



Legal Sanctions in Environmental Crimes: Between Effectiveness and Obstacles

Andris E. Bahutala,¹ Asrul Aswar ²

¹Faculty of Law, Universitas Negeri Gorontalo, Indonesia.

²Faculty of Law, Universitas Hasanuddin, Makassar, Indonesia.

Correspondence E-mail: bahutalaandris@gmail.com

Abstract: The purpose of this paper is to evaluate the effectiveness of the application of criminal sanctions based on Law No. 32 of 2009 concerning Environmental Protection and Management and to identify the obstacles to its implementation in the context of environmental law enforcement in Indonesia. The writing method uses a juridical-normative approach to the study of laws and regulations and a qualitative approach through case studies of environmental court decisions and interviews with law enforcement officers. The analysis and discussion focus on the form of criminal sanctions (imprisonment and fines), the principle of ultimum remedium, the still limited deterrent effect, as well as technical obstacles to proof, coordination between agencies, and low public awareness and participation. Based on these findings, the conclusion states that although the legal framework for environmental criminal sanctions is comprehensive, its effectiveness is still hampered by institutional and procedural aspects; therefore, recommendations are directed at strengthening the technical capacity of officers, harmonizing regulations, and increasing collaboration between agencies and public education so that criminal sanctions can function optimally as an instrument for preventing and eradicating environmental crimes.

Keywords: Environmental Criminal Sanctions; Effectiveness; Ultimum Remedium.

@2025 Andris E. Bahutala and Asrul Ashwar

Under the license CC BY-SA 4.0

How to cite (Chicago Style):

Andris E. Bahutala and Asrul Aswar. "Legal Sanctions in Environmental Crimes: Between Effectiveness and Obstacles." *Estudiante Law Journal*, 7 (2), (June 2025): 461-478. <https://doi.org/10.33756/eslaj.v7i2.31634>

1. Introduction

In a number of decade Lastly, Indonesia faces improvement significant in case pollution And damage threatening environmentsustainability ecosystem And welfare society. According to data from the Ministry of Environment Life and Forestry (KLHK), occurred improvement by 27% on case pollution environment from 2018 to 2023, with a total of 4,523 cases identified covering pollution air, water, and land.¹ Number This Not yet including cases that are not reported, which is estimated the amount Far more big. Increase activity industrialization without supervision strict, practice illegal mining, clearing land with method burn forest, and management waste that is not adequate become trigger main degradation condition environment in various Indonesian territory. Various study show that impact from pollution environment This has contribute on increasing disease breathing in cities big, polluted clean water source for millions population, and the disappearance diversity life that is not invaluable. As put forward by Dinda Fitri Yudha Yanti et al., that in a way economy, damage environment has cause material losses reached hundreds trillion rupiah every the year, including cost health, decline productivity agriculture, and damage infrastructure consequence disaster ecological.²

Face the situation is getting worse worrying this, enforcement sanctions criminal in law environment become the more urge as effort preventive And repressive For control destruction environment. Law Number 32 of 2009 concerning Protection and Management Environment Life (UUPPLH) has arrange various sanctions sufficient punishment comprehensive, including criminal prison up to 15 years And fine up to Rp15 billion for perpetrator pollution And destruction environment. However thus, the implementation sanctions the Still Far from effective as expected. Novia Paruki et al., revealed that from around 1,237 cases reported environment on in 2022, only 18% will arrive on stage prosecution, and not enough of the 5% that ended up on verdict punishment maximum.³ This shows a significant gap between the available legal regulations and their implementation in the field. Weak environmental law enforcement not only fails to provide a deterrent effect on perpetrators, but also sends the wrong signal to the public and business actors that violations of environmental regulations are not a serious matter. As a result, cases of environmental violations continue to emerge and tend to increase from year to year, even with larger and more complex patterns and scales, which ultimately worsen environmental conditions in Indonesia.

The weaknesses of environmental law enforcement in Indonesia can be identified in several fundamental aspects, with one of the most significant being the limited knowledge and capacity of law enforcement officers. As noted by Anika Ni'matun

¹ Kementerian Lingkungan Hidup, "Laporan Kinerja Tahun 2023: "Memperkuat Sumbangan Tapak Untuk Pemulihan Ekonomi Nasional Dan Reformasi Struktura" (Jakarta, 2023).

² Dinda Fitri Yudha Yanti, Latifah Nurjannah Sartono, and Ubaidillah Kamal, "Tantangan Dalam Penegakkan Peraturan Lingkungan Hidup Di Era Digital," *Jurnal Multidisiplin Ilmu Akademik* 1, no. 3 (May 27, 2024): 384–93, <https://doi.org/10.61722/jmia.v1i3.1472>.

³ Novia Rahmawati A. Paruki and Ahmad Ahmad, "Efektivitas Penegakan Hukum Tambang Ilegal," *Batulis Civil Law Review* 3, no. 2 (August 26, 2022): 177–86, <https://doi.org/10.47268/ballrev.v3i2.966>.

Nisa and Suharno, in their study "Enforcement of Environmental Problems to Achieve Sustainable Development (Case Study of Forest Fires in Indonesia)", many police officers, prosecutors, and even judges do not have a deep understanding of the complexity of environmental law and the technical aspects of environmental pollution.⁴ Several case studies they examined showed that law enforcers often have difficulty in collecting scientific evidence related to environmental pollution, determining the causal relationship between certain actions and the environmental damage that occurs, or understanding the long-term impact of an activity on the ecosystem. This situation is exacerbated by the limited availability of adequate environmental forensic laboratories and environmental experts who can provide credible information in the judicial process. As a result, many cases of pollution and environmental damage cannot be processed optimally, are stopped midway, or end with verdicts that are not commensurate with the environmental damage caused. According to data from the Indonesian Environmental Advocacy Network (JATAM, 2023), around 65% of reported environmental cases were not adequately followed up due to technical constraints in the investigation and inquiry process, including the inability of officers to identify elements of criminal acts in environmental cases.⁵

In addition to the limited capacity of law enforcement officers, the lack of public awareness of the importance of environmental protection remains a major obstacle to environmental law enforcement in Indonesia. The latest national survey released by the Central Statistics Agency (BPS) in the 2023 Indonesian Environmental Statistics shows that public awareness of the impact of daily activities on environmental pollution is still low, with only around 35% of respondents aware of the contribution of their activities to environmental pollution. In addition, a survey of public satisfaction with public services at the Ministry of Environment and Forestry (KLHK) in the second semester of 2023 indicated that although services were in the good category (IKM value 79.3), there was still dissatisfaction regarding service procedures and the time frame for completing environmental permits which could affect public trust in the environmental legal system.⁶ Sumartan et al., identified several factors that contributed to low public awareness, including lack of early environmental education, inadequate information about the impacts of environmental damage, and distrust of the effectiveness of the legal system in handling environmental cases.⁷ This condition causes people to be reluctant to report environmental violations they witness, not critical of industrial practices that pollute the environment around them, and even

⁴ Anika Ni'matun Nisa and Suharno, "Penegakan Hukum Terhadap Permasalahan Lingkungan Hidup Untuk Mewujudkan Pembangunan Berkelanjutan (Studi Kasus Kebakaran Hutan Di Indonesia)," *Jurnal Bina Mulia Hukum* 4, no. 2 (March 10, 2020): 294–312, <https://jurnal.fh.unpad.ac.id/index.php/jbmh/article/view/92>.

