P-ISSN: 2987-8071| E-ISSN: 2987-8063| DOI: https://doi.org/10.53955/jsderi.v3i1.39

Journal of Sustainable Development and Regulatory Issues (JSDERI)

http://journal.contrariusactus.com/index.php/JSDERI/index

| Research Article |

Check for updates

Legislative Framework for Decentralized Administration in Addressing River Pollution

Aditia Syaprillah [1,*], Fuad Shehab Shyyab [2]

[1] Faculty of Law, University Borneo Tarakan, Kalimantan Utara, Indonesia.
[2] University of Taibah – Al Madinah Al Munawarah, Saudi Arabia.

** Correspondence: aditiasyaprillah@borneo.ac.id*

Received: April 14, 2024 / Revised: December 31, 2024/ Accepted: January 9, 2025

Abstract: Despite several laws and regulations aimed at environmental protection, significant discrepancies remain in their effectiveness, particularly concerning water pollution in river areas. This research examines the legislative framework for protecting river basins in Indonesia, focusing on water pollution. Using a normative legal research method with a conceptual approach, the study analyzes the current legislative provisions and their implementation. The findings reveal that while existing environmental protection laws and technical regulations for supervision and sanctions are in place, they have not been fully effective in preventing river pollution across various regions in Indonesia. The research suggests that a new legislative direction is necessary to support the successful implementation of environmental protection, advocating for sustainable and green legislation. It emphasizes the need for stronger administrative sanctions against individuals and corporations responsible for pollution and calls for enhanced oversight from national to local authorities. The study concludes that strengthening decentralized administration is crucial to ensuring that laws and regulations are correctly implemented, thereby addressing the persistent issue of river pollution and promoting long-term environmental sustainability.

Keywords: Administrative Law; Decentralisation; Framework; Pollution; River;

INTRODUCTION

Indonesia's potential for water resources, specifically rivers, is ranked fifth globally, following Canada, Brazil, and the United States. Additionally, Indonesia's littoral spans over 81,000 kilometers, and the country is home to the most diverse tropical marine and coastal ecosystems in the world, with 78% of its landmass being water.[1] If not properly managed and protected, this significant water potential can have a detrimental impact (pollute). Nevertheless, Indonesia is the fourth-most populous nation globally and the fourth-largest producer of fish and seafood. Indonesia's rivers are designated as "polluted" to a greater extent than other bodies of water amid the rapid expansion of seafood and other industries.[2] The role of household river pollution, particularly in-river bathing and associated sanitary practices, is examined, and it is determined that upstream river-based sanitary practices in Indonesia can account for up to 7.5 percent of all diarrheal deaths in a given year. This translates to

[1] Newmar Wegner and others, 'Hydro Energy Potential Considering Environmental Variables and Water Availability in Paraná Hydrographic Basin 3', *Journal of Hydrology*, 580 (2020), 124183 https://doi.org/10.1016/j.jhydrol.2019.124183

[2] Adriana Gómez-Sanabria and others, 'Sustainable Wastewater Management in Indonesia's Fish Processing Industry: Bringing Governance into Scenario Analysis', *Journal of Environmental Management*, 275 (2020), 111241 https://doi.org/10.1016/j.jenvman.2020.111241

860 diarrheal fatalities throughout a four-year period. We have discovered suggestive evidence that households engage in avoidance behavior in response to the upstream use of rivers for garbage disposal but not in response to the upstream use of rivers for bathing and sanitary practices.[3]

The potential of our river is in stark contrast to the fact that in the case study, The Citarum River plays a critical role in the community and ecosystem nearby. Consequently, the community should be able to easily comprehend its condition by determining its daily WQI (water quality index). the pollution index to indicate that the water in the Citarum River was "slightly polluted" and "heavily polluted." The primary contaminants were phenol, sulfide, and fecal coliform. Additionally, the Cipeusing River in Indonesia has been granted a new status. The water contamination status of the Cipeusing River transformed from 2016 to 2017. In 2016, the Cipeusing River was moderately polluted, with a value of 5.05–7.07; in 2017, it was severely degraded, with a value of 15.65– 17.65. The Cipeusing River has been identified as a source of pollution that also contributes to the pollution of the Citarum River, and it is highly polluted due to the discharge of refuse into the river by textile factories and households.[4] Plastic detritus accounts for approximately 53.65% of all litter items discovered in the Ciliwung River, which indicates the severity of Indonesian rivers. This abundance is up to 30 times greater than previous global studies on riverbank litter. The presence of riverbank debris has the potential to contribute between 4.95 and 18.82 tons per year to marine pollution, with an estimated 2.71 to 10.32 tons of plastic refuse. Riverbank debris is more prevalent in upstream regions than in other locations along the river, and it tends to accumulate in areas with low waste management collection rates.[5]

Even though Government Regulation Number 22 of 2021 explicitly addresses environmental protection and management, its implementation is frequently not by the stated regulations. The efficacy of institutions that regulate river water quality, such as those responsible for the Citarum River and the river in Cirebon, is restricted by inadequate coordination and regulatory implementation. Specific articles in UURI No. 32/2009 delineate penalties for noncompliance with refuse management regulations and criminal and administrative sanctions. The PPLH Law's Article 104 mandates imprisonment and fines for unauthorized waste disposal; however, enforcement is inadequate, resulting in ongoing pollution.[6]

[3] Jarir At Thobari and others, 'Direct and Indirect Costs of Acute Diarrhea in Children under Five Years of Age in Indonesia: Health Facilities and Community Survey', *The Lancet Regional Health - Western Pacific*, 19 (2022), 100333 https://doi.org/10.1016/j.lanwpc.2021.100333

[4] Aris Ismanto and others, 'First Evidence of Microplastics in the Water and Sediment of Surakarta City River Basin, Indonesia', *Marine Pollution Bulletin*, 196 (2023), 115677 https://doi.org/10.1016/j.marpolbul.2023.115677

[5] Muhammad Reza Cordova and others, 'From Riverbank to the Sea: An Initial Assessment of Plastic Pollution along the Ciliwung River, Indonesia', *Marine Pollution Bulletin*, 206 (2024), 116662 https://doi.org/10.1016/j.marpolbul.2024.116662

[6] Dini Hartiningsih and others, 'Water Quality Pollution Indices to Assess the Heavy Metal Contamination: A Case Study of the Estuarine Waters in Cirebon City (West Java, Indonesia) Pre- and Post- CARE COVID-19', *Environmental and Sustainability Indicators*, 21 (2024), 100318 https://doi.org/10.1016/j.indic.2023.100318

This pollution and degradation of water quality necessitate the enforcement of laws through regulations, such as water laws. Additionally, sections illustrate how sustainable land management necessitates an interdisciplinary effort and is influenced by a constellation of legal instruments that extend beyond the portion of the law that is specific to the specific land. [7] Indonesia's legislation generates numerous complications. Several laws, such as Law No. 32 of 2009, have been implemented in Indonesia to address river pollution. Nevertheless, these regulations are not consistently well-executed due to inadequate human resources and awareness. In addition, the regulation of plastic waste is influenced by international treaties such as the 1982 UNCLOS and national laws; however, enforcement is inadequate, particularly in the context of managing plastic waste in river environments.[8]

The enforcement of the law is far from ideal in comparison to some jurisdictions. The absence of clear guidelines for sanctioning behavior changes in business actors can result in a lack of accountability. Evidence enforcement operations were observed to have failed to arrest the primary actors responsible for illegal logging, with only a tiny percentage of them being prosecuted with even minor sentences. The legal framework that governs administrative sanctions may be unclear, which has led to an unequal application of the law in various cases, resulting in minor sentences. This is not the case, as the legal strategy to combat illegal fishing through regulatory frameworks does not depend on and should not depend on the legislators' emphasis on a specific enforcement approach, whether it be administrative, civil, or criminal. Administrative and criminal procedures have been implemented in the majority of countries.[9]

Moreover, the absence of coordination among the government, provincial government, district/city government, or regional administrative organizations in implementing supervision is a challenge in water pollution control. At the implementation level, a legal vacuum results from incomplete provisions. Uncertainty and divergent perspectives regarding environmental management supervision result from inconsistent, ambiguous, and nebulous norms. Additionally, administrators are constrained by a scarcity of personnel, funding, and capacity, which places the environment and local populations at the highest risk of adverse consequences. Enforcement supervision is necessary due to the inconsistent application of existing regulations, which frequently lack clarity and coherence. Although the underlying causal mechanisms are complex and context-dependent, there is a correlation between improved environmental performance and higher governance quality. In contrast, institutions can be fortified by positive ecological outcomes by promoting eco-friendly policies, environmental education, and public participation, reinforcing norms, and cultivating a culture of accountability. Conversely, institutions may be weakened by inadequate ecological performance, encompassing resource depletion,

