



## Analysis of The Concept of Green Legislation on Draft Regulation on Groundwater Conservation and Biopore Infiltration Holes in Cirebon City in 2024

Moh. Sigit Gunawan <sup>1</sup>, Deni Yusup Permana <sup>2</sup>, Diky Dikrurrahman <sup>3</sup>, Fahad Wiranata <sup>4</sup>, Adi Anggara <sup>5</sup>, Karmenita <sup>6</sup>

<sup>1</sup> University of Swadaya Gunung Jati, Cirebon, Indonesia. Email [sigit.gunawan@ugj.ac.id](mailto:sigit.gunawan@ugj.ac.id)

<sup>2</sup> Swadaya University of Gunung Jati, Cirebon, Indonesia. Email [deni.yusup@ugj.ac.id](mailto:deni.yusup@ugj.ac.id)

<sup>3</sup> Universitas Swadaya Gunung Jati, Cirebon, Indonesia. Email [diky.dikrurrahman@ugj.ac.id](mailto:diky.dikrurrahman@ugj.ac.id)

<sup>4</sup> University of Swadaya Gunung Jati, Cirebon, Indonesia. Email [fahadwiranata1407@gmail.com](mailto:fahadwiranata1407@gmail.com)

<sup>5</sup> University of Swadaya Gunung Jati, Cirebon, Indonesia

<sup>6</sup> University of Swadaya Gunung Jati, Cirebon, Indonesia. Email [karmenita12@student.ub.ac.id](mailto:karmenita12@student.ub.ac.id)

Corresponding Author Email [sigit.gunawan@ugj.ac.id](mailto:sigit.gunawan@ugj.ac.id)

### Abstract

#### Background.

**Aim.** This study aims to analyze the application of the concept of Green Legislation to the Draft Regional Regulation (Raperda) on Groundwater Conservation and Biopore Infiltration Holes in Cirebon City in 2024

**Methods.** This research uses a normative juridical method, which focuses on studying legal doctrines, legal principles, and regulations relevant to the research topic.

**Result.** Based on an analysis of the 2024 Cirebon City Groundwater Conservation and Biopore Infiltration Hole Draft Regulation, it was found that a number of Green Legislation principles have been implemented, reflecting sustainability, wise management of natural resources, and environmental protection. The analysis results show that this draft regulation has included several principles of Green Legislation, such as regulations regarding water conservation and bio-pore management. However, there are gaps in implementation that need to be corrected.

**Conclusion.** Therefore, the Cirebon City Government needs to improve the quality of the preparation of the Regional Regulation on Groundwater Conservation and Biopore Infiltration Holes by strengthening the integration of Green Legislation principles, especially aspects of sustainability, community participation, and wise management of natural resources. This effort can start by clarifying technical standards for constructing infiltration pits, improving the supervision and law enforcement system, and involving the community in socialization and policy implementation.

**Implication.** Harmonization is needed between this Raperda and national policies such as the Job Creation Law to minimize the potential for regulatory conflicts and achieve the goal of preserving groundwater resources effectively and consistent with the principles of sustainable development.

**Keywords:** bio-pore, green legislation, conservation, groundwater, infiltration hole

## INTRODUCTION

Global water consumption has consistently risen over the past thirty years which is expected to persist. Since the 1990s, water quality degradation has intensified, and this trend is anticipated to continue, presenting a more significant threat to sustainability and human health and the ecosystem. Rapid population growth, swift urbanization, and climate change pose a significant danger to the availability and quality of drinking water, exacerbating the unpredictability of natural events and land use patterns. Another consideration is the potential for groundwater recharge pollution, resulting from reducing non-point pollutants conveyed from urban surfaces to surface water (Arora & Mishra, 2022; Rehman et al., 2023).

These hydrological phenomena have resulted in numerous environmental and socioeconomic issues. Comprehensive master planning is essential for the creation of resilient communities and the mitigation of risks. In this context, Adaptation must account for the risks associated with one or more factors—hydrological dangers at a specific location (Tufail et al., 2025).