⁵ Jaringan Advokasi Lingkungan Indonesia, "Prospektus Kebencanaan Dari Penambangan Dan Pengolahan Nikel Di Pulau Obi, Bagian Tak Terpisahkan Dari Cerita Elektrifikasi Sistem Transportasi" (Jakarta, March 25, 2023).

⁶ Badan Pusat Statistik Indonesia, "Statistik Lingkungan Hidup Indonesia 2023" (Jakarta, November 30, 2023), <https://www.bps.go.id/id/publication/2023/11/30/d3456ff24f1d2f2cfd0ccbb0/statistik-lingkungan-hidup-indonesia-2023.html>.

⁷ Sumartan Sumartan, Nur Rahmah Wahyuddin, and Suriadi Suriadi, "Penyuluhan Sampah Sebagai Instrumen Pendidikan Lingkungan: Meningkatkan Kesadaran Dan Partisipasi Masyarakat," *Jurnal Aruna Mengabdi* 1, no. 2 (November 30, 2023): 75–80, <https://doi.org/10.61398/armi.v1i2.27>.

tend to participate in activities that have the potential to damage the environment for short-term economic gain. For example, in the case of land clearing by burning which is still rampant in various regions of Indonesia, many people are involved because they consider it the most practical and economical way, without considering the long-term impacts on air quality, health, and the sustainability of the local ecosystem.

The urgency of enforcing criminal sanctions in environmental cases is based on the inability of administrative and civil sanctions to provide a significant deterrent effect.⁸ Administrative sanctions, such as fines or revocation of business licenses, are often not commensurate with the environmental losses caused, and can actually have broader socio-economic impacts, such as mass layoffs that trigger unemployment and social unrest in society. Meanwhile, the civil legal process tends to be protracted, time-consuming and expensive, so it is unable to handle pollution cases quickly and effectively, especially if the perpetrator has strong legal resources to prolong the lawsuit process. Therefore, criminal sanctions such as imprisonment and heavy fines are a firmer and more effective solution to create a deterrent effect, considering their nature that directly limits the perpetrator's freedom and sends a strong message that environmental damage is a serious crime. With the consistent application of criminal sanctions, perpetrators of pollution will not only think twice about repeating their actions, but there will also be a deterrent effect that prevents other parties from committing similar violations, so that environmental law enforcement can run more optimally in protecting the ecosystem and public interests.

Overall, the increasing cases of environmental pollution and damage in Indonesia require stricter and more effective law enforcement, especially through the application of criminal sanctions that are not only a last resort, but as a real preventive and repressive measure. Weaknesses in law enforcement caused by limited knowledge of officers and minimal public awareness must be immediately addressed with a strategy of increasing capacity and public participation. Thus, environmental conservation efforts can run optimally and Indonesia is able to face the increasingly pressing challenges of the environmental crisis.

2. Method

The method of writing this article is normative, by reviewing and interpreting the main provisions of legislation (Law No. 32/2009 and its implementing regulations), legal doctrine, and environmental court decisions as primary sources; the steps include identifying norms, systematic and logical analysis of the application of criminal sanctions, and comparison with legal practices in other jurisdictions; conclusions are drawn up based on legal consistency and the principle of restorative

⁸ Sumartono Sumartono and Zainal Arifin Hoesein, "Efektivitas Sanksi Pidana Dalam Penanggulangan Penyalahgunaan Pengelolaan Sumber Daya Minyak Dan Gas Bumi Di Indonesia," *JURNAL RETENTUM* 4, no. 1 (February 13, 2025): 20–33, <https://doi.org/10.46930/retentum.v7i1.5270>.

justice to provide appropriate recommendations in order to strengthen the effectiveness of environmental sanctions.⁹

3. Analysis and Discussion

3.1. Effectiveness of the Implementation of Environmental Criminal Sanctions

The effectiveness of legal sanctions in enforcing environmental crimes in Indonesia, especially those regulated in Article 114 of Law Number 32 of 2009 concerning Environmental Protection and Management (UUPPLH), is still being debated.¹⁰ This article regulates criminal sanctions in the form of imprisonment and a maximum fine of up to IDR 1 billion for perpetrators of environmental crimes.¹¹ However, in practice, these criminal sanctions are considered less effective, especially in providing a significant deterrent effect, especially against corporations that are the main perpetrators of environmental damage.¹² This is because criminal law enforcement often only targets individuals and the process is time-consuming and expensive.

In addition, environmental law enforcement in Indonesia faces challenges in terms of the competence of law enforcement officers. Police officers who handle environmental criminal cases do not specifically have expertise in the environmental field, so that the law enforcement process is less than optimal. On the other hand, administrative sanctions such as freezing or revocation of business licenses are considered more effective because they can be directly implemented by government agencies that have special duties and functions in the environmental field. These administrative sanctions are also faster in dealing with environmental damage and encouraging the restoration of damaged environmental functions.¹³

Although the criminal sanctions in Article 114 of the UUPPLH have quite severe threats, their effectiveness in preventing environmental violations is still less than optimal. This raises the need to integrate various types of sanctions, including administrative and civil, so that environmental law enforcement becomes more comprehensive and effective.¹⁴ This more holistic approach is expected to provide a

⁹ Irwansyah Irwansyah, *Penelitian Hukum ; Pilihan Metode & Praktik Penulisan Artikel* (Yogyakarta: Mirra Buana Media, 2020); Peter Mahmud Marzuki, *Penelitian Hukum*, Edisi Revisi (Jakarta: Prenadamedia Group, 2014); Mukti Fajar and Yulianto Achmad, *Dualisme Penelitian Hukum : Normatif & Empiris* (Yogyakarta: Pustaka Pelajar, 2010).

¹⁰ Sahat Maruli T Situmeang, "Efektivitas Sanksi Pidana Dalam Penegakan Hukum Lingkungan" 1, no. 2 (2019).

¹¹ Alfikri Lubis Lubis, "Kebijakan Penghapusan Sanksi Pidana Terhadap Tindak Pidana Lingkungan Hidup Dalam Undang-Undang Nomor 11 Tahun 2020 Tentang Cipta Kerja," *Eksekusi* 3, no. 1 (June 1, 2021): 1-17, <https://doi.org/10.24014/je.v3i1.12467>.