[7] Teemu Viinikainen, 'Regulatory Measures in Water Legislation That Can Support Sustainable Soil Management', *Soil Security*, 13 (2023), 100111 https://doi.org/10.1016/j.soisec.2023.100111

[8] Irwan Sasradinata, Agung Pramono, and Lufsiana Lufsiana, 'Pengaturan Hukum Laut Internasional Dan Nasional Dalam Pencemaran Lingkungan Hidup Di Perairan Indonesia Akibat Sampah Plastik', *ARBITER: Jurnal Ilmiah Magister Hukum*, 5.1 (2023), 23–29 https://doi.org/10.31289/arbiter.v5i1.1645

[9] Blaise Kuemlangan and others, 'Enforcement Approaches against Illegal Fishing in National Fisheries Legislation', *Marine Policy*, 149 (2023), 105514 https://doi.org/10.1016/j.marpol.2023.105514

high pollution levels, and a lack of sustainable practices. This can result in a detrimental cycle in which governance mechanisms, including regulatory supervision and enforcement, deteriorate over time.[10]

The legal environment in Indonesia concerning water pollution is influenced by international and national regulations designed to safeguard the river ecosystem and mitigate environmental pollution. Nevertheless, the enforcement of these laws is confronted with substantial obstacles, such as a lack of comprehension among law enforcement officials and inadequate implementation. As a result of a lack of resources and knowledge among law enforcement agencies, enforcement remains weak, resulting in ineffective pollution control measures despite the existence of extant laws. Nevertheless, Braimah believes that reducing costs and tariffs will be achieved by addressing water pollution issues through implementing stringent policies and regulations, revitalization processes, and advanced technologies. Additionally, the expenses associated with restructuring the economy regarding production and/or consumption patterns are referred to as structural adjustment costs. More importantly, reducing water pollution or other forms of environmental degradation to a recommended standard frequently necessitates complex economy-wide modeling to address structural adjustment costs. The third metric is restoration cost, which quantifies the expense of restoring a degraded ecosystem or water body to a usable state.[11]

The role of environmental law in Indonesia's efforts to address water pollution is multidimensional, encompassing the integration of sustainable practices, enforcement mechanisms, and regulatory frameworks. Inadequate supervision and compliance by industries frequently result in the failure to implement existing laws effectively. Key elements of this matter are delineated in the subsequent sections. Obstacles persist, such as inadequate public awareness regarding environmental protection and low compliance rates. It is imperative to foster sustainable practices and effectively manage pollution by promoting collaboration between government agencies and communities.[12]

The relationship between environmental regulation and economic development has consistently provoked debate. The conventional viewpoint posits that environmental regulation entails additional costs on business operations, thereby reducing the firm's competitiveness. This implies that ecological regulation has the potential to promote innovation and improve performance. Environmental regulation has a significant and positive impact on firm innovation despite the fact

[10] Sofik Handoyo, 'Public Governance and National Environmental Performance Nexus: Evidence from Cross-Country Studies', *Heliyon*, 10.23 (2024), e40637 https://doi.org/10.1016/j.heliyon.2024.e40637
[11] Emmanuel Kwame Nti and others, 'Water Pollution Control and Revitalization Using Advanced Technologies: Uncovering Artificial Intelligence Options towards Environmental Health Protection, Sustainability and Water Security', *Heliyon*, 9.7 (2023), e18170 https://doi.org/10.1016/j.heliyon.2023.e18170
[12] Risyan Putri Maharani, Dhamara Kusuma Swastika Ratri, and Destina Balqis Anggiyanti, 'Eksistensi Direktorat Jenderal Penegakan Hukum Lingkungan Hidup Dan Kehutanan Dalam Penanganan Kasus Pencemaran Lingkungan Oleh Pabrik Pengolahan Kelapa Sawit Di Riau', *JURNAL HUKUM, POLITIK DAN ILMU SOSIAL*, 3.3 (2024), 162–73 https://doi.org/10.55606/jhpis.v3i3.3903

that it does not considerably affect firm competitivenes.[13] As economic development advances, the adverse impact of environmental regulation on green technological innovation gradually diminishes. Only when economic development reaches a high level does environmental regulation significantly promote green technological innovation.

Additionally, the primary function of administration law is to enhance the enforcement of government regulations and the quality of exports. Export product quality is significantly and adversely correlated with pollution reduction plans. Additionally, the negative consequences are more severe for the firms that fall into either of the following categories: (i) operating in capital-intensive industries, (ii) being privately owned, (iii) exporting to non-OECD markets, and (iv) being located in the western region. Our results indicate that the adverse consequences of the new environmental policy on the quality of export products may be alleviated by product diversification. The results of this investigation have substantial policy implications. Products with low value-added, high energy consumption, and significant pollution will continue to constitute a considerable portion of exports in the post-COVID-19 era. The economy may experience a rapid decline due to excessively stringent environmental regulations, which may exacerbate export shrinkage, and trade protectionism resurfaces as the global economy recovers slowly.[14]

Porter's hypothesis is empirically and theoretically supported by the positive correlation between enhanced water administrative environmental regulation and increased firm innovation, which results from administrative law's impact on environmental performance. Secondly, this beneficial effect is more pronounced for privately owned firms close to suppliers, polluting, and politically unaffiliated. Thirdly, this effect is evident not only in the quantity but also in the character of innovation. Fourthly, the primary objective of water environment regulation is to encourage firm innovation by reducing the consumption of intermediate products, increasing industry profits through the exit of low-productivity firms, and increasing enterprise R&D investment. The government should prioritize the quality and quantity of innovations to improve water environment regulation. It is imperative to encourage enterprises to enhance their innovation output and underscore the practical application value and market competitiveness of these innovations. The government can implement an innovation evaluation system incorporating innovations' quality and practical application effects.[15]

In terms of law, pollution issues must be addressed with certainty and enforcement. In principle, administrative law enforcement is a component of government authority, as it is responsible for preventing and addressing violations based on their

[13] Yu Qi, Jianshun Zhang, and Jianwei Chen, 'Tax Incentives, Environmental Regulation and Firms' Emission Reduction Strategies: Evidence from China', *Journal of Environmental Economics and Management*, 117 (2023), 102750 https://doi.org/10.1016/j.jeem.2022.102750

[14] Yuping Deng, Yanrui Wu, and Helian Xu, 'On the Relationship between Pollution Reduction and Export Product Quality: Evidence from Chinese Firms', *Journal of Environmental Management*, 281 (2021), 111883 https://doi.org/10.1016/j.jenvman.2020.111883

[15] Abdoul G. Sam and Xiaodong Zhang, 'Value Relevance of the New Environmental Enforcement Regime in China', *Journal of Corporate Finance*, 62 (2020), 101573 https://doi.org/10.1016/j.jcorpfin.2020.101573

nature and effectiveness. This research also aims to investigate how administrative bodies or officials in local governments are compliant in enforcing administrative law on water pollution control [16]. The principle of proportionality in domestic administrative law mandates that the performer of an administrative activity balance the objects of the activity against the interests of its administrative counterpart. This ensures that the administrative activity has the least negative impact on the administrative counterpart and that the purpose of the activity is proportional to its potential adverse effects. The purpose of this research is to provide an analysis of the effectiveness of environmental administrative law enforcement against water pollution (rivers) in the regions, as well as to contribute to the implementation of ecological administrative law enforcement by local governments to ensure a healthy and decent living environment (water) for the community.

METHOD

This research is normative legal research, namely research that examines legal norms and concepts.[17] The approach in this research uses a statutory approach and a conceptual approach. Legal materials are obtained through literature studies and interviews, then analyzed using deductive analysis using the prescriptive method.[18]

RESULT AND DISCUSSION

The Role of Legislative Framework for Decentralized Administration in Addressing River Pollution

The decentralization of regional governance from the central government to the regions is intended to enhance community participation, equity, and justice in regional governance administration, including environmental protection and management. Decentralization is anticipated to facilitate the effective and efficient provision of public services by local requirements and costs by bringing the government closer to the people. Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia aims to establish a sustainable and healthful environment in the regions. The objective of achieving sound and healthy environmental management and protection through decentralization is highly logical, as local governments are intimately acquainted with their region's geographical conditions and environmental typology.[19]

In the article "Decentralized Environmental Management," Nicole Niessen elucidates that centralizing environmental protection and management will result in the leveling of ecological issues in regions with varying territorial characteristics,

[16] Shi'ao Zhang, 'Law Enforcement or Use of Force: The Legal Nature of Activities Conducted by CCG and JCG in the Disputed Waters', *Marine Policy*, 171 (2025), 106440 https://doi.org/10.1016/j.marpol.2024.106440

[17] Aditia Syaprillah, Yahya Ahmad Zein, and Tove H.Malloy, 'A Social Justice Legitimacy to Protect Coastal Residents', *Journal of Human Rights, Culture and Legal System*, 3.3 (2023), 541–68 https://doi.org/10.53955/jhcls.v3i3.159