Resilient communities have representative, responsive, and well-established civic systems. Higher levels of information sharing, efficient resource management, and disaster readiness are correlated with community engagement and collaboration. Community governance and engagement are essential to ensure that water and sanitation systems are successfully adapted to climate change and to promote resilience. Scholars have used several approaches to examine the potential vulnerability and resilience adaptation for water supply technologies and management (Falkland & White, 2020; Jain et al., 2020; Kohlitz et al., 2019; Nagabhatla & Brahmhatt, 2020). However, these studies must provide more complex techniques to monitor the water supply system's resilience within a limited time, which may be utilized in different scenarios. To cover this gap, (Howard et al., 2021) introduced a new framework.

Leedy and Ormrod define the research method as "the general approach the researcher takes in carrying out the research project. "That is the general approach used by researchers in a study. From this definition, research methods are understood as a way to solve problems or develop science with a scientific approach. A research method includes techniques or procedures to identify and analyze information related to a particular topic.(1) Including legal doctrine, which is the basis for the formation of laws and regulations.

According to Sugiyono, research methods are a scientific way to obtain valid data to find, develop, and prove specific knowledge. It aims to understand, solve, and anticipate specific problems (Efendi, 2022). It also aims to understand, solve, and anticipate specific problems that arise in research. For example, in this study, a deeper understanding of the concept of Green Legislation is crucial to analyze Raperda's conformity with the principles of environmental sustainability.

This normative juridical research discusses the doctrines and principles in legal science that are the basis for forming laws and regulations. As stipulated in Articles 5 and 6 of Law Number 10 of 2004 concerning the Formation of Laws and Regulations, several principles must be fulfilled in the formation of regulations (Ali & Lai, 2021), such as clarity of purpose, proper shaping institutions, conformity between type and payload material, Implementation qualifications, justice, and legal certainty.

In addition, the content of the regulations must also contain the principles of protection, humanity, nationality, family, and other values under their respective legal fields. Thus, this study focuses on the study of legal principles or doctrines in the existing legal system, although this normative juridical research is often considered less applicable than empirical research. However, it is important to note that this research remains relevant in the context of analyzing the Raperda, which is a legal product that leads to environmental sustainability.

## **LITERATURE REVIEW**

The literature review serves as a theoretical basis to support research. This research refers to Green Legislation, which focuses on forming environmentally friendly laws and regulations. This concept emphasizes that regulations must reflect the principles of sustainability, responsible resource management, and environmental protection in the long term. In support of this, legal theory provides a broader view of how law can be adapted to meet the environment's and society's needs.

The legal theory approach, which divides legal science into three main layers of legal dogmatics, legal theory (in a narrow sense), and legal philosophy, has an important role in forming an analytical foundation. An in-depth understanding of these three layers is important, especially in ensuring that legal concepts such as Green Legislation are applied appropriately. For example, Radbruch stated that legal theory clarifies the value and postulate of law to its philosophical basis. This is relevant in this research because the value of sustainability needs to be placed as the basis of the applicable legal philosophy.(1)

This research utilizes various relevant legal theories to explain the concepts of sustainability and justice. Here are the main theories used:

### **Green Legislation *Concept***

Article 33 Paragraph 4 of the 1945 Constitution seeks to integrate economic development with democracy, solidarity, efficiency, justice, sustainability, and other environmental principles. This provision emphasizes the importance of ensuring that economic development is oriented towards material gains and considers the balance of the environment. However, the provisions in Article 33 Paragraph 4 of the 1945 Constitution are still informed in general language. Hence, they require further elaboration through lower rules, such as laws or regional policies. The elaboration is needed to provide more operational guidance, including in a dispute requiring court interpretation (Purwendah, 2019).

Article 28 H Paragraph 1 of the 1945 Constitution states that "everyone has the right to live a prosperous life in birth and mind, to live and get a good and healthy living environment and the right to receive health services." This article provides a strong basis that the right to a healthy environment is part of the human rights that the state must protect. In this case, Article 28 H Paragraph 1 of the 1945 Constitution shows that environmental rights have been constitutionalized, making them a policy issue and a fundamental right with binding legal force (Purwendah, 2019). Thus, implementing this right requires concrete steps from the government to ensure its sustainable fulfillment.

