

Disagreement Between Heavy Equipment Tax Regulations and The Mandate of The Constitutional Court Decision on Road and Environmental Damage Variables

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Abstract: This study examines in depth the disharmony between the Heavy Equipment Tax provisions in Law No. 1 of 2022 concerning Financial Relations between the Central Government and Local Governments and the mandate of Constitutional Court Decision No. 15/PUU-XV/2017. The research focuses on the inconsistency in the formulation of the basis for imposition and characteristics of Heavy Equipment Tax, which has not internalized the variables of road damage and environmental impact as negative externalities from the use of heavy equipment. The main legal problem lies in the absence of the integration of road/environmental damage weight coefficients as previously known in the Motor Vehicle Tax (PKB) regime, so that the regulatory objectives that should reflect the regulatory function are not achieved. In addition, the lack of clarity in the legal approach is evident in the methodological choice of the legislators, who only adopted a budgetary approach without considering the conceptual approach of the polluter pays principle and the relevant Pigouvian tax theory to control the externalities of heavy equipment. This study is a normative (doctrinal) legal study using a statute approach to assess the conformity of the HKPD Law with the Constitutional Court's decision and a conceptual approach to examine the need to include road and environmental damage variables in the design of heavy equipment tax. The results show that heavy equipment tax regulations in the HKPD Law are still oriented solely towards budgetary functions, without adequate regulatory instruments to correct the negative externalities of heavy equipment use on public roads and in operational areas. The conclusion of the study confirms that the failure to fulfill the Constitutional Court's mandate has led to uncertainty in the concept of heavy equipment tax regulation and resulted in a lack of synchronization between the constitutional goal of environmental protection and the design of regional fiscal policy.

Keywords: Heavy Equipment Tax, HKPD Law, Tax Regulation Function.

INTRODUCTION

Based on the provisions of Article 1 of the 1945 Constitution of the Republic of Indonesia, it is emphasized that Indonesia is a unitary state in the form of a republic. As a consequence of the unitary state form, a

national government was formed which has the highest authority in state administration.¹ To support the effectiveness of government administration, the Indonesian government structure is divided into several levels, namely the provincial level, which is further divided into regencies and cities. Each level of government has its own apparatus and authority.² Furthermore, the Unitary State of the Republic of Indonesia as a state based on the rule of law, Pancasila, and the 1945 Constitution has the fundamental duty to realize the welfare of the people and social justice for all Indonesians.³ In the context of taxation, the philosophy of tax collection is not solely oriented towards the budgetary function, but must also fulfill a regulatory function that reflects the state's responsibility to protect the interests of society from the negative externalities of economic activities. Taxation as an instrument of public policy should reflect the principle of substantive justice, not just procedural justice.⁴ The principle of fairness in taxation requires that every economic actor who causes negative impacts on the environment and public infrastructure must bear a proportional burden for the impacts they cause.⁵ This is in line with Pigouvian Tax theory, which states that parties who create negative externalities must internalize the social costs incurred through the tax mechanism.⁶

On the other hand, the operation of heavy equipment in various industrial sectors such as mining, construction, plantations, and forestry actually causes road damage and environmental degradation. The burden of infrastructure and environmental damage is ultimately borne by the general public through the government budget for maintenance and rehabilitation. Therefore, philosophically, heavy equipment tax regulations must be able to allocate this burden fairly to the businesses that operate the heavy equipment, so that distributive justice is achieved in society. The dynamics of heavy equipment taxation in Indonesia's regional taxation legal system have undergone a complex and controversial legal journey.⁷ The legal problem stems from Law Number 28 of 2009 concerning Regional Taxes and Levies (PDRD Law), which includes heavy equipment as part of the Motor Vehicle Tax (PKB) object. Article 1 point 13 of the PDRD Law defines motor vehicles as including "*heavy equipment and large equipment that in their operation use wheels and motors and are not permanently attached.*"⁸

In this regard, this legal construction was then tested through Constitutional Court Decision Number 3/PUU-XIII/2015, which stated that heavy equipment is not included in the category of motor vehicles as

¹ Watuwaya, E. R. P. (2021). *National Integration as a Parameter of Unity and Integrity of the Republic of Indonesia*. Center for Open Science. <https://doi.org/10.31219/osf.io/hwe8v>

² M.H., Prof. Dr. Juanda. S. H. (2021). *Local Government Law*. Alumni Publishers.

³ Constitutional Court. (n.d.). *1945 Constitution of the Republic of Indonesia*.

⁴ Rohendi, A. (n.d.). *Budgetary Function and Regulatory Function in Indonesian Taxation Law*. Retrieved November 22, 2025, from <https://ssrn.com/abstract=2681185>

⁵ Romi, R. (2009). A Study of the Principle of Fairness in Tax Collection in Indonesia. *Jurnal Media Hukum*, 3(4).

⁶ Tunisia, F., & Inayati, I. (2025). Pigouvian Concept Analysis Tax and Earmarking Tax in The Implementation of Motor Vehicle Tax. *Enrichment: Journal of Multidisciplinary Research and Development*, 2(10). <https://doi.org/10.55324/enrichment.v2i10.270>

⁷ *Strategic Framework for Optimizing Local Taxes and Levies*. (n.d.). Retrieved November 22, 2025, from <https://klc2.kemenkeu.go.id/kms/knowledge/kerangka-strategis-optimalisasi-pajak-daerah-dan-retribusi-daerah-403d125a/detail/>

⁸ *Law No. 28 of 2009*. (n.d.). Regulation Database | JDIH BPK. Retrieved November 22, 2025, from <https://peraturan.bpk.go.id/Details/38763/uu-no-28-tahun-2009>

regulated in Law Number 22 of 2009 concerning Road Traffic and Transportation. This ruling created legal uncertainty due to the dualism between the provisions of the PKB in the PDRD Law and the traffic regulations.⁹ The peak of the legal problem occurred through Constitutional Court Decision Number 15/PUU-XV/2017, which stated that the phrase "*including heavy equipment and large equipment*" in Article 1 point 13, Article 5 paragraph (2), Article 6 paragraph (4), and Article 12 paragraph (2) of the PDRD Law, is contrary to the 1945 Constitution and has no binding legal force. In its legal considerations, the Constitutional Court explicitly stated that: "*Heavy equipment causes damage to road quality, either directly or indirectly*". The Constitutional Court gave the lawmaker a period of 3 (three) years to formulate new regulations that accommodate the separation of heavy equipment tax provisions from PKB by considering the impact of road and environmental damage caused by heavy equipment.¹⁰ As a follow-up to the mandate of the ruling, the government passed Law Number 1 of 2022 concerning Central and Local Government Financial Relations (HKPD Law), which regulates Heavy Equipment Tax (PAB) as a separate type of tax in Article 1 point 32.