[18] Pradeep Mullekyal Devadasan, 'Legal Research- Descriptive Analysis on Doctrinal Methodology', *International Journal of Management, Technology, and Social Sciences (IJMTS)*, 2.December 2019 (2022), 10 https://doi.org/10.47992/IJMTS.2581.6012.0075

[19] T. Primananda Alfath, Lilik Pudjiastuti, and Dina Sunyowati, 'The Legal Framework of Green Governance in Archipelagic State Based on Constitution of The Republic of Indonesia', 358.Icglow (2019), 37–40 https://doi.org/10.2991/icglow-19.2019.9

potentially leading to more systemic and widespread environmental problems.[20] Therefore, a decentralization system is required to enhance the efficacy and justice of protecting and managing natural resources and the environment. Additionally, it has a beneficial effect on environmental protection and management, including the fate of the region is determined by the area itself, which means that local governments and communities will be severe in anticipating every possibility related to the environment. Regional autonomy brings public policy making and decisions closer to the people in the region, which is more in line with environmental conditions in the area. Additionally, regional independence allows for more direct and faster, even cheaper, control from the community and various interest groups in the area on environmental policies.[21]

The community must be regulated, as the slums in the suburbs of Makassar necessitate a distinct treatment program in its physical, economic, and social aspects. The community's conditions and characteristics must be considered when implementing a Makassar development policy. In this case, the policy must secure the existence of poor and marginal communities in the periphery. Enhancing the living conditions of local citizens, particularly those of marginalized and disadvantaged communities, is the primary objective of good urban governance, a multifaceted concept. Land reclamation along watersheds and settlements is the cause of her. This condition results in a decrease in groundwater levels, inadequate regulation of river flows, and the overflow of river water and high tides into slums inhabited by impoverished individuals during the rainy season.[22]

The significance of decentralization becomes relevant when vertical decentralization enhances the efficacy of environmental regulations, with financial incentives from the central government to local governments being essential for fostering green transformation. Local government supervision substantially influences successful ecological management and enterprise pollution reduction. A moderate increase in environmental decentralization fosters local enterprises' environmental innovation while minimizing excessive distortions from externalities, particularly when considering local tax competition. The division of ecological management powers and responsibilities between central and local governments, known as decentralized environmental management, has been demonstrated to promote regional green innovation in China by enhancing local governance autonomy in ecological protection.[23]

---

[20] Uli Wildan Nuryanto and others, 'Environmental Management Control System, Blockchain Adoption, Cleaner Production, and Product Efficiency on Environmental Reputation and Performance: Empirical Evidence from Indonesia', *Sustainable Futures*, 7 (2024), 100190 https://doi.org/10.1016/j.sftr.2024.100190

[21] Liao Nanlin and others, 'Environmental and Economic Assessment of the Construction, Operation, and Demolition of a Decentralized Composting Facility', *Science of The Total Environment*, 884 (2023), 163724 https://doi.org/10.1016/j.scitotenv.2023.163724

[22] Batara Surya and others, 'Environmental Pollution Control and Sustainability Management of Slum Settlements in Makassar City, South Sulawesi, Indonesia', *Land*, 9.9 (2020), 279 https://doi.org/10.3390/land9090279

[23] Ling Guo and Xiaoni Jiang, 'Decentralization of Environmental Management and Enterprises' Environmental Technology Innovation: Evidence from China', *Applied Economics*, 54.36 (2022), 4170–86 https://doi.org/10.1080/00036846.2021.2022093

Legislative tools are crucial for preventing resource overuse and responding to circumvention; however, they may prove ineffective if they are not enforced or if their objectives are redundant or contradictory. In Jordan's case study, the regulatory framework for groundwater and its impact on the quality and quantity of the resource are demonstrated. This underscores the significance of groundwater legislation in influencing river quality. The absence of policy coherence between sectors and the lack of compliance and enforcement of these policies led to the over-extraction of water, resulting in groundwater pollution and a decrease in the water table. Furthermore, enhancing the efficacy and monitoring of current agricultural practices and technologies is imperative.[24]

It is crucial to identify the issue of river pollution through legislation. The problem of river pollution claims involves the allocation of an emissions budget among agents situated along a river. Agents are ordered, and the location of emissions is a critical concern in addition to impartiality, which is a significant distinction from standard claims problems; by integrating an exogenous order of the agents reflects their position along the river. This extension is motivated by the issue of river water pollution, which includes nutrient pollution from agricultural production and chemical pollution from industrial processes. These pollutants cause more significant aggregate damage as they are released further upstream. This is designed to distribute restricted emissions permits among the agents involved, considering the environmental harm caused by pollution and impartiality concerns.[25]

Decentralized administration role the Unitary State of the Republic of Indonesia is the foundation of law, as evidenced by Law Number 32 of 2009 concerning Environmental Protection and Management, which refers to regional autonomy. This means that local governments are responsible for managing and regulating environmental protection and management.[26] Currently, local administrations possess the authority to implement law enforcement and conduct planning, utilization, control, maintenance, and supervision in environmental protection and management. Administrative law enforcement (supervision and application of sanctions), criminal law enforcement, and civil claims are three law enforcement options in the environmental sector related to law enforcement.[27]

Decentralized administration law is crucial for promoting a comprehensive management strategy for river basins, which prioritizes sustainable practices across sectors. It includes penalties for companies that violate pollution standards, although these are frequently considered inadequate. It includes penalties for companies that violate pollution standards, often deemed insufficient. Although the law establishes a strong foundation for preventing river pollution, its effectiveness is contingent upon

[24] Zeinab Abu Romman and Mustafa Al Kuisi, 'The Impact of Water Legislation on Groundwater Sustainability in an Arid Region: Spatial Statistical Approach', *Environmental Development*, 46 (2023), 100852 https://doi.org/10.1016/j.envdev.2023.100852

[25] Yuzhi Yang, Erik Ansink, and Jens Gudmundsson, 'How to Pollute a River If You Must', *Journal of Environmental Economics and Management*, 130 (2025), 103105 https://doi.org/10.1016/j.jeem.2024.103105

[26] Sudharto P. Hadi, Rizkiana S. Hamdani, and Ali Roziqin, 'A Sustainability Review on the Indonesian Job Creation Law', *Heliyon*, 9.2 (2023), e13431 https://doi.org/10.1016/j.heliyon.2023.e13431

[27] Yu Minyou and Ni Yao, 'Law Enforcement in the Implication of Blue Cooperation – A Reflection of China', *Marine Policy*, 163 (2024), 106080 https://doi.org/10.1016/j.marpol.2024.106080

enhanced enforcement mechanisms and increased industry accountability. In contrast, some contend that the current legal framework may not adequately address the intricacies of pollution, which would require more extensive reforms and community involvement.[28]

Various regulations govern the administration of statutes against river pollution in Indonesia. Notably, Government Regulation Number 22 of 2021 aims to resolve environmental concerns. Despite the existence of these laws, enforcement continues to be a significant challenge due to industries' dequate supervision and compliance by industries.[29] Key elements of this matter are delineated in the subsequent sections. The necessity of Environmental Impact Assessments (AMDAL) is underscored by Government Regulation Number 22 of 2021, which establishes a legal framework for managing river pollution. Many companies continue to pollute rivers without confronting consequences even though the law mandates strict penalties for violators. Insufficient coordination among agencies and a lack of public awareness frequently make law enforcement feeble. Severe pollution results from numerous industries, particularly those in mining and manufacturing, failing to adhere to existing regulations.[30]

The role of administration law has been implemented and decentralized in other nations, including China. The River Chief System (RCS) is a system that was initially implemented in Wuxi City in 2007 and has since been progressively adopted by other cities in China. The RCS designates governance executives at the province, prefecture, county, and township levels. Each leader is regarded as the river chief for their jurisdiction and is accountable for the contamination of the river. The RCS is a pioneering environmental institution established in China to reduce water pollution. It accomplishes this by designating provincial, prefectural, county, and township-level leaders as river chiefs for the corresponding river segment within their jurisdictions. Nevertheless, the treatment effect remains uncertain as a significant policy innovation to regulate river pollution, as only a few papers have examined the precise impacts of polluting activities.[31] RCS is effective at inducing industrial firms to reduce their water pollutant emissions by nearly 20%, as well as emission intensities.[32]

However, some roles are plagued by specific issues. As the paradigm transition from command-and-control statutes to collaborative partnerships continues, public

[28] Eunice O. Olaniyi, Maria Claude Solarte-Vasquez, and Tommi Inkinen, 'Smart Regulations in Maritime Governance: Efficacy, Gaps, and Stakeholder Perspectives', *Marine Pollution Bulletin*, 202 (2024), 116341 https://doi.org/10.1016/j.marpolbul.2024.116341