¹² Yudiarto Sihotang, Marnan A. T. Mokorimban, and Rudy M. K. Mamangkey, "Penegakan Hukum Lingkungan Dalam Pengendalian Pencemaran Udara Pada Pabrik Industri Berdasarkan Undang-Undang Nomor 32 Tahun 2009," *Lex Privatum* 14, no. 1 (September 16, 2024), <https://ejournal.unsrat.ac.id/v3/index.php/lexprivatum/article/view/58156>.

¹³ Situmeang, "Efektivitas Sanksi Pidana Dalam Penegakan Hukum Lingkungan."

¹⁴ Eddy Elminsyah Jaya and Maslina Maslina, *Hukum Lingkungan Dan Tata Ruang – Ekonomi Lingkungan (Pengantar Teori Dan Aplikasi)* (Brebes: UMUS Press, 2024).

stronger deterrent effect and encourage business actors and individuals to be more responsible in maintaining environmental sustainability in Indonesia.

Data from West Java Province shows an increasing trend in the number of environmental crime cases even though criminal sanctions have been imposed on the perpetrators. In 2012, there were 122 cases recorded, then increased to 150 cases in 2013, and continued to rise to 172 cases in 2014. The increase in the number of cases reflects that the imposition of criminal sanctions, which should function as a deterrent, has not been able to significantly reduce the number of environmental violations in the region. This indicates weaknesses in the environmental law enforcement system that is applied, both in terms of the effectiveness of sanctions and the implementation of supervision and action.¹⁵

The increase in cases also shows that other factors, such as weak supervision, lack of firmness in law enforcement, and the possibility of non-transparent licensing practices, also contribute to the high number of environmental violations. For example, the case of pollution of the Cikijing River in West Java which continues to recur despite regulations and sanctions, shows that the issuance of waste disposal permits is still often carried out without adequate environmental impact evaluation.¹⁶ This condition shows that criminal sanctions alone are not enough without being supported by strict permit management and the application of the precautionary principle in environmental protection.

In addition, the increase in cases also indicates the need for a more comprehensive approach to environmental law enforcement. This approach must involve synergy between criminal sanctions, administrative sanctions, and education for the community and business actors so that awareness and compliance with environmental regulations increase.¹⁷ Preventive efforts through strengthening regulations, increasing the capacity of law enforcement officers, and active community involvement in environmental supervision are key to reducing the number of violations. Thus, even though criminal sanctions already exist, without the support of an integrated and effective law enforcement system, the increase in cases of environmental crimes in West Java is likely to continue.

The principle of *ultimum remedium* regulated in Law Number 32 of 2009 concerning Environmental Protection and Management (UUPPLH) emphasizes that criminal sanctions must be used as a last resort in enforcing environmental law.¹⁸ This principle implies that before implementing criminal sanctions, enforcement must first be carried out through administrative sanctions, such as warnings, administrative fines,

¹⁵ Ade Mahmud, "Menyoal Efektivitas Sanksi Pidana Dalam Tindak Pidana Lingkungan Hidup Di Provinsi Jawa Barat," *Jurnal Dialektika Hukum* 5, no. 1 (June 20, 2023): 62-77, <https://doi.org/10.36859/jdh.v5i1.1441>.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Bobby Bimantara, Somawijaya Somawijaya, and Imamulhadi Imamulhadi, "Penyidikan Tindak Pidana Lingkungan Hidup Melalui Penerapan Asas *Ultimum Remedium* Dihubungkan Dengan Undang-Undang Nomor 32 Tahun 2009 Tentang Perlindungan Dan Pengelolaan Lingkungan Hidup," *Jurnal Poros Hukum Padjadjaran* 2, no. 2 (May 31, 2021): 366-81, <https://doi.org/10.23920/jphp.v2i2.357>.

freezing of permits, or revocation of business permits.¹⁹ This gradual approach is intended to make law enforcement more proportional and provide an opportunity for business actors or individuals to correct mistakes without having to immediately face repressive and severe criminal penalties. Thus, the principle of *ultimum remedium* is expected to create a balance between environmental protection and legal certainty for business actors.

However, in the practice of environmental law enforcement in Indonesia, the application of the *ultimum remedium* principle is often inconsistent and unstructured. There are a number of cases where criminal sanctions are directly imposed without going through the administrative sanction stage first.²⁰ This condition can occur for several reasons, such as lack of coordination between law enforcement agencies, limited capacity of officers in supervising and evaluating administrative violations, or even because of public pressure and the need to show firm action quickly. As a result, business actors or individuals who could actually still be given the opportunity to correct violations through administrative sanctions are instead immediately faced with a more complicated and long-term criminal process.

The inconsistent application of the *ultimum remedium* principle has various negative impacts, both for the effectiveness of law enforcement and for business actors and the wider community.²¹ From a law enforcement perspective, directly imposing criminal sanctions without administrative stages can increase the burden on the courts and make the legal process longer and more expensive. In addition, this also has the potential to reduce opportunities for peaceful and restorative dispute resolution that prioritizes environmental recovery. From a business actor perspective, an overly harsh approach without the opportunity for improvement can create legal uncertainty and hinder investment that is oriented towards sustainability.²² Therefore, it is necessary to strengthen the law enforcement mechanism that is more systematic and consistent in implementing the *ultimum remedium* principle, so that criminal sanctions truly become an effective last resort in protecting the environment in Indonesia.

Case studies in the Citarum River Basin (DAS) reveal that environmental pollution carried out by corporations has not received adequate criminal sanctions, even though the negative impacts are very large for the community and the surrounding ecosystem. The Citarum River, as one of the longest rivers and the main water source

¹⁹ I. Nyoman Gede Sugiarta and Ida Ayu Putu Widiati, "Tanggungjawab Pemerintah Dalam Pengelolaan Lingkungan Hidup Berbasis Partisipasi Masyarakat untuk Pembangunan Daerah Bali," *KERTHA WICAKSANA* 14, no. 2 (July 23, 2020): 96–102, <https://doi.org/10.22225/kw.14.2.2020.96-102>.

²⁰ Reza Meilanda Lesmana, "Penerapan Asas *Ultimum Remedium* Pada Pelaku Tindak Pidana Pelanggaran Baku Mutu Limbah (Analisis Pasal 100 Uu 32 Tahun 2009)," *Khazanah Multidisiplin* 1, no. 1 (September 28, 2020): 31–45, <https://doi.org/10.15575/km.v1i1.9697>.

²¹ Martua Muda Daulay, "Kebijakan Hukum Terkait Korporasi Yang Terlibat Pencemaran Lingkungan," *Jurnal Notarius* 2, no. 1 (August 7, 2023), <https://jurnal.umsu.ac.id/index.php/notarius/article/view/16133>.