However, there are fundamental legal issues in the implementation of the HKPD Law, particularly regarding the omission of road and environmental damage variables in the basic tax calculation formula.¹¹ Based on Article 19 of the HKPD Law in conjunction with Minister of Home Affairs Regulation Number 82 of 2022, the basis for imposing Heavy Equipment Tax is only based on the Heavy Equipment Sales Value (NJAB) without involving the road damage and/or environmental pollution weight coefficient as applied to PKB.¹² This legal construction creates disharmony between the substance of the provisions in the Heavy Equipment Tax Law and the considerations and mandate of Constitutional Court Decision No. 15/PUU-XV/2017, which explicitly emphasizes the need to consider the damage caused by heavy equipment. This legal disharmony becomes even more apparent when comparing the PKB formulation in Article 13 paragraph (3) of the HKPD Law, which states: "*The basis for imposing PKB as referred to in paragraph (1) is determined based on: a. NJKB; and b. a weight that relatively reflects the degree of road damage and/or environmental pollution caused by the use of motor vehicles.*"¹³

Meanwhile, for PAB, Article 19 paragraph (1) of the HKPD Law only states: "*The basis for imposing PAB is the Sales Value of Heavy Equipment.*" This difference in legal formulation shows inconsistency in the application of the polluter pays principle and the regulatory function of taxes, even though the damage caused by heavy equipment is in fact greater than that caused by motor vehicles in general. Furthermore, the absence of regulations regarding the specific allocation of PAB revenue for road and environmental maintenance in Article 86 of the HKPD Law indicates that the regulatory function of taxation has been reduced by the dominance of the budgetary function alone. Article 86 of the HKPD Law only regulates

⁹ Law No. 22 of 2009. (n.d.). Regulation Database | JDIH BPK. Retrieved November 22, 2025, from <https://peraturan.bpk.go.id/Details/38654/uu-no-22-tahun-2009>

¹⁰ Constitutional Court. (n.d.-a). *Constitutional Court 15/PUU-XV/2017.* https://www.mkr.go.id/public/content/persidangan/sinopsis/sinopsis_perkara_541_ikhtisar%20putusan%20perkara%20nomor%2015%20puu%202017-final.pdf

¹¹ Law No. 1 of 2022. (n.d.). Regulation Database | JDIH BPK. Retrieved November 22, 2025, from <https://peraturan.bpk.go.id/Details/195696/uu-no-1-tahun-2022>

¹² Ministerial Regulation No. 82 of 2022. (n.d.). Regulation Database | JDIH BPK. Retrieved November 22, 2025, from <https://peraturan.bpk.go.id/Details/233410/permendagri-no-82-tahun-2022>

¹³ Law No. 1 of 2022. (n.d.). Regulation Database | JDIH BPK. Retrieved November 22, 2025, from <https://peraturan.bpk.go.id/Details/195696/uu-no-1-tahun-2022>

earmarking for PKB, PBJT, Cigarette Tax, and PAT, but not for PAB.¹⁴ This inconsistency in regulation has the potential to cause legal injustice for the community who bears the burden of infrastructure and environmental damage, as well as creating legal uncertainty regarding the responsibility of business actors who operate heavy equipment. This condition also shows that the HKPD Law legislation is not yet fully responsive to the constitutional mandate established through the Constitutional Court's decision. This inconsistency in regulations has the potential to cause legal injustice for the community who bear the burden of infrastructure and environmental damage, as well as creating legal uncertainty regarding the responsibility of business actors who operate heavy equipment. This condition also shows that the HKPD Law legislation is not yet fully responsive to the constitutional mandate established through the Constitutional Court's decision.

Based on the above issues, empirical evidence in the community shows that the operation and mobilization of heavy equipment has a significant social and environmental impact. Various studies have proven a strong correlation between the intensity of heavy equipment use and the level of road infrastructure damage and environmental degradation. Research conducted by Tiara Vika Anggraini (2021) in Sumberasri Village, Blitar Regency, found that the impact of the operation and mobility of sand mining heavy equipment resulted in 1.05 kilometers of severely damaged roads, 0.85 kilometers of moderately damaged roads, and 0.85 kilometers of slightly damaged roads. This infrastructure damage directly affects the socio-economic activities of the local community and incurs maintenance costs that must be borne by the local government.¹⁵ Another study conducted by Alimuddin Doni Prasetyo (2018) on the Pongkor Mini-Hydro Power Plant (PLTM) construction project identified various negative impacts of heavy equipment mobilization, including: disruption of traffic flow, increased dust pollution, increased noise intensity, soil erosion, and decreased air quality due to exhaust gases from heavy equipment engines. The social impacts of heavy equipment use are also felt by the community in the form of a decline in quality of life, health problems due to air pollution and noise, and a decline in agricultural productivity due to soil and water contamination.¹⁶

In the context of mining, farmers often experience a decline in income because the soil and water sources in their farming environment are damaged and contaminated with hazardous chemicals produced by heavy equipment activities.¹⁷ Another sociological problem is the imbalance in social costs borne by the community. Businesses that operate heavy equipment reap economic benefits from its use, while the wider community and local government must bear the costs of infrastructure maintenance and environmental rehabilitation.¹⁸ This situation creates social injustice because there is privatization of gains but socialization

¹⁴ Law No. 1 of 2022. (n.d.). Regulation Database | JDIH BPK. Retrieved November 22, 2025, from <https://peraturan.bpk.go.id/Details/195696/uu-no-1-tahun-2022>

¹⁵ Swara Bhumi Journal. (n.d.). *The Impact of Sand Mining Using Heavy Equipment on Road Damage in Sumberasri Village, Nglelok District, Blita Regency*. Swara Bhumi; Vol. 2 No. 2 (2021). Retrieved November 22, 2025, from <https://ejournal.unesa.ac.id/index.php/swara-bhumi/issue/view/2410>

¹⁶ Prasetyo, D., & Alimuddin, A. (2018). Environmental Impact Assessment of the Pongkor Mini-Hydro Power Plant (Pltm) Construction Project. *Semnastek Proceedings*.

¹⁷ Maga, L. L. M. (2022). Analysis of the Impact of PT. X Nickel Mining Activities on the Income of Rice Farmers in Tinanggea District, South Konawe Regency. *Journal of Economic Studies and Development Studies*, 9(1). <https://doi.org/10.56076/jkesp.v9i1.2289>

¹⁸ Mariyono, J. (2002). Externalities and External Costs due to Agricultural Pollution. *Journal of Socioeconomic Dynamics*, 3(1), 34–44.

of losses.¹⁹ In the context of fiscal decentralization, the ability of local governments to finance road maintenance and environmental conservation programs is highly dependent on the optimization of Local Own-Source Revenue (PAD), where local taxes are the main contributor. However, with very low PAB rates (maximum 0.2%) and no weighting for damage, revenue from this sector is not proportional to the maintenance costs that must be incurred by local governments.²⁰

In addition, empirical data also shows that sectors that intensively use heavy equipment, such as mining, infrastructure construction, and large-scale plantations, continue to experience growth.²¹ This indicates that the social and environmental impacts of heavy equipment use will increase in the future if there is no effective regulatory mechanism through tax instruments. Public awareness of environmental issues and sustainable development is also increasing. There is strong social demand for businesses that cause negative environmental impacts to be held accountable through fair and proportional mechanisms. However, the PAB regulation in the HKPD Law, which ignores the variables of road and environmental damage, is not in line with the aspirations and needs of the community for ecological justice.²² Furthermore, this condition creates a disincentive for environmentally friendly technological innovation in sectors that use heavy equipment. Without tariff differentiation based on environmental impact, business actors have no economic incentive to invest in more environmentally friendly heavy equipment technology or implement operational practices that minimize damage.

Based on the above background, the need to further examine the issue of the disharmony between the Heavy Equipment Tax provisions in the HKPD Law and Constitutional Court Decision Number 15/PUU-XV/2017, particularly in relation to road and environmental damage, has become increasingly urgent.²³ The inconsistency between the Constitutional Court's legal considerations, which demand recognition of negative externalities, and the provisions in the HKPD Law, which do not yet accommodate these variables, indicates that there is room for evaluation of the consistency of lawmakers in implementing constitutional decisions. In addition, the weak regulatory function in the imposition of PAB causes the tax instrument to lose its role as a tool to control social and ecological impacts, thus requiring a review of the alignment of PAB with ideal taxation principles and the Pigouvian approach. Furthermore, this research is also needed to formulate academic recommendations that can encourage regulatory improvements to be more adaptive in protecting public infrastructure and the environment, without hindering the dynamics of investment and economic activities that depend on the use of heavy equipment.