[29] Jia Yen Lai and Alistair Hamilton, 'For Whom Do NGOs Speak? Accountability and Legitimacy in Pursuit of Just Environmental Impact Assessment', *Environmental Impact Assessment Review*, 82 (2020), 106374 https://doi.org/10.1016/j.eiar.2020.106374

[30] Trias Hernanda and Urip Giyono, 'Environmental Legal Protection of Rivers in the Perspective of Sustainable Development', *Jurnal Jurisprudence*, 11.1 (2022), 100–113 https://doi.org/10.23917/jurisprudence.v11i1.14744

[31] Lei Hua and others, 'China's Poverty Alleviation Policy Promoted Ecological-Economic Collaborative Development: Evidence from Poverty-Stricken Counties on the Qinghai-Tibet Plateau', *International Journal of Sustainable Development & World Ecology*, 30.4 (2023), 402–19 https://doi.org/10.1080/13504509.2022.2155882

[32] Huanhuan Wang and Jiaxin Xiong, 'Governance on Water Pollution: Evidence from a New River Regulatory System of China', *Economic Modelling*, 113 (2022), 105878 https://doi.org/10.1016/j.econmod.2022.105878

administrators, policymakers, and watershed stakeholders will increasingly rely on collaborative partnerships to address intricate environmental issues. The potential for conflicting policies and the potential abuse of authority exists due to the watershed management model in Indonesia that is delegated to the regions. Multistakeholders are involved in the watershed management process. The function of policy is to establish collaboration among stakeholders and to clarify each's responsibilities. This suggests that a comprehensive and integrated policy is required to safeguard the environmental ecosystem of riparian areas. Consequently, the sustainability of the ecosystem and social community can be facilitated by implementing watershed management.[33]

The government requires supervision to resolve the issue. Supervision is a process designed to prevent and remedy errors that may occur due to the activities that have been conducted, whether intentionally or unintentionally. In the environmental sector, supervision is a process that evaluates whether the organization is operating as intended, determined, and anticipated. This is done to prevent deviations from occurring and to address them promptly. Supervision is crucial in safeguarding water quality by regulating the contamination that enters water sources by the approval (read: permit)[34], by complying with the required conditions and verifying the accuracy of self-monitoring, testing and monitoring information provided by activities and / or businesses in their reports. So that environmental supervision has the aim of evaluating and determining whether the person in charge of the business and/or activity is obedient or otherwise to the laws and regulations in the field of environmental protection and management, as well as carrying out environmental management and monitoring obligations as contained in environmental documents (environmental approval).[35]

Legal Framework for Decentralized Environmental Administration in Indonesia

According to the Legislative Draft of the Environmental Act, the conflict between natural resources and the environment is characterized by the confrontation between those who possess resources and more substantial power and those who are access-disabled or have access to resources and less power. Exploitation, which disregards the interests and rights of the community, justice, and environmental principles, is the primary cause of environmental conflicts. As previously stated, inconsistent laws and regulations, both vertically and horizontally, contribute to ecological and natural resource conflicts.[36]

Administrative law plays a multidimensional role in preventing, regulating, and enforcing river pollution. Administrative law is a framework that is responsible for the

[33] Tri Sulistyaningsih and others, 'Public Policy Analysis on Watershed Governance in Indonesia', *Sustainability*, 13.12 (2021), 6615 https://doi.org/10.3390/su13126615

[34] Jiping Jiang and others, 'An Integrated Supervision Framework to Safeguard the Urban River Water Quality Supported by ICT and Models', *Journal of Environmental Management*, 331 (2023), 117245 https://doi.org/10.1016/j.jenvman.2023.117245

[35] Martí Puig and Rosa Mari Darbra, 'Innovations and Insights in Environmental Monitoring and Assessment in Port Areas', *Current Opinion in Environmental Sustainability*, 70 (2024), 101472 https://doi.org/10.1016/j.cosust.2024.101472

[36] Hansol Lee and others, 'Natural Resources Conflicts on Borderlands by the Five Spheres of Earth System', *Land*, 12.2 (2023), 389 https://doi.org/10.3390/land12020389

establishment of guidelines and penalties for polluters, the promotion of compliance, and the protection of water quality. Preventive measures and repressive actions against violations are essential components of this approach, which are necessary for effective environmental governance. Function Decentralized administration law to preventive measures such as counseling and guidance. Governments frequently implement outreach programs to inform the public and industries about pollution prevention strategies. Permit Systems to Regulatory Frameworks are required for discharges into water bodies to monitor and control pollution levels. An example is India's Water (Prevention and Control of Pollution) Act.[37]

In addition, administration law serves other purposes, such as imposing repressive measures. Penalties and Sanctions: Administrative law establishes penalties for violators, such as the revocation of permits, fines, and warnings, to discourage pollution. The efficacy of administrative regulations can be improved by enforcing compliance through public nuisance actions and other legal mechanisms through legal recourse with courts and tribunals.[38]

In Indonesia, legislative laws have been enacted to implement the Environment Law to combat river pollution. For example, Law No. 7/2004 on Water Resources, as amended by Law No. 17/2019, mandates that the principles of sustainability, balance, public benefit, integration and harmony, justice, independence, transparency, and accountability must manage water resources. Article 5 of Law No. 17/2019 also mandates that water resources be managed and utilized to benefit the populace. This is founded on the natural resource management principles delineated in the 1945 Constitution of the Republic of Indonesia. The law must be enforced to safeguard water in Indonesia from the standpoint of State Administration Law. The efficacy and effectiveness of the watershed management strategy that has been implemented are significantly influenced by regulations. Their inadequate enforcement further complicates the implementation of regulations. This suggests that government initiatives are required to coordinate a variety of rules.[39]

To accomplish administration law in the fight against river pollution, Best Management Practices (BMPs) must be implemented during legal direction. Best management practices (BMPs) are indispensable for curbing non-point source (NPS) pollution in agricultural contexts. Research suggests that implementing combined best management practices (BMPs), including buffer strips and fertilizer reduction, results in more effective pollution control than implementing individual practices. The effectiveness of BMPs has been assessed using the Soil and Water Assessment Tool (SWAT) model, which has demonstrated that configurations such as grassed waterways and filter strips significantly reduce nitrogen and phosphorus loading when implemented by the legal framework and enforcement. Environmental laws must be

[37] Aarti Sewak and others, 'Community Perspectives and Engagement in Sustainable Solid Waste Management (SWM) in Fiji: A Socioecological Thematic Analysis', *Journal of Environmental Management*, 298 (2021), 113455 https://doi.org/10.1016/j.jenvman.2021.113455

[38] Mark B. Taylor, 'Counter Corporate Litigation: Remedy, Regulation, and Repression in the Struggle for a Just Transition', *Sustainability*, 13.19 (2021), 10742 https://doi.org/10.3390/su131910742

[39] Tyas Mutiara Basuki and others, 'Improvement of Integrated Watershed Management in Indonesia for Mitigation and Adaptation to Climate Change: A Review', *Sustainability*, 14.16 (2022), 9997 https://doi.org/10.3390/su14169997

enforced effectively. Administrative law has been implemented to implement preventive and repressive measures against pollutants, even though there are still obstacles to the effectiveness of enforcement. An integrated approach to river management is essential, as it ensures sustainable practices with Administrative Sanctions by concentrating on upstream and downstream activities. Routine inspections are included in effective enforcement, which provides for administrative actions such as the revocation of permits for violators and warnings. It is imperative to implement rigorous penalties for noncompliance and conduct routine inspections to prevent pollution.[40] That combination to clear and prevent river pollution in Indonesia.