The concept of the Green Constitution is closely related to the country's constitution, so when discussing it, we refer to the 1945 Constitution of the Republic of Indonesia. In practice, the application of the concept of the Green Constitution is further elaborated through environmental laws, referred to as green legislation. Regulations under this constitution are designed to pay attention to environmental aspects while supporting sustainable development. One example is Law Number 32 of 2009 concerning Environmental Protection and Management, which is the primary basis for ensuring that the principles of sustainable development are used to implement regional development (Ranjani & Hendi, 2024).

This means that every development policy, plan, and program designed by the government, both at the central and regional levels, must align with the principles in the law. As part of the Green Constitution, this regulation aims to create a legal system integrating environmental norms into every development aspect. Thus, the Green Constitution refers to applying environmental norms in the constitution, which is then elaborated in more detail

through laws such as the Environmental Protection and Management Law (Ranjani & Hendi, 2024). This step reflects the country's commitment to ensuring the ecosystem's sustainability and future generations' welfare.

In addition, the green constitution aims to integrate sustainability and environmental protection principles into the country's basic laws, hoping to create fair, transparent, and responsible management of natural resources. This principle also emphasizes the importance of ecosystem balance as part of long-term oriented national development. Through the implementation of the Green Constitution, it is hoped that all development policies can provide optimal benefits not only for the current community but also for future generations (Chandra et al., 2024).

### **Progressive Legal Theory**

Progressive comes from the word progress, which means progress. The law must be able to keep up with the times, respond to changes that occur, and serve the community based on the morality of law enforcers (Rahardjo, 2006). In this context, the law must not be rigid and static but must be able to adapt to social dynamics and the needs of society that continue to develop. This confirms that the law is a written rule and a tool designed to bring about positive societal change.

Progressive law is a legal concept that depends on humans' ability to reason, understand, and use conscience in making legal interpretations that prioritize moral values and justice for society (Sudihar, 2026). Therefore, applying progressive law requires a deep understanding of the social context and awareness of the importance of substantive justice, not just procedural justice. This approach directs law enforcers to focus not only on compliance with legal texts but also on the purpose of the law, which is to serve humanity's interests holistically.

In progressive law theory, man becomes the core and goal rather than the law. The law was created to serve humans, not vice versa. Therefore, understanding the needs, interests, and dynamics of human beings is very important in the law enforcement process. Human beings, with all their complexities, are the center of law, so every policy or legal decision must consider its impact on human life (Sahputra, 2022).

According to Satjipto Raharjo, several human factors drive the law, such as empathy, sincerity, and courage (compassion, empathy, sincerity, education, commitment, dare, and *determination*) (Sahputra, 2022). These factors indicate that effective law enforcement requires high moral integrity and commitment from law enforcers. Thus, progressive law

requires technical mastery of regulations and law enforcers to have courage and sincerity in the pursuit of true justice.

This theory emphasizes that law should serve as a tool to create a better society, not just as a means to regulate behavior. Therefore, a progressive approach has become relevant in dealing with complex modern challenges, such as social conflicts, economic inequality, and environmental damage.

### **Sustainability Theory**

*The Sustainable Development Goals (SDGs), approved by the United Nations on September 25, 2015, aim to maintain the sustainable improvement of the economy, community welfare, environment, and social life through 17 goals with 169 achievements (Tan & Irawan, 2024).* In this case, the SDGs provide global guidelines that each country must adapt to create a balance between economic growth and environmental protection, which ultimately aims to improve the quality of life of the community as a whole.

Local governments are authorized to play a role starting from the planning process, strategy formulation, and policy formulation to permit issuance. Therefore, local governments have a significant responsibility to ensure that their policies reflect sustainability principles. The role of local governments is crucial in realizing regional green legislation that supports the achievement of the 2030 SDGs, especially in Goal Number 7 related to clean and affordable energy (Fitriana et al., 2022).