¹⁹ Karisma, K., Ardiani, R., Alifiyah, S., Saiful, S., & Rachmawati, D. (2021). The Impact of Privatization Policy on the Indonesian Economy. *Caraka Prabu Journal*, 5(2), 242–250. <https://doi.org/10.36859/jcp.v5i2.655>

²⁰ Jaya, A. I. B. (2024). Implications of the Law on Central and Regional Financial Relations on Tax Regulations and Local Revenue. *Yuridis Journal*, 11(2), 320–348. <https://doi.org/10.35586/jyur.v11i2.9252>

²¹ Karisma, K., Ardiani, R., Alifiyah, S., Saiful, S., & Rachmawati, D. (2021). The Impact of Privatization Policy on the Economy in Indonesia. *Caraka Prabu Journal*, 5(2), 242–250. <https://doi.org/10.36859/jcp.v5i2.655>

²² Law No. 1 of 2022. (n.d.). Regulation Database | JDIH BPK. Retrieved November 22, 2025, from <https://peraturan.bpk.go.id/Details/195696/uu-no-1-tahun-2022>

²³ Constitutional Court. (n.d.-a). *Constitutional Court 15/PUU-XV/2017*. https://www.mkri.id/public/content/persidangan/sinopsis/sinopsis_perkara_541_ikhtisar%20putusan%20perkara%20nomor%2015%20puu%202017-final.pdf

METHODOLOGY

This study uses a normative (doctrinal) legal research method by placing legislation, Constitutional Court decisions, and doctrine as the main objects of study.²⁴ Referring to the legal research methodology as described by Peter Mahmud Marzuki and Johnny Ibrahim, normative research requires clarity in the analytical approach used. Therefore, this study explicitly applies *the statute approach* to examine the consistency of heavy equipment tax regulations in the central-regional financial relations regime, *the case approach* to assess the relevance and normative mandate of the Constitutional Court's decision regarding road and environmental damage variables, and *the conceptual approach* to evaluate the concept of the *regulatory* function of taxes as the philosophical basis for imposing externalities.²⁵ The affirmation of this approach is important because in a number of previous studies there has been methodological ambiguity in linking the issue of regulatory disharmony with the appropriate analytical framework. This study therefore ensures that each legal issue is analyzed through an approach that is appropriate to the characteristics of the issue under review.

RESULTS AND DISCUSSION

Normative Analysis of Heavy Equipment Tax Regulations in the HKPD Law and Its Relevance to Constitutional Court Decision No. 15/PUU-XV/2017

The Heavy Equipment Tax Regulation in the HKPD Law marks a fundamental change in the construction of regional taxation norms on heavy equipment. Unlike the previous regime, which included heavy equipment as part of the Motor Vehicle Tax, the HKPD Law separates heavy equipment into a separate type of tax as stipulated in Article 1 number 32.²⁶ This separation is a direct response to Constitutional Court Decision No. 15/PUU-XV/2017, which granted the petitioner's request and stated that the phrase "*including heavy equipment and large equipment*" in the PKB provision was unconstitutional. In its ruling, the Court acknowledged that heavy equipment has characteristics that are significantly different from motor vehicles, so it is not appropriate to group them in the same category. This new normative construction should reflect a more mature understanding of the nature of heavy equipment and its impact.²⁷ Furthermore, the definition of Heavy Equipment Tax according to Article 1 point 32 of the HKPD Law is a tax on the ownership and/or control of heavy equipment. Meanwhile, heavy equipment itself is defined as equipment used to assist in construction and other civil engineering work that would be considered heavy if done by human labor, operates using a motor with or without wheels, is not permanently attached, and operates in certain areas but is not limited to construction, plantation, forestry, and mining areas.²⁸ This definition shows that the legislators identify heavy equipment as property or assets for its owners, not as a mode of

²⁴ Muhdar, M. (2020, April 23). *Doctrinal and Non-Doctrinal Applied Approaches in Legal Research*. Mulawarman University Press. https://www.researchgate.net/publication/340861898_PENELITIAN_DOCTRINAL_DAN_NON-DOCTRINAL_Pendekatan_Aplikatif_dalam_Penelitian_Hukum_Oleh_Muhamad_Muhdar_Penerbit

²⁵ Marzuki, Prof. Dr. M. (2017). *Legal research: Revised edition*. Prenada Media.

²⁶ Law No. 1 of 2022. (n.d.). Regulation Database | JDIH BPK. Retrieved November 22, 2025, from <https://peraturan.bpk.go.id/Details/195696/uu-no-1-tahun-2022>

²⁷ Constitutional Court. (n.d.). *Constitutional Court 15/PUU-XV/2017*. https://www.mkri.id/public/content/persidangan/sinopsis/sinopsis_perkara_541_ikhtisar%20putusan%20perkara%20nomor%2015%20puu%202017-final.pdf

²⁸ Law No. 1 of 2022. (n.d.). Regulation Database | JDIH BPK. Retrieved November 22, 2025, from <https://peraturan.bpk.go.id/Details/195696/uu-no-1-tahun-2022>

transportation. This approach shifts the paradigm from a road user charge to a personal property tax. However, this paradigm shift raises critical questions about its consistency with the Constitutional Court's consideration of the impact of heavy equipment operations on road and environmental damage.

The basic structure of heavy equipment taxation in the HKPD Law shows a significant simplification compared to the previous PKB regime. Article 19 of the HKPD Law stipulates that the basis for imposing Heavy Equipment Tax is the Sales Value of Heavy Equipment, which is determined based on the general market average price. Unlike the PKB, which uses two main elements, namely the Sales Value of Motor Vehicles and a weight that reflects the level of road damage and/or environmental pollution, Heavy Equipment Tax uses only a single variable. The absence of a weight coefficient in the calculation of Heavy Equipment Tax is a crucial point that indicates a shift in the philosophy of taxation.²⁹ This simplification of the formula does indeed provide administrative convenience and legal certainty in the calculation, but at the same time eliminates the regulatory element that was previously inherent in the vehicle taxation system that had an impact on infrastructure and the environment. Comparison with legal considerations Constitutional Court Decision No. 15/PUU-XV/2017 reveals substantial inconsistencies in the design of Heavy Equipment Tax regulations.³⁰ In its considerations, the Court explicitly states that heavy equipment causes damage to road quality, both directly and indirectly. This consideration demonstrates the Constitutional Court's awareness that although heavy equipment differs from motor vehicles in terms of function and use, its physical impact on road infrastructure remains real and must be taken into account. The Court even granted a three-year grace period in its ruling to give lawmakers the opportunity to reformulate a more appropriate heavy equipment taxation policy. However, the formulation in the HKPD Law actually ignores the dimension of road and environmental damage by removing the damage weight from the tax imposition formula.