²² Dian Ekawaty Ismail et al., "Model for Legal Settlement on Damage to the Tanjung Panjang Nature Reserve in Pohuwato Regency," *Russian Law Journal* 11, no. 3s (April 5, 2023), <https://doi.org/10.52783/rlj.v11i3s.734>.

in West Java, is heavily polluted due to the disposal of hazardous industrial waste without proper treatment.²³ The case of PT SS, a textile company that was proven to have dumped toxic waste into the river, shows how this pollution has caused damage to water quality, skin diseases, poisoning, and decreased productivity of agriculture and fisheries that depend on the river. Although the government through the Ministry of Environment and Forestry (KLHK) successfully sued and obtained a court decision ordering the company to pay environmental compensation of IDR 48 billion, the criminal sanctions imposed on corporations are still very limited and have not provided a strong deterrent effect for other business actors.²⁴

This phenomenon shows that the implementation of the *ultimum remedium* principle in environmental law enforcement in the Citarum River Basin has not been running effectively. This principle emphasizes that criminal sanctions must be the last resort after administrative sanctions are deemed ineffective, but in practice, corporations that commit major pollution such as in the Citarum are often not immediately subject to strict criminal sanctions. In fact, until now no corporation has actually been sentenced to corporal punishment even though it has been proven to have committed serious violations in the area. This is due to various obstacles, including the complexity of the legal process, weak coordination between institutions, and challenges in proving corporate criminal responsibility.²⁵ Therefore, law enforcement against perpetrators of environmental pollution in the Citarum River Basin still needs to be strengthened with a more comprehensive approach, combining penal and non-penal mechanisms so that corporations are truly responsible and environmental restoration efforts can run optimally.

The deterrent effect of criminal sanctions in environmental law enforcement in Indonesia is a major concern because even though the threat of imprisonment and large fines has been strictly regulated, perpetrators of environmental crimes, especially corporations, often do not feel threatened by these sanctions. This is due to weak law enforcement which is still colored by various obstacles, such as the lack of strict supervision of environmental violators and overlapping applicable legal regulations. Corporations tend to view criminal sanctions as a risk that can be faced because the long legal process and lack of consistency in imposing penalties make them less afraid to repeat violations. In addition, administrative sanctions such as

²³ Sapariah Satri, "Dua Perusahaan Cemari DAS Citarum Kena Hukum Rp16,26 Miliar," *Mongabay.Co.Id* (blog), March 4, 2020, <https://www.mongabay.co.id/2020/03/04/dua-perusahaan-cemari-das-citarum-kena-hukum-rp1626-miliar/>.

²⁴ Putra Adi Fajar Winarsa, Mien Rukmini, and Agus Takariawan, "Implementasi Penegakan Hukum Terhadap Pelaku Tindak Pidana Lingkungan Hidup Oleh Korporasi (Studi Tentang Pencemaran Dan Perusakan Yang Terjadi Di Sungai Citarum)," *Jurnal Poros Hukum Padjadjaran* 4, no. 1 (November 30, 2022): 162, <https://doi.org/10.23920/jphp.v4i1.1066>; Egieta Christy Tarigan and Christine S. T. Kansil, "Analisis Pertanggung Jawaban Korporasi Dalam Penanggulangan Limbah: Studi Kasus 20/Pdt.G/LH/2024/PN Sby," *Journal of Education Religion Humanities and Multidiciplinary* 2, no. 2 (November 30, 2024): 1341–46, <https://doi.org/10.57235/jerumi.v2i2.4293>.

²⁵ Eva Kusuma Wardana et al., "Pertanggungjawaban Hukum Bagi Perusahaan yang Membuang Air Limbah ke Sungai Citarum: (Studi Kasus Putusan Pengadilan Negeri Bandung Nomor 856/Pid.B/LH/2021/PN Bdg)," *Almufi Jurnal Sosial dan Humaniora* 1, no. 3 (November 30, 2024): 430–41, <https://almufi.com/index.php/ASH/article/view/404>.

revocation of business licenses which are actually more effective in creating a deterrent effect are often rarely applied strictly because of economic interests and easy licensing, so that corporations can continue to operate even though they have committed violations.²⁶

Furthermore, strengthening the capacity of law enforcement officers is one of the keys to increasing the effectiveness of criminal sanctions so that they truly provide a deterrent effect. The Director General of Law Enforcement of the Ministry of Environment and Forestry emphasized that environmental law enforcement must be oriented towards restorative justice, which not only punishes perpetrators but also restores environmental damage and community losses. However, to date, environmental law enforcement still tends to provide a momentary shock effect without significant long-term impacts. ²⁷Therefore, synergy is needed between criminal sanctions, administrative sanctions, and comprehensive dispute resolution so that a culture of compliance with environmental regulations can be built, especially for corporations that are the main perpetrators of pollution. Without strict supervision and consistent law enforcement, even large criminal sanctions will not be able to stop or significantly reduce environmental violations.

In the context of environmental law enforcement in Indonesia, administrative sanctions such as government coercion, permit suspension, and environmental permit revocation should be an effective initial step in preventing environmental violations. These sanctions are designed to put direct pressure on business actors to immediately stop activities that damage the environment and carry out recovery in accordance with applicable provisions. However, the effectiveness of these administrative sanctions is often questioned because in practice they are not implemented firmly and consistently. ²⁸One of the main obstacles is the lack of real action from authorized officials in implementing government coercion, so that business actors are sometimes only subject to administrative fines or further sanctions after violations continue without significant improvement. In addition, weak monitoring mechanisms and complicated procedures make administrative sanctions less likely to provide sufficient pressure to encourage compliance, so that environmental violations continue to occur even though these sanctions have been regulated.

In addition, the restorative justice approach is beginning to be seen as a promising alternative in environmental law enforcement. This approach emphasizes the restoration of environmental damage and the active involvement of perpetrators in repairing the negative impacts that have been caused, not just by simply giving

²⁶ Hidayat Salam, "Penegakan Hukum Lingkungan Mesti Beri Efek Jera," *kompas.id*, January 26, 2023, <https://www.kompas.id/baca/humaniora/2023/01/26/perkuat-kapasitas-aparat-penegak-hukum-lingkungan-dibutuhkan>.

²⁷ Pradipta Pandu, "Penegakan Hukum Lingkungan Belum Memberikan Efek Jera," *kompas.id*, August 24, 2022, <https://www.kompas.id/baca/humaniora/2022/08/24/penegakan-hukum-lingkungan-belum-memberikan-efek-jera>.

²⁸ Andri Gunawan Wibisana, "Tentang Ekor Yang Tak Lagi Beracun: Kritik Konseptual Atas Sanksi Administratif dalam Hukum Lingkungan di Indonesia," *Jurnal Hukum Lingkungan Indonesia* 6, no. 1 (2019): 41–71, <https://doi.org/10.38011/jhli.v6i1.123>.

punishment. Restorative justice aims to create more sustainable solutions by involving all relevant parties, including affected communities, so that the process of environmental restoration and social justice can run simultaneously.²⁹ However, the implementation of this approach is still very limited in Indonesia due to the absence of a clear legal framework and strong commitment from law enforcement officers and business actors. To optimize restorative justice, strengthening of regulations, socialization, and training for officers and stakeholders is needed so that this method can be implemented effectively and have a positive impact on preserving the environment.

