

SEPARATED AUTHORITY: LICENSING, TAXATION AND UNLICENSED MINERAL EXTRACTION IN DECENTRALISED GOVERNMENT

Muhammad Rafly Faeruz Zaman^{1*}

¹Universitas Semarang

*Corresponding author: am1210239@student.usm.ac.id · ORCID: 0009-0004-4133-3319

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ABSTRACT

Decentralised systems assign regulatory functions to different tiers of government, and the assignment determines which authority holds information about an activity and which holds jurisdiction over it. This study examines a case where the two came apart: in Indonesia, licensing authority for non-metallic minerals and rocks rests with the province, while the tax on extraction is a district levy. The method is doctrinal legal analysis of the licensing, taxation and spatial planning framework, combined with a structured review of governance research published between 2017 and 2024, organised through an analytical triad of function, information and incentive. The central finding is documented in a published Indonesian case study: a district revenue authority levies the mineral tax on businesses that hold no licence whatever, and this is lawful precisely because licensing has ceased to be a district function. Three consequences follow. Tax payment operates as de facto recognition of an unlawful operation; no duty compels the taxing authority to notify the licensing authority of what it observes; and enforcement falls to a tier that does not visit the sites. Comparative evidence from Ghana and from the Salween border shows the same pathology under different constitutional forms, indicating a structural defect. The study argues that the provincial surcharge introduced in 2022 is read as an institutional bridge, and four amendments are proposed — a notification duty, a licence-status field in tax registration, joint inspection authority and a single site register — that a fiscal instrument cannot supply.

ABSTRAK

Sistem desentralisasi membagi fungsi pengaturan kepada tingkat pemerintahan yang berbeda, dan pembagian itu menentukan otoritas mana yang memegang informasi tentang suatu kegiatan dan otoritas mana yang memegang yurisdiksi atasnya. Penelitian ini menelaah satu kasus ketika keduanya terpisah. Di Indonesia, kewenangan perizinan mineral bukan logam dan batuan berada pada provinsi, sedangkan pajak atas ekstraksinya merupakan pungutan kabupaten/kota. Metodenya adalah analisis hukum doktrinal atas kerangka perizinan, perpajakan, dan penataan ruang, dipadukan dengan telaah terstruktur riset tata kelola terbitan 2017 hingga 2024, yang ditata melalui triad analisis fungsi, informasi, dan insentif. Temuan utamanya terdokumentasi dalam satu studi kasus Indonesia yang telah terbit: badan pendapatan kabupaten memungut pajak mineral dari usaha pertambangan yang sama sekali tidak berizin, dan hal itu sah justru karena perizinan bukan lagi fungsi kabupaten. Tiga akibat mengikutinya. Pembayaran pajak berfungsi sebagai pengakuan administratif de facto atas usaha yang tidak sah; tidak ada kewajiban undang-undang yang memaksa otoritas pemungut memberitahukan apa yang dilihatnya kepada otoritas perizinan; dan penegakan jatuh pada tingkat yang tidak mendatangi lokasi. Bukti perbandingan dari Ghana dan dari perbatasan Salween menunjukkan patologi yang sama muncul

	dalam bentuk konstitusional berbeda, sehingga cacatnya bersifat struktural, bukan nasional. Penelitian ini berargumen bahwa opsen yang diperkenalkan pada 2022 paling tepat dibaca sebagai jembatan kelembagaan atas pemisahan tersebut, dan mengusulkan empat perubahan normatif — kewajiban pemberitahuan, kolom status izin dalam pendaftaran wajib pajak, kewenangan pemeriksaan bersama, dan register lokasi tunggal — yang tidak dapat disediakan oleh instrumen fiskal saja. Kata kunci: kewenangan pengaturan; desentralisasi; perizinan mineral; pajak daerah; hukum administrasi
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I. INTRODUCTION

Every decentralised system must decide which tier of government does what. The literature on that decision has concentrated on efficiency and accountability: which tier can deliver a service at least cost, which is closest to the citizens who bear the consequences, which can be held answerable. Rather less attention has been paid to a consequence of assignment that is prior to both, namely that the tier performing a function is the tier that comes to know about the activity it regulates.

This is not a trivial by-product. Regulatory knowledge is largely a by-product of routine administration. The authority that inspects premises learns what happens on them; the authority that assesses tax learns what is produced; the authority that receives complaints learns what neighbours object to. When assignment places the function that generates knowledge in one tier and the function that acts on that knowledge in another, the system may possess all the information it needs and still be unable to use it.

Indonesian regulation of non-metallic minerals and rocks presents this configuration in an unusually clean form. Following the recentralisation of mineral licensing, authority to issue extraction permits for this category rests with the province. The tax on extraction of the same material remains a district levy, assessed by district revenue officers who visit sites and estimate production. The tier that sees the activity most closely has no licensing jurisdiction over it; the tier holding jurisdiction sees it least.