The absence of road damage and environmental impact variables in the construction of Heavy Equipment Tax creates fundamental normative disharmony. From the perspective of tax function theory, the removal of these variables indicates that Heavy Equipment Tax is designed solely for budgetary functions without considering regulatory functions. In fact, Constitutional Court Decision No. 15/PUU-XV/2017 provides space for lawmakers to design a taxation scheme that not only meets regional fiscal needs but also accommodates regulatory functions to control the negative impacts of heavy equipment operations. The absence of damage weight in this tax formula contradicts the spirit of the Constitutional Court's decision, which recognizes the existence of damage as a fact that cannot be ignored. This disharmony shows that the HKPD Law does not fully capture the essence of the constitutional considerations outlined by the Court. Furthermore, the Heavy Equipment Tax Rate, which is set at a maximum of 0.2% of the Heavy Equipment Sales Value, shows a bias towards the interests of ease of doing business and economic efficiency. This rate is much lower than the general PKB rate of 1-2%, and even lower than the PKB rate for heavy equipment under the PDRD Law regime, which ranges from 0.1-0.2% without weight. The government's consideration in setting this low rate is to avoid the impact of a high-cost economy, given that heavy equipment is a vital means of production for the construction, mining, and plantation sectors. However, the

²⁹ Hasan, D. (2021). The Concept of Heavy Equipment Taxation Following Constitutional Court Decision No. 15/PUU-XV/2017. *IUS QUA IUSTUM Law Journal*, 28(3), 505–526. <https://doi.org/10.20885/iustum.vol28.iss3.art3>

³⁰ Constitutional Court. (n.d.). *Constitutional Court 15/PUU-XV/2017*. https://www.mkri.id/public/content/persidangan/sinopsis/sinopsis_perkara_541_ikhtisar%20putusan%20perkara%20nomor%2015%20puu%202017-final.pdf

setting of this very low rate further strengthens the indication that the government has no intention of using Heavy Equipment Tax as an instrument to control negative externalities. Low rates will theoretically generate optimal revenue in accordance with the budgetary function, but they lose their regulatory power to encourage more responsible behavior towards infrastructure and the environment.³¹

The characteristics of heavy equipment as a taxable object in the HKPD Law do not distinguish between heavy equipment operating on public roads (on road) and those operating off public roads (off road). This uniform approach reflects the understanding that heavy equipment, regardless of its location of operation, is essentially property that has economic value. However, this approach ignores the reality that heavy equipment that crosses public roads has a direct and more significant impact on road infrastructure damage compared to heavy equipment that only operates in closed areas such as mines or plantations. Empirical research as cited in Tiara Vika Anggraini & Aida Kurniawati (UNESA), entitled "*The Impact of Sand Mining Using Heavy Equipment on Road Damage in Sumberasri Village, Nglegok District, Blitar Regency*" shows that the mobilization of sand mining heavy equipment in Blitar Regency resulted in 1.05 km of heavy road damage, moderate damage along 0.85 km, and minor damage along 0.85 km. This empirical fact shows that differentiation based on location and intensity of operations should be considered in the design of progressive tariffs or damage weighting.³²

In addition, analysis of the heavy equipment taxation scheme in the HKPD Law also reveals inconsistencies in the treatment of Motor Vehicle Fuel Tax (PBBKB). Heavy equipment that uses fuel is still subject to PBBKB at the same rate as other motor vehicles, which is a maximum of 10% of the fuel sale value before VAT.³³ This equal treatment contrasts with the separation of Heavy Equipment Tax from PKB, raising questions about the consistency of the logic behind the distinction. If the reason for the separation is due to differences in characteristics and functions, why are heavy equipment still treated the same as motor vehicles in the context of fuel tax? This inconsistency indicates that the separation of Heavy Equipment Tax is based more on pragmatic considerations to avoid conflict with the Constitutional Court's decision, rather than on a comprehensive understanding of the fundamental differences between heavy equipment and motor vehicles in terms of their economic, social, and environmental impacts.

In this regard, the identification of points of disharmony between the HKPD Law and Constitutional Court Decision No. 15/PUU-XV/2017 shows that although formally the HKPD Law has fulfilled the Constitutional Court's mandate by separating heavy equipment from PKB, substantively there are inconsistencies in translating the Constitutional Court's legal considerations into the design of norms. In its considerations, the Court stated that heavy equipment is large in size, making it difficult to hide and easy to administer, and that the regulated rates are relatively small compared to other types of vehicles and are

³¹ Mustaqiem. (n.d.). *Local Taxes in the Transition to Regional Autonomy*. Retrieved November 24, 2025, from <https://law.uji.ac.id/wp-content/uploads/2017/02/mustaqiem-buku-pajak-daerah-dalam-transisi-otonomi-daerah.pdf>

³² Swara Bhumi Journal. (n.d.). *The Impact of Sand Mining Using Heavy Equipment on Road Damage in Sumberasri Village, Nglegok District, Blita Regency*. Swara Bhumi; Vol. 2 No. 2 (2021). Retrieved November 22, 2025, from <https://ejournal.unesa.ac.id/index.php/swara-bhumi/issue/view/2410>

³³ Law No. 1 of 2022. (n.d.). Regulation Database | JDIH BPK. Retrieved November 22, 2025, from <https://peraturan.bpk.go.id/Details/195696/uu-no-1-tahun-2022>

not subject to weight to avoid the economic impact of high costs.³⁴ However, this consideration cannot be interpreted as a total elimination of the dimension of road and environmental damage, but rather as a consideration of proportionality in designing rates. The HKPD Law, however, interprets the Constitutional Court's considerations narrowly by completely removing the damage variable from the tax formula, without considering alternatives such as progressive rates based on intensity of use or earmarking allocations for road and environmental maintenance.

Therefore, a normative analysis of the Heavy Equipment Tax provisions in the HKPD Law reveals that there is substantial disharmony with the legal considerations of Constitutional Court Decision No. 15/PUU-XV/2017, particularly in terms of the absence of road damage and environmental impact variables. Although the HKPD Law has fulfilled the formal mandate of the Constitutional Court by separating heavy equipment from the Vehicle Tax (PKB), the resulting normative construction does not reflect a holistic understanding of the negative externalities caused by the operation of heavy equipment. The design of the Heavy Equipment Tax, which is purely based on property ownership without considering the dimensions of use and impact, has created new inconsistencies that actually distance the regional taxation system from its inherent regulatory function.³⁵ This disharmony needs to be taken seriously in the evaluation and revision of local taxation policies in the future, especially in the context of strengthening fiscal decentralization that not only pursues revenue targets but also promotes sustainable development and environmental preservation.

Legal Uncertainty in the Formation of Heavy Equipment Tax Regulations and Its Impact on Regulatory Functions

The formulation of legal norms in Law Number 1 of 2022 concerning Central and Local Government Financial Relations (HKPD Law) related to heavy equipment tax reflects a fundamental ambiguity in the legal approach. This ambiguity is evident in the orientation of the legislators, who are fixated on the budgetary function or tax budget function, without paying adequate attention to the regulatory function, which should be the philosophical basis for heavy equipment tax regulations. In fact, as mandated in Constitutional Court Decision Number 15/PUU-XV/2017, the re-regulation of heavy equipment tax should consider the impact of road and environmental damage caused by the operation of heavy equipment.³⁶ The absence of this regulatory approach shows that the legislative process does not fully consider the ecological and social dimensions of tax collection, but rather leans more towards fiscal aspects alone.

The ideal legal approach in formulating heavy equipment taxes should be based on the principles of distributive justice and environmental responsibility, particularly through the application of the polluter pays principle, which requires polluters to bear the costs of the damage they cause. This principle, together with the Pigouvian Tax framework, which requires the imposition of taxes in accordance with the magnitude of negative externalities, should form the basis for the formulation of regulations. In the context

³⁴ Law No. 1 of 2022. (n.d.). Regulation Database | JDIH BPK. Retrieved November 22, 2025, from <https://peraturan.bpk.go.id/Details/195696/uu-no-1-tahun-2022>

³⁵ Salmon, H. C. J., Wiraguna, S. A., Monteiro, J. M., Tita, H. M. Y., Linawati, Susilawati, N., Arsyanda, S., Koynja, J. J., & Rahayu, H. A. (2025). *Introduction to Indonesian Tax Law*. Widina Publishers.