In industrial refuse management, administrative sanctions are essential for mitigating river pollution. The purpose of these sanctions is to ensure that environmental regulations are adhered to and to reduce the adverse effects of pollution on water bodies. The subsequent sections delineate the primary components of administrative sanctions in instances of river pollution. Various laws, such as UURI No. 32/2009, which delineates environmental management and preservation provisions, govern administrative sanctions. The administrative sanctions that apply to violators of environmental regulations are detailed in specific articles (76-83) and underscore the importance of compliance in waste management. Different Types of Administrative Sanctions Administrative sanctions that are frequently implemented include warnings in writing for initial infractions and temporary suspension of operating licenses for severe violations. Business licenses are revoked for repeated noncompliance. Enforcement actions encompass many formal and informal measures, including monetary penalties exceeding billions of dollars, legal actions, and administrative orders. Both written and verbal warnings are included in this category.[41]

The most effective form of punishment for preventing financial statement fraud in the future is administrative penalties. The recurrence of violations is also significantly reduced by supervisory measures. Self-regulatory measures, including public condemnation, elevate the probability of corporate recidivism. The cost of capital that equity shareholders must provide is a mechanism by which various punishments influence recidivism. Administrative and supervisory measures are effective methods of limiting the reoffending of financial statement fraud. Consequently, it is advised that recalcitrant firms be monitored, with a more evolved role for the CSRC and its regional offices. Similarly, the detrimental consequences of self-regulatory measures in preventing corporate recidivism indicate that this regulatory approach necessitates modification. For example, the regulatory function of stock exchanges may be advantageously restricted or modified. In theory, behavioral regulatory approaches can effectively replace methods based on the financial costs of offending and are focused on supervision and recognizing social norms in the incidence of financial offending. Additional reinforcement of accounting professionals through the

[40] Boqiang Lin and Jiawen Xie, 'Superior Administration's Environmental Inspections and Local Polluters' Rent Seeking: A Perspective of Multilevel Principal–Agent Relationships', *Economic Analysis and Policy*, 80 (2023), 805–19 https://doi.org/10.1016/j.eap.2023.09.023

[41] Qiyang He and Buhui Qiu, 'Environmental Enforcement Actions and Corporate Green Innovation', *Journal of Corporate Finance*, 91 (2025), 102711 https://doi.org/10.1016/j.jcorpfin.2024.102711

implementation of audit procedures is needed to ensure the authenticity and sufficiency of the information disclosed by publicly traded companies. External auditors should enhance their audit procedures to guarantee the accuracy of a company's revenue, expense, and asset impairment items in the balance sheets' income statements and asset items. Additionally, they necessitate understanding the fraud strategies employed by novice and recidivist fraudsters. Material details are frequently concealed, and first-time offenders report fictitious information. Recidivists favor more intricate and concealed methods, such as manipulating revenue, expense, and asset items. Auditors should not regard a detected method of fraud as an isolated event, as most fraudulent firms commit multiple offenses simultaneously. It should be interpreted as a warning that the companies may employ additional fraud strategies.[42]

Critical policy implications are associated with criminal enforcement. Environmental offenses are significantly discouraged by criminal sanctions. This is due to the theoretical prediction that increased enforcement would increase the anticipated costs of noncompliance, thereby incentivizing firms to enhance their performance to avoid severe penalties. This analysis has substantial policy implications. The rates of violations are substantially diminished as a result of criminal penalties. As a result, a significant enhancement of environmental quality may be feasible if authorities persist in pursuing criminal sanctions to ensure that environmental laws are sufficiently "tough." In particular, this influence is anticipated to be more pronounced in inland cities and in those "non-key" environmental protection cities that lack effective administrative enforcement. To accomplish environmental compliance, criminal justice is an effective measure to complement administrative enforcement in these regions.[43]

In Indonesia, the administration law is implemented to facilitate the decentralization of governance. We are aware that the Minister, Governor, and/or Regent/Mayor are required to supervise the compliance of the individual responsible for the business or activity with the agreement outlined in the business license regarding government approval related to environmental approval and the laws and regulations in the field of environmental protection and management. These regulations are enforced by the norms, standards, procedures, and criteria established by the Minister.[44] The following will delineate the authority of the Minister, Governor, and/or Regent/Mayor to oversee the compliance of the individual responsible for the business and/or activity.

[42] Yang Wang, John K. Ashton, and Aziz Jaafar, 'Financial Statement Fraud, Recidivism and Punishment', *Emerging Markets Review*, 56 (2023), 101033 https://doi.org/10.1016/j.ememar.2023.101033

[43] Xian Liu, Wen Wang, and Shoujun Huang, 'Criminal Enforcement and Environmental Performance: Evidence from China', *Ecological Economics*, 224 (2024), 108267 https://doi.org/10.1016/j.ecolecon.2024.108267

[44] Chris Florackis, Xi Fu, and Jingjing Wang, 'Political Connections, Environmental Violations and Punishment: Evidence from Heavily Polluting Firms', *International Review of Financial Analysis*, 88 (2023), 102698 https://doi.org/10.1016/j.irfa.2023.102698

The authority of the Minister, Governor, and/or Regent/Mayor in supervising the compliance of the person in charge of the business and/or activities

Minister	Governor	Mayor
Business licenses related to environmental approval issued by the government	Business licenses related to environmental approval issued by the provincial government.	Business licenses related to environmental aproval issued by the regency/city government.
Government approvals related to environmental approvals issued by the government.	Government approvals related to environmental approvals issued by the provincial government.	Government approvals related to environmental approvals issued by district/city governments.

Two Actions need to be considered by the Minister, Governor, and/or Regent/Mayor in supervising the compliance of the person in charge of the business and/or activity, including The Minister, Governor, and/or Regent/Mayor may delegate their authority to officials/technical agencies responsible for environmental protection and management. As intended in Article 71 paragraph (2) of Law Number 32 Year 2009. The authority attached to the official/technical agency is the authority of the structural official who grants the delegation by referring to the division of government affairs as stipulated in the Appendix to Law Number 23 of 2014 concerning the Regional Government and its implementing regulations. The Minister, Governor, and/or Regent/Mayor shall appoint environmental supervisory officials who are functional in carrying out supervision, as referred to in Article 71 paragraph (3) of Law Number 32 Year 2009. Further provisions regarding the authority of environmental supervisory officials are regulated in Article 74, paragraph (1) of Law Number 32 of 2009.[45]

To ensure the effective operation of the legislative system, it is necessary to supervise it. We can examine the governance frameworks of other countries that implement it, such as China. The Central Ecological and Environmental Protection Inspection has been involved in the following activities: supervision, exposure, rectification, legal enforcement, and reform. It has advanced China's ecological and environmental protection initiatives toward more sustainable, effective, and scientific practices. This inspection system is essential for preventing pollution and resolving significant ecological and environmental issues. Continuing to fulfill its "sharp sword" function, the ecological and environmental protection inspection system will contribute to the preservation of national ecological security and the promotion of green development and demonstrate a more significant potential for guiding public participation and enhancing environmental awareness.[46]

An environmental supervision officer is responsible for various duties, including promoting sustainable practices and ensuring compliance with environmental regulations. This role is essential for resolving ecological concerns, mainly when governance and enforcement mechanisms are inadequate[47]. Independent regulatory

[45] Nurul Listiyani, M. Yasir Said, and Afif Khalid, 'Strengthening Reclamation Obligation through Mining Law Reform: Indonesian Experience', *Resources*, 12.5 (2023), 56 https://doi.org/10.3390/resources12050056

[46] Chunli Zhao and others, 'The Role of Central Ecological and Environmental Protection Inspectors in Governance and an Exploration of China's Environmental Issues from This Perspective', *Ecological Frontiers*, 2024 https://doi.org/10.1016/j.ecofro.2024.11.008

[47] Nathan Wood, 'Problematising Energy Justice: Towards Conceptual and Normative Alignment', *Energy Research & Social Science*, 97 (2023), 102993 https://doi.org/10.1016/j.erss.2023.102993

bodies, public participation and supervision mechanisms, and incentives for compliance are employed as supervisory and compliance mechanisms to monitor and enforce compliance with energy justice principles. They offer governments the ability to consider their financial, technical, and human capabilities when addressing a complex issue like energy justice. The following sections provide a comprehensive overview of the primary responsibilities of environmental supervision officers. Environmental supervisory officials may collaborate with civil servant investigators to exercise their authority. The environmental supervisory official's duties are not to be obstructed by the individual responsible for the business and/or activity.[48]

The supervision method employed by environmental supervisory officials employs two methods: direct supervision by environmental supervision officers. This approach has become a significant strategy for improving environmental quality and compliance. Function The quality of the river or the supervision must be observed by direct supervision, and the river system itself adheres to similar patterns in flow directionality, power, and accountability. To accomplish this, central environmental supervision collects more comprehensive and authentic local environmental information than regional environmental protection inspection centers by direct dialogues with party and government leaders, visiting and inquiries, and accepting reports. Therefore, the central environmental supervision system resolves discrepancies between the regional ecological protection inspection center's inspection target, its vast scope, and the lower authorization level.[49]

Direct supervision is implemented through routine and incidental visits to business locations and/or activities. Annual planning, based on business licensing or government approval related to environmental approval and/or other information, is used to conduct regular supervision. In the interim, incidental supervision is implemented when the criteria for indications of repeated violations and detected violations, complaints from the public regarding alleged environmental pollution and/or environmental damage, and reports from area managers on breaches of the implementation of detailed RKL-RPL by business actors in the area are met. Indirect supervision is implemented by evaluating data from the environmental information system and/or the report of the individual responsible for the business or activity. The Environmental Supervisory Officer initiates direct supervision immediately if the results of indirect supervision demonstrate repeated violations or suggest a significant environmental threat.[50]

An enterprise's strategic decisions are contingent upon the external environment in which it operates and reducing river pollution. Market demand for green products and the proliferation of ESG concepts are not the only factors influencing corporate