3.2. Obstacle Main In Implementation Sanctions Criminal Environment In Indonesia

Implementation law environment in Indonesia is facing various complex obstacles, starting from aspect technical until social. Three challenge main ones that are often identified is constraint in proof, weakness coordination between institution enforcer law, and low participation public. Here is description deep about third obstacle the.

3.2.1. Constraint Proof And Proof

One of obstacle main in enforcement law environment is difficulty in collection sufficient evidence, which is very depends on ability technology monitoring And documentation field. Many case pollution environment difficult proven in a way law Because limitations tool And capable system record in a way accurate activity violations, such as disposal waste by House Cut Animals (RPH). In case mentioned, often not available system continuous monitoring and real-time for documenting the disposal process waste in a way right, so that evidence submitted to court become weak And No convincing. Besides that, limitations capacity technical officers in the field also made things worse problem this, because they Not yet fully control technology modern monitoring that can help in valid data collection and can accountable in a way law. Fees tall For procurement And maintenance technology sophisticated also become constraint significant that inhibits implementation system monitoring effective environment in various area.³⁰

However, the development of microelectronic sensor technology and *the Internet of Things (IoT)* offers innovative solutions to overcome these obstacles. Microelectronic technology allows the creation of small sensors that can be installed at various strategic points to monitor water, air, and soil quality in real time at an increasingly affordable cost. For example, microelectronic technology-based sensors developed by the National Research and Innovation Agency (BRIN) are able to measure important parameters such as water acidity (pH), dissolved oxygen content, and water

²⁹ Ika Rachmawati Sukarno Putri, "Analisis Pelanggaran Hukum Lingkungan yang Mengakibatkan Banjir Kalimantan Selatan Januari 2021," *JIM: Jurnal Ilmiah Mahasiswa Pendidikan Sejarah* 8, no. 2 (April 15, 2023): 353–68, <https://doi.org/10.24815/jimps.v8i2.24652>.

³⁰ Julio Rihi Nawa, Jimmy Pello, and Thelma S. M. Kadja, "Hambatan Penegakan Hukum Pidana Lingkungan Bagi Pelaku Pembuangan Air Limbah Pada Rumah Pemotongan Hewan Di Kota Kupang," *Referendum: Jurnal Hukum Perdata Dan Pidana* 1, no. 3 (September 1, 2024): 102–12, <https://doi.org/10.62383/referendum.v1i3.86>.

conductivity, which are very useful for detecting pollution early and accurately. In addition, IoT-based monitoring systems such as the Adaptive Monitoring System (AiMS) have also been implemented to monitor air pollution digitally, providing data that can be accessed directly by law enforcement officers and the public. However, mastery of this technology in Indonesia is still limited and needs to be supported by increasing human resource capacity and adequate investment so that the technology can be operated optimally and sustainably.³¹ With the application of this sophisticated technology, it is hoped that the process of collecting evidence in environmental pollution cases can be more effective, so that law enforcement can be carried out more firmly and provide a real deterrent effect for perpetrators of violations.

3.2.2. Weakness Coordination Between Agency

Enforcement law environment in Indonesia involves various institution important like Ministry Environment Life And Forestry (KLHK), police, and prosecutors, each of whom own role strategic in supervise And take action violation environment. However, in in practice, coordination between institution This often not walk effective, so that hinder implementation policy the environment that should be can walk in a way synergistic And integrated. Ineffectiveness coordination This often cause overlap overlap authority, confusion in distribution tasks, and slowness response to cases emerging environment. For example, in supervision management Trash in Place Processing End (TPA), lack of similarity perception between Investigator Employee Country Civil (PPNS) and Supervisor Environment Life (PLH) results in weakness supervision And enforcement law, which on Finally to worsen condition pollution environment in various area.³² This condition emphasizes the need for more intensive and structured coordination between institutions so that environmental law enforcement can run more effectively and sustainably.

To overcome these obstacles, strengthening the capacity of related institutions is very crucial. This includes improving human resources through training and developing the competence of law enforcement officers, as well as improving technological facilities and infrastructure to support supervision and enforcement. In addition, improving communication and coordination between agencies must be carried out continuously through regular coordination forums, such as the law enforcement coordination meeting held by the Ministry of Environment and Forestry, which emphasized the importance of a multi-instrument approach and restorative justice in environmental law enforcement. This approach not only requires criminal law enforcement, but also integrates administrative sanctions and environmental restoration measures simultaneously, so that it can create a deterrent effect while repairing environmental damage.³³ Furthermore, multi-stakeholder collaboration

³¹ Muhammad Jailani and Muhammad Faisal, "Sistem Pembuktian Pidana Pada Pelanggaran Hukum Lingkungan Di Indonesia," *JURNAL SOSIAL EKONOMI DAN HUMANIORA* 10, no. 3 (September 30, 2024): 512–19, <https://doi.org/10.29303/jseh.v10i3.675>.

³² Donny Seta, "Implementasi Hukum Lingkungan Di Indonesia: Analisis Kebijakan Dan Praktik Penegakan Hukum," *Jurnal Ilmu Hukum, Humaniora Dan Politik* 5, no. 2 (2025): 1338–47, <https://doi.org/10.38035/jihhp.v5i2.3555>.

³³ Ibid.

involving local governments, the private sector, and the community also needs to be strengthened to support the effectiveness of law enforcement and increase public awareness and participation in environmental supervision. With these steps, it is hoped that synergy between agencies can be realized so that environmental law enforcement in Indonesia becomes more optimal and sustainable.

3.2.3. Lack Source Power Man Trained

Besides problem weak coordination between institution enforcer law, deficiency source Power trained human resources And competent also become constraint big in enforcement law environment in Indonesia. Many apparatus enforcer law, both at the level of police, prosecutors, and employee country civilian on duty as Investigator Employee Country Civil (PPNS) in the field of environment alive, still Not yet own deep understanding And comprehensive about aspects law environment. This is impact direct on quality of the investigation process And prosecution cases often complex environments And need skill special, such as collection proof scientific, analysis impact environment, as well as implementation relevant regulations. This unpreparedness of human resources cause Lots case pollution And damage environment difficult For followed up optimally, even potential end with decision lack of law firm or No in accordance with level the damage that occurred.³⁴

The lack of specific training and education in environmental law for law enforcement officers further exacerbates this situation. Formal education and ongoing technical training are urgently needed so that officers can understand the ins and outs of environmental law, from regulatory aspects, investigative procedures, to valid scientific evidence collection and processing techniques. Unfortunately, the training currently available is still limited in terms of both quantity and quality, so that not all officers get adequate opportunities to improve their competence. In addition, the lack of budget support and facilities is also an obstacle in implementing the training. For this reason, the government and related institutions need to pay serious attention by developing structured and ongoing training programs, as well as collaborating with educational institutions and environmental research institutions so that law enforcement officers have adequate capabilities in handling environmental cases professionally and effectively. ³⁵With adequate human resource capacity building, it is hoped that environmental law enforcement in Indonesia can run more optimally and provide real protection for environmental sustainability.