³⁶ Constitutional Court. (n.d.). Constitutional Court 15/PUU-XV/2017. https://www.mkri.id/public/content/persidangan/sinopsis/sinopsis_perkara_541_ikhtisar%20putusan%20perkara%20nomor%2015%20puu%202017-final.pdf

of heavy equipment, these externalities include road damage, pollutant emissions, and other environmental degradation, thus requiring a basis for taxation that uses weighting according to the level of damage impact. However, the HKPD Law does not integrate these principles and theories because it only focuses on NJAB as the basis for taxation, thereby failing to make PAB a fiscal instrument capable of controlling environmental impacts. The setting of very low Heavy Equipment Tax rates, at a maximum of 0.2% of NJAB, indicates that PAB policy is more oriented towards increasing revenue and maintaining the business climate than performing its regular function of controlling environmental impacts. Unlike Motor Vehicle Tax, which includes a weight component to reflect road damage, PAB does not consider the negative externalities caused by heavy equipment. The absence of environmental studies or empirical research in the legislative process further highlights the weakness of the impact-based approach. In fact, research such as Tiara Vika Anggraini's study on road damage caused by heavy equipment operations in sand mines—which shows significant damage to village roads—demonstrates the importance of empirical data as a basis for establishing fairer tariffs and weightings. Thus, the absence of a regulatory approach and the lack of environmental impact analysis have resulted in PAB regulations that are not in line with the principles of sustainable development and ecological justice.³⁷

This unclear legal approach also results in internal inconsistencies in the regional taxation system. On the one hand, the HKPD Law stipulates that motor vehicle tax takes into account weight, which reflects the level of road damage and environmental pollution, through a coefficient ranging from 1 to 1.3. On the other hand, for heavy equipment tax objects, which in fact have greater potential for damage due to their load and dimensions, the weighting mechanism is not applied at all. This inconsistency shows that lawmakers did not use a coherent methodological framework in designing a taxation system based on externalities.³⁸ If the approach used is an externality-based approach, then consistency in its application must be maintained across all relevant types of taxable objects. The ambiguity of this legal approach also has an impact on legal uncertainty for stakeholders. Owners and operators of heavy equipment have no incentive to use more environmentally friendly equipment or reduce the intensity of use that can damage roads, because the tax structure does not differentiate based on the level of environmental impact. Conversely, local governments also lose an effective fiscal instrument to control the negative impacts of heavy equipment operations. This contradicts one of the main functions of taxation as stated by Spiegelenberg, namely regulating the level of private sector income, redistributing income, and regulating the volume of private expenditure.³⁹ In the context of heavy equipment taxation, this regulatory function should be manifested in the form of controlling activities that have the potential to damage the environment.

³⁷ Swara Bhumi Journal. (n.d.). *The Impact of Sand Mining Using Heavy Equipment on Road Damage in Sumberasri Village, Nglelok District, Blita Regency*. Swara Bhumi; Vol. 2 No. 2 (2021). Retrieved November 22, 2025, from <https://ejournal.unesa.ac.id/index.php/swara-bhumi/issue/view/2410>

³⁸ Nugraha, N. A., & Darono, A. (2022). Discourses and Institutions In Tax Policy and Fiscal Sustainability: Evidence From Indonesia. *Jurnal Pajak Dan Keuangan Negara (PKN)*, 4(1), 61–71. <https://doi.org/10.31092/jpkn.v4i1.1722>

³⁹ Putra, E. D., & Rahayu, N. (2023, June 30). *Tax Avoidance Practices and the Implementation of Anti-Tax Avoidance Policies in Indonesia*. Darma Agung University. https://www.researchgate.net/publication/372064980_praktik-praktik_tax_avoidance_serta_penerapan_kebijakan_anti-tax_avoidance_di_indonesia

A comparison with motor vehicle tax regulations further highlights the ambiguity of the legal approach in establishing heavy equipment tax norms. In motor vehicle tax, the tax base is formulated based on two elements: the Motor Vehicle Sales Value (NJKB) and a weighting that represents road damage and/or environmental pollution, expressed as a coefficient.⁴⁰ This approach reflects an effort to integrate budgetary and regulatory functions simultaneously. However, in heavy equipment taxation, this weight element is not considered at all, even though Constitutional Court Decision No. 15/PUU-XV/2017 explicitly states that heavy equipment directly or indirectly causes damage to road quality.⁴¹ This difference in treatment cannot be justified methodologically and reflects inconsistency in the application of taxation law principles. The impact of this unclear legal approach is a failure to realize the regulatory function of taxation as an instrument for controlling negative externalities. The regulatory function is an additional function of taxation that positions taxes as a government policy tool to achieve specific objectives beyond simply filling the state coffers.⁴² In the context of heavy equipment taxation, the regulatory function should be directed at controlling the impact of road and environmental damage through fiscal incentive and disincentive mechanisms. However, with the current tax structure, this function is not realized at all. In fact, it can be said that the regulation of heavy equipment tax in the HKPD Law is more inclined towards a purely budgetary function, which is contrary to the spirit of tax reform that requires the integration of environmental considerations into fiscal policy.

Therefore, the lack of clarity in the legal approach to the formulation of heavy equipment tax regulations ultimately reflects the lack of seriousness of the legislators in responding to the mandate of the Constitutional Court's decision. The Constitutional Court's decision not only ordered the separation of heavy equipment tax from motor vehicle tax, but also implicitly mandated that the new regulation take into account the specific characteristics of heavy equipment, including its impact on roads and the environment. By ignoring this mandate and focusing only on administrative-fiscal aspects, lawmakers have created a legal norm that is philosophically and methodologically flawed. Going forward, a fundamental revision of heavy equipment tax regulations is needed, integrating a regulatory approach with a clear theoretical basis, either through the application of the *polluter pays* principle or the *Pigouvian tax* theory, so that heavy equipment tax can truly function as an instrument for controlling environmental impacts as well as a source of equitable regional revenue.⁴³

The Urgency of Internalizing Road Damage and Environmental Impact Variables in the Design of Heavy Equipment Taxation

The regulation of heavy equipment tax in Law Number 1 of 2022 concerning Central and Regional Government Financial Relations has undergone a fundamental change by separating heavy equipment from the category of motor vehicles. Although this separation provides legal certainty as mandated by Constitutional Court Decision Number 15/PUU-XV/2017, there are fundamental issues that have been

⁴⁰ Lazuardi, M. H. (2021). Motor Vehicle Tax Policy, Reviewed from the Polluter Pays Principle. *Indonesian Environmental Law Journal*, 7(2), 171–196. <https://doi.org/10.38011/jhli.v7i2.317>

⁴¹ Constitutional Court. (n.d.). Constitutional Court 15/PUU-XV/2017. https://www.mkri.id/public/content/persidangan/sinopsis/sinopsis_perkara_541_ikhtisar%20putusan%20perkara%20nomor%2015%20puu%202017-final.pdf

⁴² Sari, S. M., Nadirah, I., Siregar, P., P. Z. I., & Simanjuntak, N. (2025). Analysis of the function of taxes as a regulatory tool in national development. *Ikra-Ith Humaniora : Journal of Social and Humanities*, 9(2), 842–852.

⁴³ Muhdar, M. (2012). The Existence of the Polluter Pays Principle in Environmental Law Regulation in Indonesia. *Mimbar Hukum - Faculty of Law, Gadjah Mada University*, 21(1), 67. <https://doi.org/10.22146/jmh.16247>

overlooked.⁴⁴ The design of heavy equipment taxation, which is based solely on the sale value of heavy equipment without considering variables such as road damage and environmental impact, reflects the loss of the regulatory function of taxation. In fact, the Constitutional Court explicitly stated in its considerations that heavy equipment causes damage to road quality, both directly and indirectly, and has a negative impact on the environment. The theory of externalities developed by Arthur Pigou provides a conceptual basis for why damage variables need to be internalized in the tax structure. Negative externalities are harmful effects caused by the economic activities of one party on another without adequate compensation. The operation of heavy equipment produces tangible negative externalities, ranging from physical damage to roads due to excessive loads, air pollution from exhaust emissions, noise pollution that disturbs residential areas, to damage to ecosystems in operational areas. Empirical evidence from Tiara Vika Anggraini's research shows that the mobility of sand mining heavy equipment in Sumberasri Village, Blitar Regency, resulted in 1.05 kilometers of severely damaged roads, 0.85 kilometers of moderately damaged roads, and 0.85 kilometers of slightly damaged roads. These facts on the ground prove that the negative externalities of heavy equipment are not merely theoretical assumptions, but a concrete reality that requires a policy response.