The commitment to sustainability in environmental management is also reflected in applying sustainability law principles that integrate environmental protection into state legal policies. These principles aim to create harmony between development and environmental conservation, which is the main foundation in maintaining the ecosystem's balance for future generations' benefit (Athar et al., 2024). This principle reminds us that development should not sacrifice ecosystems but must strengthen their carrying capacity.

Sustainability Law can be defined as a legal framework designed to achieve sustainable development by integrating sustainability principles into the country's legal system and policies (Dernbach & Mintz, 2011). In Indonesia, various sustainability laws are implemented, especially in the UUPPLH. This law establishes a framework that supports the management and protection of the environment, intending to ensure sustainable development. This shows that sustainability is not just a concept but has become a binding legal commitment for all parties involved in natural resource management.

In the explanation of Article 2 letter c of the UUPPLH, it is explained that the "principle of harmony and balance" requires the use of the environment to pay attention to various aspects such as economic, social, and cultural interests, as well as the protection and preservation of ecosystems. This principle is a reminder that development not only focuses on economic aspects but must also consider its impact on society and the environment. This approach was born in response to development practices that are often only oriented towards economic gain, which has the potential to harm the environment significantly.

One way to achieve this goal is to require environmental permits for all types of development, whether they have a direct impact or not. Thus, environmental permits serve as an instrument of control to ensure that each development project complies with sustainability principles. Effective law enforcement is significant so sustainable development can be carried out correctly. This is reflected in regulations such as Law No. 32 of 2009 concerning Environmental Protection and Management, as well as Law No. 11 of 2020 concerning Job Creation, which regulates law enforcement through three main instruments: Administrative Law, Civil Law, and Criminal Law (Setyawan et al., 2024). These three instruments complement each other to provide effective sanctions against violations and encourage compliance with applicable rules.

### **Theory of Justice**

John Rawls' theory of justice about *justice as fairness* It describes a society consisting of free citizens with equal basic rights and cooperating in an egalitarian economic system. In the theory of *Political liberalism*, Rawls emphasized that the legitimate use of political power in a democracy is essential to maintaining unity despite the diversity of views on life allowed by free institutions (Wenar, 2024). This shows that justice is not only about the distribution of rights and obligations but also about how power is exercised relatively to protect freedom and equality amid the diversity of society.

In this case, environmental or ecological justice is seen as social justice. Kuehn argues that environmental justice, as part of social justice, aims to encourage the best efforts so that society can achieve an order that allows them to meet their living needs sustainably (Purwendah, 2023). This emphasizes that access to a healthy environment is a fundamental right that the state must guarantee so that all levels of society can live in balance with nature.

Ecological and social justice theories view the environment as a natural resource that must be managed for the welfare of society. In this case, the state's responsibility is very

important, especially in ensuring that resource management is carried out fairly and proportionately (Purwendah et al., 2020). This principle recognizes that community welfare cannot be achieved without considering environmental sustainability, which is also a shared responsibility between the state, society, and other parties.

Efforts to formulate the meaning of eco-social justice rest on four interrelated basic assumptions. First, humans live in the world together with other creatures in interdependent relationships with their respective roles. In this context, humans cannot be separated from their ecosystems and must understand their position as part of the ecology. Second, humans are imperfect creatures but have the intellectual ability to develop and create culture. This allows humans to continue to innovate and meet their needs without damaging the environment. Third, economic life, which is part of human culture, must have an ecological perspective so that economic development does not harm the sustainability of the ecosystem. Fourth, the development of human culture, including the economy, must involve all living things that are part of the ecosystem so that no party is sacrificed for certain benefits (Binawan & Sebastian, 2022).

By understanding these four basic assumptions, eco-social justice aims to balance human needs and ecosystem sustainability. This principle directs people to think about the welfare of the present and maintain survival for future generations. Therefore, this theory of justice is an important foundation in building an ecologically fair legal and policy framework.

## **METHOD**

Partners, namely Karmenita, SH., and C.I.L, have been involved in all stages of research implementation. He made significant additional contributions in the aspects of practical and paralegal law, which supported the comprehensive legislative process. In addition, Karmenita assists in the analysis and preparation of policy recommendations related to sustainability-based legislation.