3.2.4. Low Public Awareness and Education

Public participation in reporting environmental violations in Indonesia is still relatively low, which is one of the significant obstacles in effective environmental law enforcement efforts. This low participation is largely influenced by the lack of public awareness and education regarding the importance of environmental protection. Most

³⁴ MYS/RIA, "4 Masalah yang Dihadapi Penyidik Kasus Lingkungan Hidup," [hukumonline.com](https://www.hukumonline.com/berita/a/4-masalah-yang-dihadapi-penyidik-kasus-lingkungan-hidup-lt573a6ea417e97/), 2016, <https://www.hukumonline.com/berita/a/4-masalah-yang-dihadapi-penyidik-kasus-lingkungan-hidup-lt573a6ea417e97/>.

³⁵ Ibid.

people do not fully understand their rights and obligations in preserving the environment, so they are less motivated to actively report actions that damage the environment around them.³⁶In addition, the lack of adequate information regarding the mechanism for reporting environmental violations is also an inhibiting factor, where people do not know to whom and how to report the violations officially and effectively. This condition is exacerbated by the uncertainty of the response and follow-up to the reports they submit, thus creating a sense of skepticism and apathy among the public.

As a result of this low level of public participation, social pressure on environmental violators is very minimal, so that perpetrators feel freer to carry out actions that harm the environment without fear of significant social or legal consequences.³⁷In fact, the active role of the community is very important as environmental supervisors who are directly in the field and can provide accurate and fast information to law enforcement officers.³⁸To increase public participation, systematic efforts are needed in the form of comprehensive and sustainable environmental education, both through schools, mass media, and community programs that directly involve the community. In addition, the government and related institutions must provide reporting channels that are easily accessible, transparent, and responsive, so that the community feels heard and their contributions are appreciated. With increased public awareness and involvement, it is hoped that environmental law enforcement can become more effective and environmental violations can be significantly reduced in order to create a healthy and sustainable environment.

3.2.5. Lack of Access to Information and Transparency

Limited access to information on environmental conditions and activities that have the potential to damage the environment is a major obstacle to increasing public participation in Indonesia.³⁹Many communities do not receive sufficient and transparent information about development projects or industrial activities that can have a negative impact on the environment in their area. This lack of transparency makes it difficult for communities to understand the potential risks and environmental consequences that may arise, so they cannot participate effectively in the decision-making process related to environmental protection and management.

³⁶ Kevin Leonardo Tindaon and Nuri Hidayati, "Implementasi Sistem Pengawasan Oleh Polri Terhadap Kasus Pelanggaran Hukum Lingkungan Di Kota Batam," *Jurnal Lawnesia (Jurnal Hukum Negara Indonesia)* 3, no. 2 (December 16, 2024): 536–47, https://ejournal.ubibanyuwangi.ac.id/index.php/jurnal_lawnesia/article/view/432.

³⁷ Rangga Okta Budianto and Lathifa Prima Ghanistyana, "Peran Komunikasi Politik Dalam Kampanye Isu Lingkungan: Studi Kasus Pada Kebijakan Pengelolaan Sampah Di Indonesia," *Jurnal Bisnis Dan Komunikasi Digital* 2, no. 1 (September 27, 2024): 11–11, <https://doi.org/10.47134/jbkdv2i1.3219>.

³⁸ Admin Admin, "Peran Serta Masyarakat Dalam Pengelolaan Lingkungan Hidup – Pusat Studi Lingkungan Hidup UGM," January 11, 2022, <https://pslh.ugm.ac.id/peran-serta-masyarakat-dalam-pengelolaan-lingkungan-hidup/>.

³⁹ Nadira Tatyana and Achmad Ramadhandhy Y. Putra, "Pemenuhan Hak atas Akses Informasi Lingkungan Hidup dan Partisipasi Publik terhadap Pencemaran Udara DKI Jakarta," *Jurnal Hukum Lingkungan Indonesia* 8, no. 2 (September 21, 2022): 372–401, <https://doi.org/10.38011/jhli.v8i2.420>.

⁴⁰In fact, according to Law Number 32 of 2009 concerning Environmental Protection and Management (UUPPLH), the government is required to provide complete and easily accessible information to the public, from the national to regional levels, so that the public's right to obtain environmental information can be optimally fulfilled.

The state has a responsibility to ensure that every individual has proper and easy access to environmental information held by public authorities. Fulfillment of the right to access environmental information is not only important to increase public awareness, but also becomes the basis for them to be able to actively participate in environmental monitoring and decision-making. For example, in the Environmental Impact Analysis (AMDAL) process, transparency of information and direct public involvement can help the community assess the social, economic, and environmental impacts of a project, and provide constructive input. However, challenges that are still faced include lack of socialization, limited environmental literacy, and uneven access to information technology, especially in remote areas. ⁴¹Therefore, collaborative efforts are needed between the government, non-governmental organizations, and the private sector to increase transparency, provide information in an easy-to-understand format, and build inclusive and responsive participation mechanisms. Thus, the community can be more empowered to maintain the environment sustainably and play an active role in decision-making that impacts their environment.

5. Conclusion

Based on the description above, it can be concluded that environmental law enforcement in Indonesia still faces various complex challenges, ranging from weak coordination between law enforcement agencies, limited trained human resources, to low public participation in reporting environmental violations. In addition, the effectiveness of criminal and administrative sanctions has not been optimal due to inconsistent application and lack of strict supervision of perpetrators of violations, especially corporations. Technical obstacles in collecting evidence and limited access to environmental information are also factors that hinder public participation and effective law enforcement. Therefore, it is necessary to strengthen the capacity of law enforcement officers, improve coordination between agencies, and empower communities through education and transparency of environmental information. A comprehensive approach, including the application of the principle of *ultimum remedium* and restorative justice, is expected to increase the effectiveness of environmental law enforcement so that it can provide real protection for environmental sustainability in Indonesia.

References

⁴⁰ Ibid.

⁴¹ Akmal Haris, Rayhan Nizam Mahendra, and Yazid An Naufal, "Pemenuhan Hak Atas Akses Informasi Lingkungan Hidup Terhadap Pencemaran Udara DKI Jakarta," *Aliansi: Jurnal Hukum, Pendidikan Dan Sosial Humaniora* 1, no. 5 (June 21, 2024): 121–28, <https://doi.org/10.62383/aliansi.v1i5.388>.