The principle of Pigouvian taxes asserts that the optimal solution to negative externalities is to impose a tax equivalent to the marginal external costs incurred. According to this theory, economic actors who produce pollution or damage must bear the social costs of their actions, not just the private costs.⁴⁵ In the context of heavy equipment taxes, this means that owners or operators of heavy equipment should pay compensation for road damage and environmental degradation caused by the operation of such equipment. Pigouvian taxes create state ownership rights over the environment that can be enforced through taxation regulations, whereby companies or individuals may cause pollution in their production processes, but they are obliged to pay the state for the losses caused by such pollution. The regulatory function of taxation is a policy instrument that can be used by the government to achieve specific objectives beyond simply collecting state revenue. Spiegelenberg asserts that taxes are not only for putting money into the state coffers, but also for regulating the level of private sector income, redistributing income, and regulating the volume of expenditure. In regional taxation, the regulatory function has been applied to Motor Vehicle Tax through a weight coefficient that reflects the level of road damage and environmental pollution. However, inconsistencies arise when heavy equipment tax, which has the potential to cause greater damage, does not apply a similar mechanism. The absence of a damage variable in the heavy equipment tax formula indicates that the regulatory function has been distorted by the dominance of the budgetary function.

The polluter pays principle adopted in international environmental law stipulates that polluters must bear the costs of preventing, controlling, and restoring the pollution they cause. This principle is in line with the concept of distributive justice, whereby the burden of environmental costs should not be borne by the general public, but rather by those who directly benefit economically from the activities that cause damage. The operation of heavy equipment in the construction, mining, plantation, and forestry sectors generates economic profits for owners or operators, but the social costs in the form of infrastructure damage and environmental degradation are often borne by the public. Without the internalization of external costs through taxation mechanisms, there is a hidden subsidy from the public to industries that use heavy

⁴⁴Constitutional Court. (n.d.). *Constitutional Court 15/PUU-XV/2017.* https://www.mkri.id/public/content/persidangan/sinopsis/sinopsis_perkara_541_ikhtisar%20putusan%20perkara%20nomor%2015%20puu%202017-final.pdf

⁴⁵ Pigouvian taxes. (2023). In *Encyclopedia of Sustainable Management* (pp. 2598–2598). Springer International Publishing. https://doi.org/10.1007/978-3-031-25984-5_301592

equipment. Alimuddin Doni Prasetyo's research on the environmental impact of the Pongkor hydroelectric power plant construction reveals that the mobilization of heavy equipment during the construction phase causes traffic disruptions, increases dust pollution, high noise levels, soil damage due to surface erosion, and decreased air quality due to exhaust emissions. These impacts are not limited to the project area but spread to surrounding areas and affect the quality of life of the community. The fact that heavy equipment operates at high intensity and for long periods of time increases the accumulation of damage caused.⁴⁶ Therefore, the argument that heavy equipment does not pass through public roads and therefore should not be subject to damage weight is irrelevant, because damage occurs both on public roads and in special operational areas.

The constitutional mandate for environmental protection is enshrined in Article 28H paragraph (1) and Article 33 paragraph (4) of the 1945 Constitution, which guarantees everyone's right to a good and healthy environment and obliges the state to preserve the environment.⁴⁷ Constitutional Court Decision Number 15/PUU-XV/2017 implicitly reminds lawmakers to consider the aspects of road and environmental damage when formulating heavy equipment tax policies.⁴⁸ However, the HKPD Law actually eliminates this variable by only using the sale value of heavy equipment as the basis for taxation. This situation creates disharmony between tax policy and the constitutional mandate of environmental protection, whereby fiscal instruments that should be a means of preventing damage have lost their ecological dimension. The setting of very low heavy equipment tax rates, at a maximum of 0.2%, reflects a policy priority that favors ease of doing business and investment competitiveness over environmental considerations. The government's rationalization that low rates are intended to avoid the impact of a high-cost economy does have economic considerations, especially given that heavy equipment is an important means of production in infrastructure development and natural resource exploitation. However, this logic ignores the fact that social costs in the form of road damage and environmental degradation will ultimately also become an economic burden that must be borne by the government and the community through infrastructure maintenance and health costs. In other words, low tax rates without an environmental damage component only shift the cost burden from businesses to the public, rather than eliminating the cost.

In this regard, the absence of earmarking allocations from heavy equipment tax revenues for road maintenance and environmental restoration further weakens the regulatory function of taxation. Unlike Motor Vehicle Tax, where part of the revenue is allocated for road construction and maintenance, or Cigarette Tax, where at least 50% must be used for health services, heavy equipment tax falls into the category of general local revenue without any specific use restrictions.⁴⁹ In fact, the earmarking mechanism can serve as a bridge between the budgetary and regulatory functions, whereby tax revenue is not only intended to fill the regional coffers but also to be used directly to mitigate the negative impacts caused by

⁴⁶ Alimuddin Doni Prasetyo. (n.d.). *Environmental Impact of the Pongkor Hydropower Plant Development*. <https://www.studocu.id/id/document/universitas-17-agustus-1945-samarinda/civil-engineering/kajian-dampak-lingkungan-konstruksi-pltm-minihidro-pongkor-ts-021/130080843>

⁴⁷ *The 1945 Constitution of the Republic of Indonesia*. (n.d.). Regulation Database | JDIH BPK. Retrieved November 24, 2025, from <https://peraturan.bpk.go.id/Details/101646>

⁴⁸ Constitutional Court. (n.d.). *Constitutional Court 15/PUU-XV/2017*. https://www.mkri.id/public/content/persidangan/sinopsis/sinopsis_perkara_541_ikhtisar%20putusan%20perkara%20nomor%2015%20puu%202017-final.pdf

⁴⁹ Sekaryadi, Y. (2025). Earmarking Tax: A Solution For Neglected Provincial Road Maintenance. *Jurnal HPJI*, 11(2), 127–138. <https://doi.org/10.26593/jhpii.v1i2.9517.127-138>

the tax object. This model will create a more equitable and sustainable fiscal cycle. The urgency of internalizing the variables of road damage and environmental impact in the design of heavy equipment tax is not only a matter of compliance with the mandate of the Constitutional Court's decision, but more fundamentally, it is to create a fair and sustainable taxation system. Without including these variables, tax policy loses its ability to correct economic behavior that harms the environment (corrective function), and the regulatory function of taxation is degraded to mere normative rhetoric without substantive implementation. A fundamental reformulation of heavy equipment taxation by integrating road damage and environmental weighting coefficients, accompanied by an earmarking mechanism for infrastructure maintenance and ecosystem restoration, is urgently needed to align fiscal policy with the principles of sustainable development and the constitutional mandate of environmental protection.

Implications of Regulatory Disharmony on Legal Certainty, Regional Fiscal Policy, and Environmental Protection

The inconsistency between the heavy equipment tax regulations in the HKPD Law and the mandate of Constitutional Court Decision Number 15/PUU-XV/2017 has serious implications that impact legal certainty, the effectiveness of regional fiscal policy, and environmental protection efforts. This disharmony not only creates a normative gap in the regional tax law system, but also results in inconsistency between the objectives of tax collection and the reality of the negative impacts caused by the operation of heavy equipment. This condition ultimately weakens the function of taxes as a public policy instrument that should be able to regulate economic behavior while protecting environmental interests. From a legal certainty perspective, this regulatory disharmony creates ambiguity in the implementation of heavy equipment taxation at the local government level. Although the HKPD Law has separated heavy equipment tax from motor vehicle tax as mandated by the Constitutional Court's decision, the absence of road and environmental damage variables in the basic tax imposition formula creates uncertainty regarding the philosophy and objectives of the tax imposition. Local governments face a dilemma in determining whether heavy equipment tax serves solely as a fiscal instrument to increase local revenue, or whether it also has a regulatory function to control the negative externalities caused by the operation of heavy equipment.