During the research's implementation, some of the obstacles faced included time limitations due to schedule adjustments with partners and technical challenges in collecting field data due to unfavorable weather. In addition, administrative obstacles in the coordination process have slowed down several stages of research. However, mitigation efforts have ensured that research outputs remain under the set goals.

## DISCUSSION

### Legal Data and Findings

- Rules Researched:
  - 1) Law Number 32 of 2009 concerning Environmental Protection and Management (UUPPLH) was then amended by Law Number 6 of 2023 concerning the Stipulation of Government Regulations instead of Law Number 2 of 2022 concerning Job Creation into Law (Job Creation Law)
  - 2) Law No. 17 of 2019 concerning Water Resources Law (Water Resources Law) was then amended by Law No. 6 of 2023 concerning the Stipulation of Government Regulations instead of Law No. 2 of 2022 concerning Job Creation into Law (Job Creation Law)
  - 3) Raperda on Groundwater Conservation and Biopore Infiltration Pits in Cirebon City in 2024
- Findings:

Based on an analysis of the 2024 Cirebon City Groundwater Conservation and Biopore Infiltration Hole Draft Regulation, it was found that many Green Legislation principles have been implemented, reflecting sustainability, wise management of natural resources, and environmental protection. As follows:

  - 1) Sustainability

This Raperda aims to preserve groundwater resources for current and future generations. It is emphasized that the primary purpose of this regulation is to accommodate, store, and increase groundwater reserves. This step helps reduce surface water runoff and flood risk, thus supporting sustainability.
  - 2) Wise Management of Natural Resources

The Raperda requires the creation of infiltration wells and biopore infiltration holes in certain buildings. It is designed to manage groundwater use carefully, prevent overutilization, and maintain the quality and quantity of groundwater.
  - 3) Protection of the Environment

This regulation requires the construction of infiltration wells by considering geology, hydrogeology, and hydrology aspects to prevent groundwater contamination. This arrangement also ensures separate stormwater and sewage drains to protect local ecosystems.
  - 4) Integration in Water Resources Management

The Regional Regulation requires the coordinated implementation of the construction of infiltration wells, with supervision and socialization. This step reflects a holistic approach to groundwater management.

#### 5) Community Participation and Engagement

The Raperda adopts the principle of participation by involving the community in managing and conserving groundwater resources. The obligation to build infiltration wells for new buildings is a step to increase community involvement.

Overall, this Raperda contains the principles of *Green Legislation*, which emphasizes sustainability, environmental protection, and wise management of natural resources. The aim is to create a city that is more environmentally friendly, able to face the challenges of climate change, and able to meet sustainable water needs.

### Results of Analysis

- The analysis results show that this draft regulation has included several principles of Green Legislation, such as regulations regarding water conservation and biopore management, but there are gaps in implementation that need to be corrected.
- Alignment with National Regulations:

This draft regulation follows national regulations, such as the UUPPLH and the Water Resources Law. This alignment shows that the Raperda does not contradict the principles of sustainable development (sustainability). However, there is room for improvement, especially in supervision and law enforcement.

This is important because weak oversight can hinder the effective implementation of regulations. In the context of sustainable development, this Raperda seeks to support the principle of sustainability. However, evaluation of implementation in the field is still needed to achieve the goal of water resource conservation.

In comparison, the Job Creation Law's presence in sustainable development's framework poses new challenges, including the deterioration of environmental law politics. This situation shows that national policies are often more oriented towards the developmentalism paradigm, which prioritizes economic growth without adequately considering environmental impacts. The national development framework should be directed at the eco-development paradigm, which balances economic, social, and environmental interests and prioritizes progressive environmental law policies (Maulidyna, 2022).

Thus, the steps to harmonize the Raperda and national regulations must be continued to ensure that this policy reflects the principles of fair and effective sustainability.