[48] Marc Tadaki, 'Is There Space for Politics in the Environmental Bureaucracy? Discretion and Constraint in Aotearoa New Zealand's Ministry for the Environment', *Geoforum*, 111 (2020), 229–38 https://doi.org/10.1016/j.geoforum.2020.02.021

[49] Guoying Li and others, 'Vertical Intergovernmental Environmental Protection Supervision Authority Changes and Boundary Pollution Control: A Case Study of China', *Economic Analysis and Policy*, 84 (2024), 230–39 https://doi.org/10.1016/j.eap.2024.08.014

[50] Álvaro Enríquez-de-Salamanca, 'Simplified Environmental Impact Assessment Processes: Review and Implementation Proposals', *Environmental Impact Assessment Review*, 90 (2021), 106640 https://doi.org/10.1016/j.eiar.2021.106640

top management's concern for environmental protection and social responsibility; external ecological regulations also have a significant impact. Various voluntary CSR initiatives may not be able to be established without mandatory ecological regulations. Appropriate environmental regulations can stimulate technological innovation within organizations. Nevertheless, the influence of environmental regulation on technological innovation may differ depending on the industrial structure, economic development stage, and regulatory instruments implemented.[51]

The environmental supervisory official is required to cease certain violations in the event of a serious ecological threat during the implementation of supervision. This is intended to prevent the occurrence of more significant and broader impacts if ecological pollution and/or environmental damage are not immediately stopped, as well as more significant losses to the environment. Centralized purification is the primary method for managing water pollution. The investment in centralized water pollution control is further increased as the level of economic development increases. [52] The cessation of specific violations committed by environmental supervisory officials may take the following forms: a. the closure of wastewater disposal channels; b. the demolition of wastewater disposal channels; c. the cessation of emission source operations; d. the closure of waste disposal sites; and/or e. other attempts to prevent specific violations. The individual in charge of the business and/or activity is accountable for safeguarding the location from potential injury, alteration, or loss of evidence.[53]

One intriguing aspect of environmental supervision is that the central government can assume responsibility for supervision, a process known as oversight (second-tier supervision). The Minister may assume responsibility for supervising violations and/or damage committed by the individual responsible for the business or activity, as the central government considers there has been environmental damage and/or pollution in the region. This oversight aims to promote the active participation of municipal governments in implementing supervision by their respective jurisdictions. Therefore, the regional government cannot anticipate this oversight to be consistently implemented, as it can only be implemented under specific circumstances, by particular actors, and at certain periods. The categories of circumstances that permit central government oversight include: a. the absence of supervision by the Governor, regent, or mayor by laws and regulations or standard operating procedures for supervision; b. the failure of the Governor, regent, or mayor to apply administrative sanctions by the provisions of laws and regulations; and c. the occurrence of environmental pollution and/or damage that has a significant impact or serious violations that can disrupt the community.

[51] Yujuan Wu and Jacquline Tham, 'The Impact of Environmental Regulation, Environment, Social and Government Performance, and Technological Innovation on Enterprise Resilience under a Green Recovery', *Heliyon*, 9.10 (2023), e20278 https://doi.org/10.1016/j.heliyon.2023.e20278

[52] Bo Chen, Gegentana, and Yongsheng Wang, 'The Impact of Environmental Regulations on Enterprise Pollution Emission from the Perspective of "Overseeing the Government"', *Sustainability*, 15.14 (2023), 11311 https://doi.org/10.3390/su151411311

[53] Dhita Amelia, 'Regulasi Penegakan Hukum Terhadap Pencemaran Air Di Sungai Citarum, Jawa Barat', *Savana: Indonesian Journal of Natural Resources and Environmental Law*, 1.2 (2024), 88–96 https://doi.org/10.25134/savana.v1i2.245

The central government must first coordinate with the local government to implement technical oversight. This coordination is intended to gather all necessary information, including the extent to which the individual responsible for the business or activity complies with the provisions of laws and regulations. This ensures that the oversight is implemented efficiently and effectively. The community's involvement in the construction is essential for supervision. Community and central government authority are more akin to citizen science. Conversely, the local community is responsible for conducting all monitoring processes. Local stakeholders may be involved in some or all phases of a program, including goal setting and determining appropriate methods, data collection and analysis, and the sharing and dissemination of the monitoring between these two extremes. More importantly, the participation of local stakeholders in monitoring processes has been beneficial in enhancing decision-making in addressing current environmental degradation issues, particularly resource management.[54]

Law enforcement must engage in community development. Effective conservation of voluntary community initiatives necessitates robust enforcement mechanisms. Sanctions against community members will become more severe if violations are repeated or result in significant violations. Communities with pre-existing community enforcement institutions, transparent and legal conservation standards, and strong conservation leaders are likelier to have robust community enforcement mechanisms. Regardless of legal property rights, communities with robust enforcement mechanisms and strong local government support for sanctioning contribute to effective conservation. In specific communities, enforcement institutions are robust, yet they continue to encounter difficulties in sanctioning community members due to the strong social bonds among families. In other communities, outside rule-breakers do not respect the authority of community institutions. Assistance with sanctions from external actors is a practical alternative in both scenarios.[55]

Mechanism and Complaint System The community employs a variety of environmental complaint mechanisms to detect pollution and ecological damage. The significance of compliance and regulatory actions is that they are interdependent. Plants subject to more frequent regulatory actions are more likely to be detected, increasing their compliance with pollution control regulations. Similarly, recalcitrant plants will probably be subjected to more stringent monitoring and enforcement measures. Regulatory actions substantially impact compliance decisions; implementing regulatory pressure through inspections and/or violation notices is a successful method of promoting greater compliance across facilities. [56] By Decree Number

[54] Chiara Genta and others, 'A Local Analysis of Circular Economy through a Stakeholders' Lens: From Definitions and Collaborative Efforts to Metrics for Monitoring. The Case of Turin (Italy)', *Environmental Impact Assessment Review*, 112 (2025), 107736 https://doi.org/10.1016/j.eiar.2024.107736

[55] Marieke van der Zon, Wil de Jong, and Bas Arts, 'Community Enforcement and Tenure Security: A Fuzzy-Set Qualitative Comparative Analysis of Twelve Community Forest Management Initiatives in the Peruvian Amazon', *World Development*, 161 (2023), 106071 https://doi.org/10.1016/j.worlddev.2022.106071

[56] Shreekant Gupta, Shalini Saksena, and Omer F. Baris, 'Environmental Enforcement and Compliance in Developing Countries: Evidence from India', *World Development*, 117 (2019), 313–27 https://doi.org/10.1016/j.worlddev.2019.02.001

900/018/DLH/VIII/2021. It includes a mechanism system, complaint procedures, a complaint requirement, a 9-day settlement time, fees/tariffs, and mechanisms for reporters who arrive directly (face-to-face). After this, the complainant is requested to complete a complaint form in response to the purported environmental contamination and damage. PPLH follows: PPLH conducts field visits to sites suspected of causing environmental contamination and damage, as indicated by reports submitted through complaint forms. Laws and regulations are more likely to mitigate the effects of pollution, particularly in rivers, when implemented in conjunction with community development, supervision, and legislation. Therefore, the river pollution issue can be resolved by implementing legislation that prioritizes sustainability, accompanied by rigorous government sanctions and supervisory tools. River pollution is reduced by implementing legislation that aligns with sustainable objectives and promotes environmental regulations in the administrative sector, as well as the stringent monitoring of disturbances and the active involvement of the community.

CONCLUSION

The enforcement of environmental law in Indonesia, as outlined in UURI No. 32/2009 and Government Regulation Number 22 of 2021, significantly relies on administrative sanctions to mitigate environmental degradation in river areas. It is imperative to ensure that administrative law is effectively implemented in order to hold communities or businesses accountable for the pollution of river water. The authority to enforce laws and conduct supervision is granted to local governments in accordance with a variety of regulations. Nevertheless, there are substantial discrepancies in the enforcement and supervision of central and local administrations. It is evident that a new regulatory approach is required, one that prioritizes administrative sanctions to ensure that perpetrators are held accountable at all levels of government, while also incorporating environmental preservation and sustainability. Significant pollution persists in spite of the current regulations and supervision initiatives designed to safeguard rivers from pollution, underscoring deficiencies in both enforcement and regulation. In order to resolve this issue, administrative enforcement should commence with the reform of pertinent laws and regulations, which should be followed by the implementation of rigorous sanctions to prevent and mitigate water pollution in riverine regions. By fortifying these measures, it will be possible to guarantee more sustainable administration of river ecosystems and more effective environmental protection.