- Admin, Admin. "Peran Serta Masyarakat Dalam Pengelolaan Lingkungan Hidup – Pusat Studi Lingkungan Hidup UGM," January 11, 2022. <https://pslh.ugm.ac.id/peran-serta-masyarakat-dalam-pengelolaan-lingkungan-hidup/>.
- Bimantara, Bobby, Somawijaya Somawijaya, and Imamulhadi Imamulhadi. "Penyidikan Tindak Pidana Lingkungan Hidup Melalui Penerapan Asas Ultimum Remedium Dihubungkan Dengan Undang-Undang Nomor 32 Tahun 2009 Tentang Perlindungan Dan Pengelolaan Lingkungan Hidup." *Jurnal Poros Hukum Padjadjaran* 2, no. 2 (May 31, 2021): 366–81. <https://doi.org/10.23920/jphp.v2i2.357>.
- Budianto, Rangga Okta, and Lathifa Prima Ghanistyana. "Peran Komunikasi Politik Dalam Kampanye Isu Lingkungan: Studi Kasus Pada Kebijakan Pengelolaan Sampah Di Indonesia." *Jurnal Bisnis Dan Komunikasi Digital* 2, no. 1 (September 27, 2024): 11–11. <https://doi.org/10.47134/jbkd.v2i1.3219>.
- Daulay, Martua Muda. "Kebijakan Hukum Terkait Korporasi Yang Terlibat Pencemaran Lingkungan." *Jurnal Notarius* 2, no. 1 (August 7, 2023). <https://jurnal.umsu.ac.id/index.php/notarius/article/view/16133>.
- Elminsyah Jaya, Eddy, and Maslina Maslina. *Hukum Lingkungan Dan Tata Ruang – Ekonomi Lingkungan (Pengantar Teori Dan Aplikasi)*. Brebes: UMUS Press, 2024.
- Fajar, Mukti, and Yulianto Achmad. *Dualisme Penelitian Hukum : Normatif & Empiris*. Yogyakarta: Pustaka Pelajar, 2010.
- Haris, Akmal, Rayhan Nizam Mahendra, and Yazid An Naufal. "Pemenuhan Hak Atas Akses Informasi Lingkungan Hidup Terhadap Pencemaran Udara DKI Jakarta." *Aliansi: Jurnal Hukum, Pendidikan Dan Sosial Humaniora* 1, no. 5 (June 21, 2024): 121–28. <https://doi.org/10.62383/aliansi.v1i5.388>.
- Indonesia, Badan Pusat Statistik. "Statistik Lingkungan Hidup Indonesia 2023." Jakarta, November 30, 2023. <https://www.bps.go.id/id/publication/2023/11/30/d3456ff24f1d2f2cfd0ccb0/statistik-lingkungan-hidup-indonesia-2023.html>.
- Irwansyah, Irwansyah. *Penelitian Hukum ; Pilihan Metode & Praktik Penulisan Artikel*. Yogyakarta: Mirra Buana Media, 2020.
- Ismail, Dian Ekawaty, Ahmad Ahmad, Fence M Wantu, and Novendri Mohamad Nggilu. "Model for Legal Settlement on Damage to the Tanjung Panjang Nature Reserve in Pohuwato Regency." *Russian Law Journal* 11, no. 3s (April 5, 2023). <https://doi.org/10.52783/rlj.v11i3s.734>.
- Jailani, Muhammad, and Muhammad Faisal. "Sistem Pembuktian Pidana Pada Pelanggaran Hukum Lingkungan Di Indonesia." *JURNAL SOSIAL EKONOMI DAN HUMANIORA* 10, no. 3 (September 30, 2024): 512–19. <https://doi.org/10.29303/jseh.v10i3.675>.
- Jaringan Advokasi Lingkungan Indonesia. "Prospektus Kebencanaan Dari Penambangan Dan Pengolahan Nikel Di Pulau Obi, Bagian Tak Terpisahkan Dari Cerita Elektrifikasi Sistem Transportasi." Jakarta, March 25, 2023.
- Kementerian Lingkungan Hidup. "Laporan Kinerja Tahun 2023: "Memperkuat Sumbangan Tapak Untuk Pemulihan Ekonomi Nasional Dan Reformasi Struktura." Jakarta, 2023.

- Lesmana, Reza Meilanda. "Penerapan Asas Ultimum Remedium Pada Pelaku Tindak Pidana Pelanggaran Baku Mutu Limbah (Analisis Pasal 100 Uu 32 Tahun 2009)." *Khazanah Multidisiplin* 1, no. 1 (September 28, 2020): 31–45. <https://doi.org/10.15575/km.v1i1.9697>.
- Lubis, Alfikri Lubis. "Kebijakan Penghapusan Sanksi Pidana Terhadap Tindak Pidana Lingkungan Hidup Dalam Undang-Undang Nomor 11 Tahun 2020 Tentang Cipta Kerja." *Eksekusi* 3, no. 1 (June 1, 2021): 1–17. <https://doi.org/10.24014/je.v3i1.12467>.
- Mahmud, Ade. "Menyoal Efektivitas Sanksi Pidana Dalam Tindak Pidana Lingkungan Hidup Di Provinsi Jawa Barat." *Jurnal Dialektika Hukum* 5, no. 1 (June 20, 2023): 62–77. <https://doi.org/10.36859/jdh.v5i1.1441>.
- Mahmud Marzuki, Peter. *Penelitian Hukum*. Edisi Revisi. Jakarta: Prenadamedia Group, 2014.
- MYS/RIA. "4 Masalah yang Dihadapi Penyidik Kasus Lingkungan Hidup." *hukumonline.com*, 2016. <https://www.hukumonline.com/berita/a/4-masalah-yang-dihadapi-penyidik-kasus-lingkungan-hidup-lt573a6ea417e97/>.
- Nawa, Julio Rihi, Jimmy Pello, and Thelma S. M. Kadja. "Hambatan Penegakan Hukum Pidana Lingkungan Bagi Pelaku Pembuangan Air Limbah Pada Rumah Pemotongan Hewan Di Kota Kupang." *Referendum: Jurnal Hukum Perdata Dan Pidana* 1, no. 3 (September 1, 2024): 102–12. <https://doi.org/10.62383/referendum.v1i3.86>.
- Nisa, Anika Ni'matun, and Suharno. "Penegakan Hukum Terhadap Permasalahan Lingkungan Hidup Untuk Mewujudkan Pembangunan Berkelanjutan (Studi Kasus Kebakaran Hutan Di Indonesia)." *Jurnal Bina Mulia Hukum* 4, no. 2 (March 10, 2020): 294–312. <https://jurnal.fh.unpad.ac.id/index.php/jbmh/article/view/92>.
- Pandu, Pradipta. "Penegakan Hukum Lingkungan Belum Memberikan Efek Jera." *kompas.id*, August 24, 2022. <https://www.kompas.id/baca/humaniora/2022/08/24/penegakan-hukum-lingkungan-belum-memberikan-efek-jera>.
- Paruki, Novia Rahmawati A., and Ahmad Ahmad. "Efektivitas Penegakan Hukum Tambang Ilegal." *Batulis Civil Law Review* 3, no. 2 (August 26, 2022): 177–86. <https://doi.org/10.47268/ballrev.v3i2.966>.
- Putri, Ika Rachmawati Sukarno. "Analisis Pelanggaran Hukum Lingkungan yang Mengakibatkan Banjir Kalimantan Selatan Januari 2021." *JIM: Jurnal Ilmiah Mahasiswa Pendidikan Sejarah* 8, no. 2 (April 15, 2023): 353–68. <https://doi.org/10.24815/jimps.v8i2.24652>.
- Salam, Hidayat. "Penegakan Hukum Lingkungan Mesti Beri Efek Jera." *kompas.id*, January 26, 2023. <https://www.kompas.id/baca/humaniora/2023/01/26/perkuat-kapasitas-aparat-penegak-hukum-lingkungan-dibutuhkan>.
- Saturi, Sapariah. "Dua Perusahaan Cemari DAS Citarum Kena Hukum Rp16,26 Miliar." *Mongabay.Co.Id* (blog), March 4, 2020. <https://www.mongabay.co.id/2020/03/04/dua-perusahaan-cemari-das-citarum-kena-hukum-rp1626-miliar/>.

