection and transcription through thematic analysis to concluding. Confirmability was the primary concern, ensuring that theme formation and interpretation were grounded in the informants' empirical data.

Results and Discussion

This study identifies two main factors behind the moral dilemma faced by miners. First, mining has been a tradition of the Kolbano community for decades and has become a permanent occupation and the main source of income. Around 1984, the area along Kolbano Beach became a site for colored stone mining (LM, personal communication, May 19, 2023). The government once banned mining in this area, citing its status as a government-owned tourism zone. Between 1997 and 1998, however, the community faced severe economic hardship, which led residents to agree on using part of the government land to support their families (YT, personal communication), a practice that continues today. An estimated 80 percent of residents in Kolbano District, including children and adults, work as miners along the beach, while the rest work as civil servants, entrepreneurs, or traders (DT, personal communication, May 19, 2023). This occupation has proven to bring quick and satisfying results, which makes it hard to abandon. Without special requirements, relying only on labor and time, miners can meet daily needs, build houses, send their children through university (LM, personal communication), and purchase cars (AB, personal communication, May 19, 2023). This contrasts with seasonal farm work or office jobs that require specific qualifications.

Second, stones found along the shoreline sell for around ten thousand rupiah per sack, while more valuable stones, known as abu tang, sell for Rp 50,000 per sack and require digging five to six meters deep, often close to the water table. Between these two options, miners naturally choose the one that earns them a higher income. They do not intend to damage nature, but because the valuable stones lie underground (WS, personal communication), digging becomes unavoidable. Faced with this situation, miners experience a genuine moral dilemma. They feel obligated to protect the beauty of nature and to meet their family's needs as part of their responsibility, yet they cannot fulfill both obligations at once. According to Fletcher, an action considered wrong may still take place to prevent a worse outcome (Fletcher, 2007). Miners may anticipate economic hardship and try to avoid poverty. As a result, mining and digging continue to this day.

This reality has caused environmental problems, including tidal flooding and abrasion. In 2020, a tidal flood pushed seawater up to the dock and even the main road, sweeping away structures built for tourists (YK, personal communication, May 19, 2023). The beach condition has also become troubling, with holes appearing along the shore from past excavation and a decline in the distinctive appeal of Kolbano Beach, namely its colored stones. One informant described the current condition of the beach as follows:

"In the past, the colored stones used to be visible everywhere, but now you have to look closely to find any. The distinctive feature of Kolbano Beach is gone. Only the Fatu'un remains, and that is only because the large stone cannot be moved"
(ALMT, personal communication, May 22, 2023).

Kolbano Beach is known for its colored stones scattered along the shore and a large stone shaped like a lion's head called Fatu'un, meaning stone tree or stone peak. One distinctive feature of the beach, its colorful stones, continues to disappear because of mining activity. The spread of colorful stones has given rise to piles of collected stones that resemble small hills, ready for sale. Despite the troubling beach condition, the church also faces a dilemma in how to respond. A pastor familiar with the activity explained that mining is the community's main livelihood, so if the church prohibits it, the church would need to provide an alternative for residents to meet their needs (AA, personal communication, May 22, 2023). After roughly 20 years of mining, residents believe that God approves of this work and has helped a community that once relied only on selling betel nut (AT, personal communication).

Miners recognize the various consequences of mining, yet they see no other way to earn enough to live. The issue does not concern the absence of alternatives, since residents of Kolbano already work as fishermen, farmers, and civil servants. Instead, many feel driven to gain quick and large profits to meet their needs. They pursue economic growth while large-scale exploitation of nature continues, with no restoration efforts. People today form a consumer society. Owning goods and money serves as the main source of happiness, and happiness becomes the only real purpose in life (McFague, 2001). Because of this consumer mindset, the situation appears complicated, as though no solution exists, not because of limited options, but because people see mining as the only viable choice. At the same time, people remain reluctant to change their habits and mindset, since they already view mining as an easy and profitable activity to manage.

Work is a basic human need, both a means of survival and a source of dignity. People live to work and create, but pursuing work needs to be accompanied by awareness of other abilities, responsibility, and consideration of its impact on oneself, family, community, and the environment. A person who acts this way fulfills the moral demand contained in Rasmussen's concept of "the integrity of creation." As part of this integrity, concern for the welfare of other creatures must take precedence over the expansion of human possessions (Rasmussen, 2010).