## CONCLUSION

Based on the analysis, the integration of the concept of Green Legislation in the Regional Regulation on Groundwater Conservation and Biopore Infiltration Holes in Cirebon City has been carried out substantively. This can be seen from the various provisions in the Raperda that reflect the principles of sustainability, wise management of natural resources, environmental protection, and community integration and participation. This Raperda is designed to conserve groundwater resources for the sake of current and future generations through the regulation of reservoirs, storage, and replenishment of groundwater reserves. In addition, the obligation to make infiltration wells and biopore infiltration holes in certain buildings shows an effort to prevent excessive groundwater exploitation while maintaining its quality and quantity. The regulation also establishes technical requirements that consider geological and hydrogeological aspects to protect groundwater and local ecosystems. In addition, water resources management is carried out in a coordinated manner through supervision and socialization, as well as involving the community in the implementation of groundwater conservation, which affirms the principle of participation in the Green Legislation.

However, several gaps need to be addressed, especially in the aspects of supervision and law enforcement, and these gaps still need to be strengthened to ensure effective implementation. In general, this Raperda has reflected the principles of sustainable development as stipulated in the concept of Green Legislation, including sustainability, environmental protection, and integrated management of natural resources. However, applying these principles is sometimes disrupted by the dominance of the developmentalism paradigm in national policies, as seen in the Job Creation Law, which focuses more on economic growth than environmental protection. Therefore, although Raperda has sought to adopt substantive principles of sustainable development, its success depends heavily on practical implementation, consistent support of national regulations, and harmonization with the broader sustainable development framework.

Therefore, the Cirebon City Government needs to improve the quality of the preparation of the Regional Regulation on Groundwater Conservation and Biopore Infiltration Holes by strengthening the integration of Green Legislation principles, especially aspects of

sustainability, community participation, and wise management of natural resources. This effort can start by clarifying technical standards for constructing infiltration pits, improving the supervision and law enforcement system, and involving the community in socialization and policy implementation. In addition, better harmonization is needed between this Raperda and national policies such as the Job Creation Law so that the potential for regulatory conflicts can be minimized so that the goal of preserving groundwater resources can be achieved effectively and consistent with the principles of sustainable development.

## BIBLIOGRAPHY

Ali Z, Lai Z. *Legal Research Methods*. Jakarta: Sinar Grafika; 2021.

Athar Tristan Andana Kanz, Githa Asmadeningrum Rosady, Savero Pramudika Arya Wibowo. The Implementation of the Green Constitution in Indonesia in an Effort to Maintain the Sustainability of a Good and Healthy Environment as a State Responsibility. *Terang J Studies the Science of Political Science and Law* [Internet]. July 10, 2024; 1(3):269–83. Available on: <https://journal.appihi.or.id/index.php/Terang/article/view/425>

Arora, N.K., Mishra, I., (2022). Sustainable development goal 6: global water security. *Environ. Sustain.* 5, 271–275. <https://doi.org/10.1007/s42398-022-00246-5>

Binawan AA, Sebastian T. *Menim(b)ang eco-social justice* [Internet]. Jakarta; 2012. Available at: [https://epistema.or.id/wp-content/uploads/2015/07/Working\\_Paper\\_Epistema\\_Institute\\_07-2012.pdf](https://epistema.or.id/wp-content/uploads/2015/07/Working_Paper_Epistema_Institute_07-2012.pdf)

Chandra F, Diar A, Hartati H. Green Constitution in Efforts to Preserve a Just Environment. *J Researcher Inov.* 2024; 4(3):889–96.

Dernbach JC, Mintz JA. Environmental laws and sustainability: An introduction. Vol. 3, *Sustainability*. Molecular Diversity Preservation International; 2011. p. 531–40.

Efendi J, Rijadi P. *Normative and Empirical Legal Research Methods: Second Edition*. Jakarta: Prenada Media; 2022.

Falkland, T., White, I., (2020). *Freshwater Availability Under Climate Change*. Springer Climate, pp. 403–448. <https://doi.org/10.1007/978-3-030-32878>

Fitriana ZM, Isabella DV, Sari L. The Concept of Regional Green Legislation: Supporting the Achievement of the 2030 SDGs Number 7 on Energy. *J Huk Lingkungan Indones.* 2022; 8(2):431–54.