REFERENCES

Abu Romman, Zeinab, and Mustafa Al Kuisi, 'The Impact of Water Legislation on Groundwater Sustainability in an Arid Region: Spatial Statistical Approach', *Environmental Development*, 46 (2023), 100852 https://doi.org/10.1016/j.envdev.2023.100852

Alfath, T. Primananda, Lilik Pudjiastuti, and Dina Sunyowati, 'The Legal Framework of Green Governance in Archipelagic State Based on Constitution of The Republic of Indonesia', 358.Icglow (2019), 37–40 https://doi.org/10.2991/icglow-19.2019.9

Amelia, Dhita, 'Regulasi Penegakan Hukum Terhadap Pencemaran Air Di Sungai Citarum, Jawa Barat', *Savana: Indonesian Journal of Natural Resources and Environmental Law*, 1.2 (2024), 88–96 https://doi.org/10.25134/savana.v1i2.245

At Thobari, Jarir, Sutarman, Asal Wahyuni Erlin Mulyadi, Emma Watts, Natalie Carvalho, Frédéric Debellut, and others, 'Direct and Indirect Costs of Acute Diarrhea in Children under Five Years of Age in Indonesia: Health Facilities and Community Survey', *The Lancet Regional Health - Western Pacific*, 19 (2022), 100333 https://doi.org/10.1016/j.lanwpc.2021.100333

Basuki, Tyas Mutiara, Hunggul Yudono Setio Hadi Nugroho, Yonky Indrajaya, Irfan Budi Pramono, Nunung Puji Nugroho, Agung Budi Supangat, and others, 'Improvement of Integrated Watershed Management in Indonesia for Mitigation and Adaptation to Climate Change: A Review', *Sustainability*, 14.16 (2022), 9997 https://doi.org/10.3390/su14169997

Chen, Bo, Gegentana, and Yongsheng Wang, 'The Impact of Environmental Regulations on Enterprise Pollution Emission from the Perspective of "Overseeing the Government"', *Sustainability*, 15.14 (2023), 11311 https://doi.org/10.3390/su151411311

Cordova, Muhammad Reza, Max R. Kelly, Muhammad Hafizt, Singgih Prasetyo Adi Wibowo, Yaya Ihya Ulumuddin, Triyoni Purbonegoro, and others, 'From Riverbank to the Sea: An Initial Assessment of Plastic Pollution along the Ciliwung River, Indonesia', *Marine Pollution Bulletin*, 206 (2024), 116662 https://doi.org/10.1016/j.marpolbul.2024.116662

Deng, Yuping, Yanrui Wu, and Helian Xu, 'On the Relationship between Pollution Reduction and Export Product Quality: Evidence from Chinese Firms', *Journal of Environmental Management*, 281 (2021), 111883 https://doi.org/10.1016/j.jenvman.2020.111883

Devadasan, Pradeep Mullekyal, 'Legal Research- Descriptive Analysis on Doctrinal Methodology', *International Journal of Management, Technology, and Social Sciences (IJMTS)*, 2.December 2019 (2022), 10 https://doi.org/10.47992/IJMTS.2581.6012.0075

Enríquez-de-Salamanca, Álvaro, 'Simplified Environmental Impact Assessment Processes: Review and Implementation Proposals', *Environmental Impact Assessment Review*, 90 (2021), 106640 https://doi.org/10.1016/j.eiar.2021.106640

Florackis, Chris, Xi Fu, and Jingjing Wang, 'Political Connections, Environmental Violations and Punishment: Evidence from Heavily Polluting Firms', *International Review of Financial Analysis*, 88 (2023), 102698 https://doi.org/10.1016/j.irfa.2023.102698

Genta, Chiara, Esther Sanyé-Mengual, Patrizia Lombardi, and Serenella Sala, 'A Local Analysis of Circular Economy through a Stakeholders' Lens: From Definitions and Collaborative Efforts to Metrics for Monitoring. The Case of Turin (Italy)', *Environmental Impact Assessment Review*, 112 (2025), 107736 https://doi.org/10.1016/j.eiar.2024.107736

Gómez-Sanabria, Adriana, Eric Zusman, Lena Höglund-Isaksson, Zbigniew Klimont, So-Young Lee, Kaoru Akahoshi, and others, 'Sustainable Wastewater Management in Indonesia's Fish Processing Industry: Bringing Governance into Scenario Analysis', *Journal of Environmental Management*, 275 (2020), 111241 https://doi.org/10.1016/j.jenvman.2020.111241

Guo, Ling, and Xiaoni Jiang, 'Decentralization of Environmental Management and Enterprises' Environmental Technology Innovation: Evidence from China', *Applied Economics*, 54.36 (2022), 4170–86 https://doi.org/10.1080/00036846.2021.2022093

Gupta, Shreekant, Shalini Saksena, and Omer F. Baris, 'Environmental Enforcement and Compliance in Developing Countries: Evidence from India', *World Development*, 117 (2019), 313–27 https://doi.org/10.1016/j.worlddev.2019.02.001

Hadi, Sudharto P., Rizkiana S. Hamdani, and Ali Roziqin, 'A Sustainability Review on the

Indonesian Job Creation Law', *Heliyon*, 9.2 (2023), e13431 https://doi.org/10.1016/j.heliyon.2023.e13431

Handoyo, Sofik, 'Public Governance and National Environmental Performance Nexus: Evidence from Cross-Country Studies', *Heliyon*, 10.23 (2024), e40637 https://doi.org/10.1016/j.heliyon.2024.e40637

Hartiningsih, Dini, Skalalis Diana, Yuniarti MS, Mochamad Rudyansyah Ismail, and Qurnia Wulan Sari, 'Water Quality Pollution Indices to Assess the Heavy Metal Contamination: A Case Study of the Estuarine Waters in Cirebon City (West Java, Indonesia) Pre- and Post-CARE COVID-19', *Environmental and Sustainability Indicators*, 21 (2024), 100318 https://doi.org/10.1016/j.indic.2023.100318

He, Qiyang, and Buhui Qiu, 'Environmental Enforcement Actions and Corporate Green Innovation', *Journal of Corporate Finance*, 91 (2025), 102711 https://doi.org/10.1016/j.jcorpfin.2024.102711

Hernanda, Trias, and Urip Giyono, 'Environmental Legal Protection of Rivers in the Perspective of Sustainable Development', *Jurnal Jurisprudence*, 11.1 (2022), 100–113 https://doi.org/10.23917/jurisprudence.v11i1.14744

Hua, Lei, Rong Ran, Mingjuan Xie, and Tingrou Li, 'China's Poverty Alleviation Policy Promoted Ecological-Economic Collaborative Development: Evidence from Poverty-Stricken Counties on the Qinghai-Tibet Plateau', *International Journal of Sustainable Development & World Ecology*, 30.4 (2023), 402–19 https://doi.org/10.1080/13504509.2022.2155882

Ismanto, Aris, Tony Hadibarata, Denny Nugroho Sugianto, Muhammad Zainuri, Risky Ayu Kristanti, Ulung Jantama Wisha, and others, 'First Evidence of Microplastics in the Water and Sediment of Surakarta City River Basin, Indonesia', *Marine Pollution Bulletin*, 196 (2023), 115677 https://doi.org/10.1016/j.marpolbul.2023.115677

Jiang, Jiping, Yunlei Men, Tianrui Pang, Sijie Tang, Zhiqiang Hou, Meiyu Luo, and others, 'An Integrated Supervision Framework to Safeguard the Urban River Water Quality Supported by ICT and Models', *Journal of Environmental Management*, 331 (2023), 117245 https://doi.org/10.1016/j.jenvman.2023.117245

Kuemlangan, Blaise, Elizabeth-Rose Amidjogbe, Julia Nakamura, Alessandra Tomassi, Rudolph Hupperts, Buba Bojang, and others, 'Enforcement Approaches against Illegal Fishing in National Fisheries Legislation', *Marine Policy*, 149 (2023), 105514 https://doi.org/10.1016/j.marpol.2023.105514

Lai, Jia Yen, and Alistair Hamilton, 'For Whom Do NGOs Speak? Accountability and Legitimacy in Pursuit of Just Environmental Impact Assessment', *Environmental Impact Assessment Review*, 82 (2020), 106374 https://doi.org/10.1016/j.eiar.2020.106374

Lee, Hansol, Jeongeun Son, Suyeon Min, Haeun Lee, and Mi Sun Park, 'Natural Resources Conflicts on Borderlands by the Five Spheres of Earth System', *Land*, 12.2 (2023), 389 https://doi.org/10.3390/land12020389

Li, Guoying, Zhenhai Liu, Qiuyun Zhao, and Gaofei Zhang, 'Vertical Intergovernmental Environmental Protection Supervision Authority Changes and Boundary Pollution Control: A Case Study of China', *Economic Analysis and Policy*, 84 (2024), 230–39 https://doi.org/10.1016/j.eap.2024.08.014

Lin, Boqiang, and Jiawen Xie, 'Superior Administration's Environmental Inspections and Local Polluters' Rent Seeking: A Perspective of Multilevel Principal–Agent Relationships', *Economic Analysis and Policy*, 80 (2023), 805–19 https://doi.org/10.1016/j.eap.2023.09.023