Humans and the environment depend on each other for survival. At times, miners take something from nature, namely colored stones. At other times, nature responds and suffers damage from these actions, which then threatens the miners themselves. Work stops, and the collected materials are washed back into the sea by the waves. This reality supports McFague's body analogy, in which damage to one part affects the function of the rest. This means the

relationship between humans and nature involves both benefits and losses. A deeper reading of this analogy leads to an important conclusion. While nature provides what humans need, this should not translate into unlimited human control over nature. For the sake of their own survival, humans also hold a duty to provide what nature needs (Darmaputera, 2015). Humans cannot fully experience the beauty of living on Earth without returning that beauty to it (Rasmussen, 2010). In essence, for humans to remain healthy and strong, nature needs the same conditions (McFague, 2001).

Humans first need to understand their position in the world, the purpose of their existence, and how they should act. Humans exist in the world to carry out good work according to God's command and will. In line with McFague, humans serve as the hands and feet of God, acting as God's helpers within and for the body of the world. Human work serves to advance the divine purpose of the Earth's flourishing (McFague, 2001). However, understanding of God's mandate and good work often remains limited to building harmonious relationships with other people and with God, without extending to efforts that protect the well-being and health of all creatures, including nature. Nature still occupies a position separate from humans because of a unique human trait, reason. For colored stone miners on Kolbano Beach, nature is a precious blessing from God, as colored stones provide income for daily food needs. This view reflects a strong anthropocentric outlook, treating nature only as a source to meet human needs. If this view holds, then a question follows: can humans also be considered a precious blessing from God for nature?

Each person holds a different response to that question. Given this, the first and most essential step is to understand the ideas of Rasmussen and McFague, who call for a sustainable life on Earth. First, to build a sustainable future, Rasmussen stresses the need to value ecological integrity. Nature carries worth beyond serving as a tool to satisfy human interest. Humans and nature together form a complete creation because both bear the image of God and stand as an epiphany of God's presence (Rasmussen, 2010), or, in McFague's terms, the body of God. The basic moral norm humans must hold, then, is respect for the Holy God. God made humans in the *imago Dei*, which means humans must understand divine love in relation to everything God desires and loves. God created humans in His image so that humans would love nature as God loves humans and nature, caring for and nurturing it with compassion (APR, personal communication).

McFague views nature as the path through which people come to know God's presence in the world. Nature is the place where God reveals Himself to humans, allowing them to draw closer to Him. Miners also witness God's work through and within nature, which brings good into their lives. Those who once sold betel nut now work as miners and live with sufficiency. They show respect and gratitude toward the Holy Power through an annual thanksgiving prayer. Even so, miners do not respond well to God's presence amid the pain of nature, namely, natural disasters. Feelings of regret over taking too many stones, along with the belief that God expresses anger, last only as long as nature continues to show signs of distress. This response carries a risk to future generations, since no real shift in attitude toward ecological concerns occurs. McFague's statement, "where love is not, God must needs be," places a moral demand on miners to bring God's presence into a setting that lacks love for the environment and nature.

Disaster should serve as a turning point and a valuable opportunity to fulfill the moral duty of treating nature with greater respect, honoring the inherent value of nature's own existence.

Second, sustainability requires distributive justice. For McFague, justice does not mean equal income for each person, but a balance that allows all creatures to survive and thrive. Humans, in this view, should see a good life not as having abundance, but as having enough. Miners can show this attitude of sufficiency by selecting only the stones requested by buyers, instead of collecting every type of stone or digging without limit. Another option involves mining only to raise business capital, then stopping once that capital reaches a sufficient amount. Miners could also shift from mining to rebuilding tourism facilities along Kolbano Beach, such as shelters and food stalls, benefiting everyone. This approach does not call for humans to stop using natural resources altogether, which would harm the economy, but calls for a critical attitude in how they use these resources. When work involves nature, an ethical person needs to treat nature well. Rapid economic progress holds little value if it comes from a damaged and polluted environment that repeatedly harms people.