This ambiguity has implications for the process of drafting local regulations as implementing regulations for the HKPD Law. Without explicit guidance on how to integrate considerations of road and environmental damage into the tax imposition mechanism, local governments tend to adopt a minimalist approach that focuses only on administrative aspects and achieving revenue targets. This contradicts the principle that every tax regulation must have a clear purpose and predictable impact, both for taxpayers and for the community affected by the externalities of the taxed activities. From the perspective of local fiscal policy, the omission of road damage and environmental variables in the heavy equipment tax structure results in a loss of potential revenue that could have been allocated for infrastructure maintenance and environmental rehabilitation. The setting of a very low tax rate of a maximum of 0.2% of the sale value of heavy equipment without a damage weight component reflects a policy priority that favors ease of doing business and control of high economic costs over the principles of fiscal justice and environmental responsibility. In fact, road damage caused by the mobilization of heavy equipment requires a significant maintenance budget, which should be partially financed through the mechanism of internalizing external costs in the tax structure.

A further implication relates to the allocation of regional budgets to address the negative impacts of heavy equipment use. Unlike motor vehicle tax or cigarette tax, where the revenue is directed to fund related sectors, such as road construction or health services, the heavy equipment tax in the HKPD Law does not

include an earmarking or special allocation mechanism. As a result, there is no guarantee that revenue from heavy equipment tax will be used to repair road damage or address environmental degradation caused by the operation of heavy equipment. This condition creates horizontal injustice, where the burden of repairing damage is borne by the general public through the regional budget, while the businesses that directly cause the damage do not bear a proportional cost. The weakness of instruments to control environmental externalities is another crucial implication of this regulatory disharmony. Pigouvian tax theory asserts that taxes should be levied in proportion to the negative externalities caused by an economic activity, so that business actors are encouraged to internalize social costs and consider environmental impacts in their operational decisions. By ignoring the variables of road and environmental damage, the heavy equipment tax structure in the HKPD Law fails to perform a corrective function on destructive economic behavior. As a result, there are no fiscal incentives for heavy equipment owners or operators to choose more environmentally friendly technologies or implement operational practices that minimize damage.

The disconnect between fiscal and environmental protection objectives is even more apparent when considering the context of heavy equipment use in extractive sectors such as mining, plantations, and large-scale construction. These sectors are known to have significant environmental impacts, ranging from road damage and air quality degradation due to particulate emissions to soil and water contamination. However, the existing heavy equipment tax structure does not differentiate rates based on intensity of use or type of damage caused. This reflects a policy inconsistency, whereby on the one hand the government promotes sustainable development and environmental protection, but on the other hand does not provide fiscal instruments that support the achievement of these goals. The long-term impact of this disharmony is an increase in social costs that must be borne by the community and local governments. Road damage that is not adequately addressed will reduce infrastructure quality, increase transportation costs, and decrease regional economic productivity. Meanwhile, continued environmental degradation without effective mitigation mechanisms will threaten the sustainability of local ecosystems and public health. From a public economic perspective, this situation indicates a market failure that is not corrected by available policy instruments, thereby creating inefficient resource allocation and unfair burden distribution.

Reconstructing the norms in heavy equipment taxation is an urgent necessity to address these various negative implications. This reconstruction must begin with a reinterpretation of the Constitutional Court's ruling, which not only emphasizes the formal separation between motor vehicle tax and heavy equipment tax, but also substantive recognition of the damage caused by heavy equipment. The reformulation of the basis for taxation needs to integrate a damage weighting component that can measure the level of negative externalities, both through quantitative indicators such as weight and intensity of use, as well as qualitative indicators such as the type of operation and location of heavy equipment use. In addition, the reconstruction of norms must also include the development of a special allocation mechanism (earmarking) that ensures that a portion of heavy equipment tax revenue is used to restore infrastructure damage and address environmental impacts. This mechanism can adopt a model that has been applied to cigarette taxes or motor vehicle taxes, where a certain percentage of revenue is specifically allocated to road maintenance and environmental protection programs in the areas where heavy equipment is operated. Thus, heavy equipment tax not only serves as a source of regional revenue, but also as a policy instrument that is responsive to the challenges of road damage and environmental degradation, while realizing the principles of fiscal justice and sustainable environmental responsibility.

CONCLUSION

Based on the above discussion, it can be understood that in terms of the normative legal aspects of Law Number 1 of 2022 concerning Central and Regional Government Financial Relations, it was found that the heavy equipment tax regulations contained in the relevant articles did not fully accommodate the substance of the mandate contained in Constitutional Court Decision Number 15/PUU-XV/2017.⁵⁰ Although formally the legislators have separated heavy equipment tax from motor vehicle tax as required by the decision, substantively there are still gaps in the regulations regarding road damage and environmental impact variables, which should be key considerations in determining the tax base and rates. The legal construct established in the HKPD Law places heavy equipment solely as an object of property tax or personal property tax, without integrating the negative externalities caused by the operation of heavy equipment on road infrastructure and the environment. The legal considerations in Constitutional Court Decision No. 15/PUU-XV/2017 explicitly state that heavy equipment causes damage to road quality, both directly and indirectly, and has an impact on the environment.⁵¹ However, the provisions of Article 19 of the HKPD Law, which regulates the basis for imposing heavy equipment tax, are only based on the Heavy Equipment Sales Value (NJAB) determined from the general market average price, without involving a weighting coefficient that reflects the level of road damage and environmental pollution as regulated in motor vehicle tax. This condition shows an inconsistency between the legal norms contained in the law and the spirit and considerations underlying the Constitutional Court's decision, thereby raising the issue of vertical harmonization in the Indonesian legal system.

Furthermore, this study reveals that the heavy equipment tax regulation in the HKPD Law shows an unclear legal orientation, as it emphasizes regional revenue with low rates and does not consider the damage caused by heavy equipment. This approach ignores the regulatory function of taxation, which should be used to control negative externalities, so that the polluter pays principle and the Pigouvian Tax concept are not implemented in the design of the PAB. As a result, the costs of environmental and infrastructure damage are not internalized to the actors who cause the impact, but are instead borne by the community and local government. These findings emphasize the need to reposition heavy equipment taxes so that they function not only as a fiscal instrument but also as a regulatory tool that supports the protection of the environment and public infrastructure. On the other hand, the results of the study show that the use and movement of heavy equipment has a significant impact on road infrastructure damage and reduces environmental quality through air pollution, noise, dust, and soil structure disturbance. These impacts are cumulative and require large costs for recovery, so they need to be internalized in tax policy. Therefore, heavy equipment tax regulations should ideally not only be based on sales value, but must also include variables such as weight, size, intensity of use, and operational characteristics that affect the level of damage to roads and the environment. This approach will ensure that the tax burden reflects social and ecological costs proportionally, encourages the use of more environmentally friendly technologies, and strengthens the function of taxes as a tool to control negative externalities in realizing sustainable development.