Listiyani, Nurul, M. Yasir Said, and Afif Khalid, 'Strengthening Reclamation Obligation through Mining Law Reform: Indonesian Experience', *Resources*, 12.5 (2023), 56 https://doi.org/10.3390/resources12050056

Liu, Xian, Wen Wang, and Shoujun Huang, 'Criminal Enforcement and Environmental Performance: Evidence from China', *Ecological Economics*, 224 (2024), 108267 https://doi.org/10.1016/j.ecolecon.2024.108267

Minyou, Yu, and Ni Yao, 'Law Enforcement in the Implication of Blue Cooperation – A Reflection of China', *Marine Policy*, 163 (2024), 106080 https://doi.org/10.1016/j.marpol.2024.106080

Nanlin, Liao, Lü Fan, Zhang Hua, Shao Liming, and He Pinjing, 'Environmental and Economic Assessment of the Construction, Operation, and Demolition of a Decentralized Composting Facility', *Science of The Total Environment*, 884 (2023), 163724 https://doi.org/10.1016/j.scitotenv.2023.163724

Nti, Emmanuel Kwame, Samuel Jerry Cobbina, Eunice Efua Attafuah, Lydia Dziedzorm Senanu, Gloria Amenyeku, Michael Amoah Gyan, and others, 'Water Pollution Control and Revitalization Using Advanced Technologies: Uncovering Artificial Intelligence Options towards Environmental Health Protection, Sustainability and Water Security', *Heliyon*, 9.7 (2023), e18170 https://doi.org/10.1016/j.heliyon.2023.e18170

Nuryanto, Uli Wildan, Basrowi, Icin Quraysin, and Ika Pratiwi, 'Environmental Management Control System, Blockchain Adoption, Cleaner Production, and Product Efficiency on Environmental Reputation and Performance: Empirical Evidence from Indonesia', *Sustainable Futures*, 7 (2024), 100190 https://doi.org/10.1016/j.sftr.2024.100190

Olaniyi, Eunice O., Maria Claude Solarte-Vasquez, and Tommi Inkinen, 'Smart Regulations in Maritime Governance: Efficacy, Gaps, and Stakeholder Perspectives', *Marine Pollution Bulletin*, 202 (2024), 116341 https://doi.org/10.1016/j.marpolbul.2024.116341

Puig, Martí, and Rosa Mari Darbra, 'Innovations and Insights in Environmental Monitoring and Assessment in Port Areas', *Current Opinion in Environmental Sustainability*, 70 (2024), 101472 https://doi.org/10.1016/j.cosust.2024.101472

Qi, Yu, Jianshun Zhang, and Jianwei Chen, 'Tax Incentives, Environmental Regulation and Firms' Emission Reduction Strategies: Evidence from China', *Journal of Environmental Economics and Management*, 117 (2023), 102750 https://doi.org/10.1016/j.jeem.2022.102750

Risyan Putri Maharani, Dhamara Kusuma Swastika Ratri, and Destina Balqis Anggiyanti, 'Eksistensi Direktorat Jenderal Penegakan Hukum Lingkungan Hidup Dan Kehutanan Dalam Penanganan Kasus Pencemaran Lingkungan Oleh Pabrik Pengolahan Kelapa Sawit Di Riau', *JURNAL HUKUM, POLITIK DAN ILMU SOSIAL*, 3.3 (2024), 162–73 https://doi.org/10.55606/jhpis.v3i3.3903

Sam, Abdoul G., and Xiaodong Zhang, 'Value Relevance of the New Environmental Enforcement Regime in China', *Journal of Corporate Finance*, 62 (2020), 101573 https://doi.org/10.1016/j.jcorpfin.2020.101573

Sasradinata, Irwan, Agung Pramono, and Lufsiana Lufsiana, 'Pengaturan Hukum Laut Internasional Dan Nasional Dalam Pencemaran Lingkungan Hidup Di Perairan Indonesia Akibat Sampah Plastik', *ARBITER: Jurnal Ilmiah Magister Hukum*, 5.1 (2023), 23–29 https://doi.org/10.31289/arbiter.v5i1.1645

Sewak, Aarti, Sameer Deshpande, Sharyn Rundle-Thiele, Fang Zhao, and Renata Anibaldi, 'Community Perspectives and Engagement in Sustainable Solid Waste Management (SWM) in Fiji: A Socioecological Thematic Analysis', *Journal of Environmental Management*, 298 (2021), 113455 https://doi.org/10.1016/j.jenvman.2021.113455

Sulistyaningsih, Tri, Achmad Nurmandi, Salahudin Salahudin, Ali Roziqin, Muhammad Kamil, Iradhad T. Sihidi, and others, 'Public Policy Analysis on Watershed Governance in Indonesia', *Sustainability*, 13.12 (2021), 6615 https://doi.org/10.3390/su13126615

Surya, Batara, Haeruddin Saleh, Seri Suriani, Harry Hardian Sakti, Hadijah Hadijah, and Muhammad Idris, 'Environmental Pollution Control and Sustainability Management of Slum Settlements in Makassar City, South Sulawesi, Indonesia', *Land*, 9.9 (2020), 279 https://doi.org/10.3390/land9090279

Syaprillah, Aditia, Yahya Ahmad Zein, and Tove H.Malloy, 'A Social Justice Legitimacy to Protect Coastal Residents', *Journal of Human Rights, Culture and Legal System*, 3.3 (2023), 541–68 https://doi.org/10.53955/jhcls.v3i3.159

Tadaki, Marc, 'Is There Space for Politics in the Environmental Bureaucracy? Discretion and Constraint in Aotearoa New Zealand's Ministry for the Environment', *Geoforum*, 111 (2020), 229–38 https://doi.org/10.1016/j.geoforum.2020.02.021

Taylor, Mark B., 'Counter Corporate Litigation: Remedy, Regulation, and Repression in the Struggle for a Just Transition', *Sustainability*, 13.19 (2021), 10742 https://doi.org/10.3390/su131910742

Viinikainen, Teemu, 'Regulatory Measures in Water Legislation That Can Support Sustainable Soil Management', *Soil Security*, 13 (2023), 100111 https://doi.org/10.1016/j.soisec.2023.100111

Wang, Huanhuan, and Jiaxin Xiong, 'Governance on Water Pollution: Evidence from a New River Regulatory System of China', *Economic Modelling*, 113 (2022), 105878 https://doi.org/10.1016/j.econmod.2022.105878

Wang, Yang, John K. Ashton, and Aziz Jaafar, 'Financial Statement Fraud, Recidivism and Punishment', *Emerging Markets Review*, 56 (2023), 101033 https://doi.org/10.1016/j.ememar.2023.101033

Wegner, Newmar, Erivelto Mercante, Isaque de Souza Mendes, Diandra Ganascini, Marcus Metri Correa, Marcio Furlan Maggi, and others, 'Hydro Energy Potential Considering Environmental Variables and Water Availability in Paraná Hydrographic Basin 3', *Journal of Hydrology*, 580 (2020), 124183 https://doi.org/10.1016/j.jhydrol.2019.124183

Wood, Nathan, 'Problematising Energy Justice: Towards Conceptual and Normative Alignment', *Energy Research & Social Science*, 97 (2023), 102993 https://doi.org/10.1016/j.erss.2023.102993

Wu, Yujuan, and Jacquline Tham, 'The Impact of Environmental Regulation, Environment, Social and Government Performance, and Technological Innovation on Enterprise Resilience under a Green Recovery', *Heliyon*, 9.10 (2023), e20278

https://doi.org/10.1016/j.heliyon.2023.e20278

Yang, Yuzhi, Erik Ansink, and Jens Gudmundsson, 'How to Pollute a River If You Must', *Journal of Environmental Economics and Management*, 130 (2025), 103105 https://doi.org/10.1016/j.jeem.2024.103105

Zhang, Shi'ao, 'Law Enforcement or Use of Force: The Legal Nature of Activities Conducted by CCG and JCG in the Disputed Waters', *Marine Policy*, 171 (2025), 106440 https://doi.org/10.1016/j.marpol.2024.106440

Zhao, Chunli, Fei Cao, Hao Sun, Wenting Guo, Feng Chen, Chengfang Li, and others, 'The Role of Central Ecological and Environmental Protection Inspectors in Governance and an Exploration of China's Environmental Issues from This Perspective', *Ecological Frontiers*, 2024 https://doi.org/10.1016/j.ecofro.2024.11.008

van der Zon, Marieke, Wil de Jong, and Bas Arts, 'Community Enforcement and Tenure Security: A Fuzzy-Set Qualitative Comparative Analysis of Twelve Community Forest Management Initiatives in the Peruvian Amazon', *World Development*, 161 (2023), 106071 https://doi.org/10.1016/j.worlddev.2022.106071