From a theological perspective, McFague explains that God's glory lies in every living creature reaching its full potential, and humans therefore live to glorify God by loving the world and everything in it (McFague, 2001). Human life and the welfare of nature now form one whole, two sides that depend on each other. For Rasmussen, the wholeness of creation reflects God's glory and greatness. When humans feel privileged because of the narrative in Genesis 1, they actually face a spiritual crisis. Humans do not own nature; they manage it. God owns nature, so every human action remains bound by God and by ethical values. The relationship between humans and God therefore shapes human behavior toward nature. Correct understanding, as well as disobedience toward God's commands, determines the harmony of the relationship between humans and nature. Miners need to consider the following point: damaging nature means damaging oneself and God, just as damaging oneself means damaging nature and God. Supported by a spirit of justice, miners hold a noble calling as priests of creation, one that calls for fulfilling the *imago dei* and *imago mundi* responsibly.

Changing attitudes and actions does not come easily. Discussions about ethics never reach a fully satisfying conclusion. No matter how hard people try, they can never meet the standard of what is fully right, good, and correct. However, people can still choose what comes closest to right, good, and correct in ways that benefit both humans and the environment. In this context, moral awareness and motivation matter greatly. Recent research supports this claim, showing that moral awareness is not merely theoretical but takes shape through real-world contexts, experiences, and the maturity of thought (Jati et al., 2026). Moral awareness can shape character, which consists of the distinct values held by a person and expressed through attitude and behavior. These values then shape faith and ethics, built on a foundation that includes love for God and His creation, as well as responsibility (Mulyanah et al., 2020). Character and values are shaped by motivation and moral awareness. Knowledge of what is right, good, and correct shapes decision-making, along with understanding and reflection on the choices made. From the standpoint of character epistemology, an internal drive to act well, based on moral awareness and personal responsibility, holds more value because it comes from conscience rather than mere formal compliance (Hasan & Nurharirah, 2026). A decision built on this

process can become part of moral character, since it forms the basis for ethical action and ethical living.

As moral subjects, humans hold moral responsibility before God concerning the condition of the Earth. God gave humans a mandate to govern and even subdue nature, but only as a form of stewardship for which they remain accountable to God, the Creator (Darmaputera, 2015). Miners need to reconsider their decisions to resolve the dilemma they face. The Kolbano coastal environment, including its colored stones, deserves moral treatment, even though it cannot return the favor. This is where justice in the relationship with nature takes shape. Humans should not exploit nature without limit. In return, nature continues to offer part of itself to humans.

Conclusion

The decision of the Kolbano community to continue mining colored stones along Kolbano Beach is directly tied to the need to meet basic needs, particularly economic ones. This condition creates a moral dilemma between sustaining human life and protecting nature as part of the wholeness of creation. This study shows that resolving this dilemma requires awareness of each person is calling as a moral being and as a steward who holds moral responsibility for the continued life of all creation. Within the environmental ethics of Larry Rasmussen and Sallie McFague, this responsibility takes shape through humility, the pursuit of environmental justice, and the recognition that human privilege should never erase the intrinsic value of other parts of creation. Environmental ethics can serve as a reflective framework for understanding how communities reason and form moral judgments when facing conflicts between economic needs and ecological moral responsibilities. Based on this discussion, the study offers the following recommendations. To build ecological understanding and resolve the moral dilemma through an environmental ethics framework, the government and, where possible, religious institutions need to work together to provide sustainable livelihood alternatives for the community, alongside enforcement of coastal protection policies. At the same time, theological reflection and ecological practice need strengthening through training based on environmental moral education. Further research can also explore how community moral reasoning develops over time when facing moral dilemmas to protect and sustain all of creation.

References

- Damanhuri, H. A., & Jamaludin, U. (2025). Local Wisdom Of The Baduy Community: Systematic Literature Review On Social, Cultural, And Environmental Ethics. *Jurnal Moral Kemasyarakatan*, 10(2), 586–595. <https://doi.org/10.21067/jmk.v10i1.12010>
- Darmaputera, E. (2015). *Etika Sederhana Untuk Semua: Perkenalan Pertama*. BPK Gunung Mulia.
- Fletcher, V. H. (2007). *Lihatlah Sang Manusia!: Suatu Pendekatan Pada Etika Kristen Dasar*. BPK Gunung Mulia.
- Hasan, S., & Nurharirah, S. (2026). *Pendidikan Karakter Berbasis Moderasi Beragama: Landasan Teoritis, Model Konseptual Dan Implementasinya*. PT Bukuloka Literasi Bangsa.
- Hernisu. (2017). *Sekelumit Kisah Penambang Batu Di Pantai Kolbano NTT*. DetikTravel. <https://travel.detik.com/domestic-destination/d-3495590/sekelumit-kisah-penambang-batu-di-pantai-kolbano-ntt>