- Setha, Donny. "Implementasi Hukum Lingkungan Di Indonesia: Analisis Kebijakan Dan Praktik Penegakan Hukum." *Jurnal Ilmu Hukum, Humaniora Dan Politik* 5, no. 2 (2025): 1338–47. <https://doi.org/10.38035/jihhp.v5i2.3555>.
- Sihotang, Yudiarto, Marnan A. T. Mokorimban, and Rudy M. K. Mamangkey. "Penegakan Hukum Lingkungan Dalam Pengendalian Pencemaran Udara Pada Pabrik Industri Berdasarkan Undang-Undang Nomor 32 Tahun 2009." *Lex Privatum* 14, no. 1 (September 16, 2024). <https://ejournal.unsrat.ac.id/v3/index.php/lexprivatum/article/view/58156>.
- Situmeang, Sahat Maruli T. "Efektivitas Sanksi Pidana Dalam Penegakan Hukum Lingkungan" 1, no. 2 (2019).
- Sugiartha, I. Nyoman Gede, and Ida Ayu Putu Widiati. "Tanggungjawab Pemerintah Dalam Pengelolaan Lingkungan Hidup Berbasis Partisipasi Masyarakat untuk Pembangunan Daerah Bali." *KERTHA WICAKSANA* 14, no. 2 (July 23, 2020): 96–102. <https://doi.org/10.22225/kw.14.2.2020.96-102>.
- Sumartan, Sumartan, Nur Rahmah Wahyuddin, and Suriadi Suriadi. "Penyuluhan Sampah Sebagai Instrumen Pendidikan Lingkungan: Meningkatkan Kesadaran Dan Partisipasi Masyarakat." *Jurnal Aruna Mengabdi* 1, no. 2 (November 30, 2023): 75–80. <https://doi.org/10.61398/armi.v1i2.27>.
- Sumartono, Sumartono, and Zainal Arifin Hoesein. "Efektivitas Sanksi Pidana Dalam Penanggulangan Penyalahgunaan Pengelolaan Sumber Daya Minyak Dan Gas Bumi Di Indonesia." *JURNAL RETENTUM* 4, no. 1 (February 13, 2025): 20–33. <https://doi.org/10.46930/retentum.v7i1.5270>.
- Tarigan, Egieta Christy, and Christine S. T. Kansil. "Analisis Pertanggung Jawaban Korporasi Dalam Penanggulangan Limbah: Studi Kasus 20/Pdt.G/LH/2024/PN Sby." *Journal of Education Religion Humanities and Multidiciplinary* 2, no. 2 (November 30, 2024): 1341–46. <https://doi.org/10.57235/jerumi.v2i2.4293>.
- Tatyana, Nadira, and Achmad Ramadhandhy Y. Putra. "Pemenuhan Hak atas Akses Informasi Lingkungan Hidup dan Partisipasi Publik terhadap Pencemaran Udara DKI Jakarta." *Jurnal Hukum Lingkungan Indonesia* 8, no. 2 (September 21, 2022): 372–401. <https://doi.org/10.38011/jhli.v8i2.420>.
- Tindaon, Kevin Leonardo, and Nuri Hidayati. "Implementasi Sistem Pengawasan Oleh Polri Terhadap Kasus Pelanggaran Hukum Lingkungan Di Kota Batam." *Jurnal Lawnesia (Jurnal Hukum Negara Indonesia)* 3, no. 2 (December 16, 2024): 536–47. https://ejournal.ubibanyuwangi.ac.id/index.php/jurnal_lawnesia/article/view/432.
- Wardana, Eva Kusuma, Markoni Kantika, Horadin Saragih, and I. Made Kantikha. "Pertanggungjawaban Hukum Bagi Perusahaan yang Membuang Air Limbah ke Sungai Citarum: (Studi Kasus Putusan Pengadilan Negeri Bandung Nomor 856/Pid.B/LH/2021/PN Bdg)." *Almufi Jurnal Sosial dan Humaniora* 1, no. 3 (November 30, 2024): 430–41. <https://almufi.com/index.php/ASH/article/view/404>.
- Wibisana, Andri Gunawan. "Tentang Ekor Yang Tak Lagi Beracun: Kritik Konseptual Atas Sanksi Administratif dalam Hukum Lingkungan di Indonesia." *Jurnal*

- Hukum Lingkungan Indonesia* 6, no. 1 (2019): 41–71.
<https://doi.org/10.38011/jhli.v6i1.123>.
- Winarsa, Putra Adi Fajar, Mien Rukmini, and Agus Takariawan. “Implementasi Penegakan Hukum Terhadap Pelaku Tindak Pidana Lingkungan Hidup Oleh Korporasi (Studi Tentang Pencemaran Dan Perusakan Yang Terjadi Di Sungai Citarum).” *Jurnal Poros Hukum Padjadjaran* 4, no. 1 (November 30, 2022): 162.
<https://doi.org/10.23920/jphp.v4i1.1066>.
- Yanti, Dinda Fitri Yudha, Latifah Nurjannah Sartono, and Ubaidillah Kamal. “Tantangan Dalam Penegakkan Peraturan Lingkungan Hidup Di Era Digital.” *Jurnal Multidisiplin Ilmu Akademik* 1, no. 3 (May 27, 2024): 384–93.
<https://doi.org/10.61722/jmia.v1i3.1472>.