Howard, G., Nijhawan, A., Flint, A., Baidya, M., Pregnolato, M., Ghimire, A., Poudel, M., Lo, E., Sharma, S., Mengustu, B., Ayele, D.M., Geremew, A., Wondim, T., (2021). The how tough is WASH framework for assessing the climate resilience of water and sanitation. *npj Clean Water* 4, 39–49. <https://doi.org/10.1038/s41545-021-00130-5>

Jain, A.K., Banerjee, D.M., Kale, V.S., (2020). Geology and tectonics of Bangladesh. In: Kleinspehn, K. (Ed.), *Environmental Monitoring and Assessment. New Perspectives in Basin Analysis*. Journal of Springer, Nature, pp. 557–576. [https://doi.org/10.1007/978-3-030-42845-7\\_10](https://doi.org/10.1007/978-3-030-42845-7_10)

- Kohlitz, J., Chong, J., Willetts, J., (2019). Analysing the capacity to respond to climate change: a framework for community-managed water services. *Clim. Dev.* 11, 775–785. <https://doi.org/10.1080/17565529.2018.1562867>.
- Maulidyna SA. Environmental Law Politics in Sustainable Development Policies with Environmental Perspectives in Indonesia. *Simbur Cahaya* 2022; 29(2):265–92.
- Nagabhatla, N., Brahmhatt, R., (2020). Geospatial assessment of water-migration scenarios in the context of sustainable development goals (SDGs) 6, 11, and 16. *Remote Sens.* 12, 1376. <https://doi.org/10.3390/RS12091376>
- Purwendah EK. The Concept of Ecological Justice and Social Justice in the Indonesian Legal System Between Idealism and Reality. *J Pacta Sunt Servanda.* 2023; 4(1):101–9.
- Purwendah EK, Djatmiko A, Pudyastiwi E. Ecological justice and social justice as the basis for the protection and preservation of the marine environment in the Indonesian legal system. *J Undiksha Citizenship Educator.* 2020; 8(2):1–14.
- Purwendah EK. The Concept Of Ecological Justice And Social Justice In The Indonesian Legal System Between Idealism And Reality. *J Huk Commune [Internet].* August 1, 2019; 5(2):139. Available on: <https://ejournal.undiksha.ac.id/index.php/jkh/article/view/18425>
- Rahardjo S. *Dissecting progressive law.* 2 ed. Jakarta: Kompas Book Publisher; 2006.
- Ranjani G, Hendi Setiawan. Green Constitution: Review of Environmental Benefits and Restoration Through Reclamation and Post-Mining. *Lex Renaiss [Internet].* September 25, 2024; 9(1):108–33. Available on: <https://journal.uui.ac.id/Lex-Renaissance/article/view/31647>
- Sahputra M. Restorative Justice as a form of progressive law in the regulation of the Legislature in Indonesia. *J Transform Adm.* 2022; 12(01):87–96.
- Setyawan IH, Kurnia ME, Rajib RK. The Dynamics of Environmental Law in the Concept of Sustainable Implementation in Indonesia. *Progressive Politics J Law, Politics and Hum.* 2024; 1(2):193–201.
- Sudihar A. Progressive Law. *J Judicial [Internet].* 2022; 15(2). Available on: <https://jurnalkonstitusi.mkri.id/index.php/jk/article/download/1816/pdf/4221>
- Tan W, Irawan IW. Contextualization of Batam City Regional Regulations Related to Environmental Pollution from the Perspective of Sustainable Development Goals (SDGs). *Maleo Law J.* 2024; 8(2):193–204.
- Tufail, M., Nasir, M. J., Rahman, A. U., Kakakhel, S. I., & Tariq, A. (2025). A geospatial assessment of the resilience of municipal water supply to flooding in Nowshera District, Pakistan. *HydroResearch*, 8, 89-98.
- Wenar L. *Stanford Encyclopedia of Philosophy.* 2021 [quoted December 5, 2024]. John Rawls. Available on: <https://plato.stanford.edu/entries/rawls/>