- Jati, S. N., Kartasasmita, S., Syamsuddin, L., Wahyuriko, P. E., Dewi, R. S., Rokhmah, M., Lestari, W., Suharsono, Y., Wahyudi, I., Muni, A. I., & Fauzi, F. I. (2026). *Psikologi Dalam Kajian Filsafat* (D. Karmiyati, Ed.). Universitas Muhammadiyah Malang.
- Kause, W. L., Umar, Z. D., & Sangaji, A. H. (2020). Tata Kelola Data Dan Informasi Pertambangan Di Provinsi Nusa Tenggara Timur. *Flobamora*, 3(1), 65–74. <https://doi.org/10.46888/Flobamora.V3i1.46>
- Kemenkeu Ditjen Perbendaharaan Provinsi NTT. (2020). *Kajian Fiskal Regional Provinsi Nusa Tenggara Timur Tahun 2020* (hlm. 1–180).
- McFague, S. (2001). *Life Abundant: Rethinking Theology And Economy For A Planet In Peril*. Fortress Press.
- Mendonca, D. (2008). Sobre El Concepto De Dilema Moral. *Revista Discusiones*, 8.
- Mulyanah, D., Legiani, W. H., & Lestari, R. Y. (2020). Model Kurikulum Sekolah Alam Berbasis Karakter. *Jurnal Moral Kemasyarakatan*, 5(2), 75–80. <https://ejournal.unikama.ac.id/index.php/JMK/article/view/4439/2944>
- Nagari, H. P. (2020). Gerakan Sosial Ekofeminisme Melawan Penambangan Marmer Di Gunung Mutis Nusa Tenggara Timur. *Ijd-Demos*, 2(1), 58–67. <https://doi.org/10.37950/Ijd.V2i1.33>
- Patti, Y. N., Boimau, Y., Kadek, A., & Lestari, D. (2021). Pemetaan Pola Perlapisan Bawah Permukaan Sekitar Pantai Kolbano Kabupaten Timor Tengah Selatan Menggunakan Data Anomali Magnetik. *Magnetic: Research Journal Of Physics And Its Application*, 1(2), 92.
- Penambangan Tidak Dikendalikan Di Kolbano-TTS. (2015). *Pos-Kupang*. <https://kupang.tribunnews.com/2015/06/03/penambangan-tidak-dikendalikan-di-kolbano-tts>
- Rasmussen, L. L. (2010). *Komunitas Bumi: Etika Bumi (Merawat Bumi Demi Kehidupan Yang Berkelanjutan Bagi Segenap Ciptaan)* (L. S. Kie, Ed.). BPK Gunung Mulia.
- Safii, L. (2004). *Cintailah Lingkungan Hidupku*. PT Tiga Serangkai Pustaka Mandiri.
- Se'u, W. G. G. (2013). *Persepsi Dan Sikap Masyarakat Terhadap Pertambangan Mangan (Studi Kasus Desa Supul, Kabupaten Timor Tengah Selatan, Nusa Tenggara Timur)* [Master's thesis, Satya Wacana Christian University]. <https://repository.uksw.edu/handle/123456789/4033>
- Stevanus, K. (2019). Pelestarian Alam Sebagai Perwujudan Mandat Pembangunan: Suatu Kajian Etis-Teologis. *Kurios*, 5(2), 94–108. <https://www.sttpb.ac.id/e-journal/index.php/kurios/article/view/107>
- Widjaja, P. S. (2018). Apakah Aku Penjaga Saudaraku?: Mencari Etika Ekologis Kristiani Yang Panentheistik Dan Berkeadilan. *Gema Teologika*, 3(2), 167–184. <https://doi.org/10.21460/Gema.2018.32.395>
- Yaqin, A. (2020). *Pendidikan Akhlak-Moral Berbasis Teori Kognitif* (Monalisa, Ed.). PT Rajagrafindo Persada.