Therefore, this study confirms that the heavy equipment tax regulation in Law Number 1 of 2022 concerning Central and Local Government Financial Relations does not fully comply with the mandate contained in Constitutional Court Decision Number 15/PUU-XV/2017. The failure to fulfill this mandate

⁵⁰ Law No. 1 of 2022. (n.d.). Regulation Database | JDIH BPK. Retrieved November 22, 2025, from <https://peraturan.bpk.go.id/Details/195696/uu-no-1-tahun-2022>

⁵¹ Constitutional Court. (n.d.). Constitutional Court 15/PUU-XV/2017. https://www.mkri.id/public/content/persidangan/sinopsis/sinopsis_perkara_541_ikhtisar%20putusan%20perkara%20nomor%2015%20puu%202017-final.pdf

has led to uncertainty in the concept of heavy equipment tax regulations and has resulted in disharmony between the constitutional goal of environmental protection and the design of regional fiscal policies that are being implemented. The absence of road damage and environmental impact variables in the structure of heavy equipment taxation reflects the dominance of the budgetary function over the regulatory function, so that the potential of taxes as an instrument for controlling negative externalities is not being optimally utilized. This condition not only raises legal issues in the form of inconsistencies in the regulatory system, but also has practical implications in the form of additional fiscal burdens for local governments and ineffective environmental protection efforts. Therefore, corrective measures are needed through the revision of heavy equipment tax regulations that integrate the principle of externalities internalization, strengthen the regulatory function of taxes, and ensure the alignment of fiscal policies with the constitutional principles of environmental protection and sustainable development.

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REFERENCES

Books and Journal

Board, T. R. (n.d.). *Rigid and Flexible Pavement Design and Rehabilitation*.

Hasan, D. (2021). The Concept of Heavy Equipment Taxation After Constitutional Court Decision Number 15/PUU-XV/2017. *IUS QUA IUSTUM Law Journal*, 28(3), 505–526. <https://doi.org/10.20885/iustum.vol28.iss3.art3>

Jackson, T. (2013). *Material Concerns: Pollution, Profit and Quality of Life*. Routledge

Jaya, A. I. B. (2024). Implications of the Law on Central and Regional Financial Relations on Tax Regulations and Local Revenue. *Yuridis Journal*, 11(2), 320–348. <https://doi.org/10.35586/jyur.v11i2.9252>

Journal Articles

Karisma, K., Ardiani, R., Alifiyah, S., Saiful, S., & Rachmawati, D. (2021). The Impact of Privatization Policy on the Indonesian Economy. *Caraka Prabu Journal*, 5(2), 242–250. <https://doi.org/10.36859/jcp.v5i2.655>

Lazuardi, M. H. (2021). Motor Vehicle Tax Policy Reviewed from the Polluter Pays Principle. *Indonesian*

Environmental Law Journal, 7(2), 171–196. <https://doi.org/10.38011/jhli.v7i2.317>

Maga, L. L. M. (2022). Analysis of the Impact of Nickel Mining Activities on Rice Farmers' Income. *Journal of Economic Studies and Development Studies*, 9(1). <https://doi.org/10.56076/jkesp.v9i1.2289>

Mariyono, J. (2002). Externalities and External Costs due to Agricultural Pollution. *Journal of Socioeconomic Dynamics*, 3(1), 34–44

Marzuki, Prof. Dr. M. (2017). *Legal Research* (Revised Edition). Prenada Media.

Muhdar, M. (2012). The Existence of the Polluter Pays Principle in Environmental Law Regulation. *Mimbar Hukum*, 21(1), 67. <https://doi.org/10.22146/jmh.16247>

Muhdar, M. (2020). *Doctrinal and Non-Doctrinal Research: An Applicative Approach in Legal Research*. Mulawarman University Press.

Mustaqiem. (n.d.). *Local Taxes in the Transition to Regional Autonomy*. Retrieved from <https://law.uii.ac.id/wp-content/uploads/2017/02/Mustaqiem-Buku-Pajak-Daerah-Dalam-Transisi-Otonomi-Daerah.pdf>

Newbery, D. M. (1988). Road Damage Externalities and Road User Charges. *Econometrica*, 56(2), 295–316. <https://doi.org/10.2307/1911073>

Nugraha, N. A., & Darono, A. (2022). Discourses and Institutions in Tax Policy and Fiscal Sustainability. *Journal of Taxation and State Finance*, 4(1), 61–71. <https://doi.org/10.31092/jpkn.v4i1.1722>

Parasetyo, A. D. (n.d.). Environmental Impact of the Pongkor Hydropower Plant Development. <https://www.studocu.id/id/document/universitas-17-agustus-1945-samarinda/civil-engineering/kajian-dampak-lingkungan-konstruksi-pltm-minihidro-pongkor-ts-021/130080843>

Parviziomran, E., & Bergqvist, R. (2025). Decarbonization Costs for the Swedish Heavy Duty Road Fleet. *Transport Policy*, 160, 1–14. <https://doi.org/10.1016/j.tranpol.2024.10.033>

Pigou, A. (2017). *The Economics of Welfare*. Routledge.

Pigouvian Taxes. (2023). In *Encyclopedia of Sustainable Management* (p. 2598). Springer. https://doi.org/10.1007/978-3-031-25984-5_301592

Prasetyo, D., & Alimuddin, A. (2018). Study of Environmental Impacts on the Pongkor PLTM Construction Project. *Semnastek Proceedings*.

Putra, E. D., & Rahayu, N. (2023). Tax Avoidance Practices in Indonesia. Darma Agung University.

Romi, R. (2009). A Study of the Principle of Fairness in Tax Collection in Indonesia. *Jurnal Media Hukum*, 3(4).

Sari, S. M., Nadirah, I., Siregar, P., P, Z. I., & Simanjuntak, N. (2025). Analysis of the function of taxes as a regulatory tool in national development. *IKRA-ITH Humanities: Journal of Social and Humanities*, 9(2), 842–852.

Schulthoff, M., Kaltschmitt, M., Balzer, C., Wilbrand, K., & Pomrehn, M. (2022). European Road Transport Policy Assessment: A Case Study for Germany. *Environmental Sciences Europe*, 34(1), 92. <https://doi.org/10.1186/s12302-022-00663-7>

Sekaryadi, Y. (2025). Earmarking Tax: A Solution for Neglected Provincial Road Maintenance. *Jurnal HPJI*, 11(2), 127–138. <https://doi.org/10.26593/jhpji.v11i2.9517.127-138>

Swara Bhumi Journal. (2021). The Impact of Sand Mining Using Heavy Equipment. *Swara Bhumi*, 2(2). <https://ejournal.unesa.ac.id/index.php/swara-bhumi/issue/view/2410>

Tunisia, F., & Inayati, I. (2025). Pigouvian Concept Analysis in Motor Vehicle Tax. *Enrichment Journal*, 2(10). <https://doi.org/10.55324/enrichment.v2i10.270>

Legal Documents

Constitutional Court. Decision No. 15/PUU-XV/2017.

Constitution of the Republic of Indonesia of 1945. JDIH BPK.

Law Number 34 of 2000 concerning Regional Taxes and Levies. Accessed on October 29, 2025, from <https://peraturan.bpk.go.id/Details/45238/uu-no-34-tahun-2000>

Law Number 28 of 2009 concerning Regional Taxes and Levies. Accessed on October 29, 2025, from <https://peraturan.bpk.go.id/Details/38763/uu-no-28-tahun-2009>

Law Number 1 of 2022 concerning Financial Relations between the Central Government and Regional Governments. Accessed on October 20, 2025, from <https://peraturan.bpk.go.id/Details/195696/uu-no-1-tahun-2022>

Government Regulation Number 65 of 2001 concerning Regional Taxes. Accessed on October 29, 2025, from <https://peraturan.bpk.go.id/Details/53062>

Ministry of Home Affairs Regulation No. 82 of 2022. Accessed on October 29, 2025, from <https://peraturan.bpk.go.id/Details/233410/permendagri-no-82-tahun-2022>

Strategic Framework for the Optimization of Local Taxes and Local Levies. Ministry of Finance KLC2. <https://klc2.kemenkeu.go.id>