A published Indonesian case study brings the consequence into view. Ardiansyah et al. (2023) report that a district revenue authority levies the mineral tax on extraction businesses operating entirely without a licence, and conclude that this constitutes no violation, precisely because licensing is no longer a district function. The observation is easy to read as a local irregularity. It is better read as the predictable output of the assignment.

This study therefore asks three questions. First, how are the functions of licensing, taxation, spatial designation and monitoring distributed across tiers in this field, and what does each tier consequently know and want? Second, what legal consequences follow from a district lawfully taxing an unlicensed operation? Third, what would close the separation, and how much of that work can a fiscal instrument such as the 2022 provincial surcharge actually do?

The contribution is analytical and normative rather than empirical. The study offers a framework — the function-information-incentive triad — for locating this class of failure, applies it to a documented Indonesian case, tests its generality against comparative evidence, and specifies the statutory amendments the analysis implies.

2. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Functional assignment and the location of knowledge

The assignment of regulatory functions across tiers is conventionally analysed as a question of efficiency and proximity. The literature reviewed here suggests a third criterion that is rarely made explicit: informational correspondence, meaning the degree to which the tier holding authority over an activity is also the tier that observes it. Where correspondence is high, enforcement follows observation. Where it is low, observation and enforcement must be joined by an institutional mechanism, and if none is supplied the system fails silently, since no official has done anything wrong.

This framing distinguishes the present analysis from ordinary complaints about coordination. A coordination failure implies that two authorities that should cooperate do not. Informational non-correspondence implies something stronger: that each authority is acting entirely within its mandate, and that the failure is located in the assignment rather than in the conduct of any official.

The function-information-incentive triad

The framework used here characterises each assigned function by three attributes. The function is what the tier is legally empowered to do. The information is what performing that function causes the tier to learn. The incentive is what the tier gains or loses from the activity continuing. A regulatory system is coherent to the extent that, for each activity, some single tier holds all three: the power to act, the knowledge that action is warranted, and a reason to act.

Three characteristic failure modes follow. Authority without information produces nominal regulation, in which the empowered tier cannot identify what to regulate. Information without authority produces observed non-enforcement, in which the knowing tier watches lawfully. And incentive misalignment produces active tolerance, in which a tier that could report has reason not to. The Indonesian case examined below exhibits all three simultaneously, which is why it is analytically useful.

Fragmentation in extractive governance

The comparative evidence indicates that fragmented regulatory authority is characteristic of aggregate extraction rather than incidental to it. Asare et al. (2024), examining terrestrial sand mining around Accra, find extraction regulated by multiple agencies with minimal inter-agency collaboration, and illegal mining persisting because permitting procedures are convoluted,

coordination weak, official corruption present, and night-time monitoring poor. Each element of that diagnosis is institutional rather than technical.

Lamb and Fung (2022) examine the Salween across the Myanmar-Thailand border and find state-centric transboundary governance frameworks failing to capture impacts, because extraction is entangled with riverside livelihoods and migration that those frameworks do not register. Their case is a separation across states rather than across tiers within one, yet the pathology is recognisably the same: the authority with jurisdiction does not see what the framework was built to govern.

Torres et al. (2021) supply the reason this recurs. Because impacts propagate downstream and demand is met from whichever source is cheapest, governance must operate at the scale of the regional supply network, whereas authority is constituted at the scale of political jurisdictions. Any jurisdictional assignment will therefore be non-corresponding to some degree; the design question is how the resulting gap is bridged, not whether it exists.

Illegality as an institutional product

A second literature addresses what occurs outside the licensed sector. Rege and Lavorgna (2017), comparing environmental organised crime in Italy and India, map how criminal groups organise illegal sand and soil extraction, manage threats and exploit regulatory and policing weaknesses. Their account treats illegality as an organised response to identifiable institutional openings rather than as simple non-compliance.

Lamb et al. (2019) supply the necessary counterweight, arguing that the global sand trade omits local livelihoods from the policy calculation. The distinction matters for enforcement design: an operator extracting without a licence may be a criminal enterprise or a household whose agricultural livelihood has become unviable, and a legal framework treating both identically will be simultaneously ineffective against the first and unjust toward the second. Purnomo et al. (2021) document precisely this second category in Indonesia, finding village economies shifting into extraction under infrastructure demand, with resistance cultural and passive.

Haq et al. (2023) identify inconsistent regulation as the principal obstacle to environmental management in an Indonesian district and propose redesign to eliminate illegal operations. Untari et al. (2022) find sand mining established as a livelihood inside a conservation area, concluding that strengthening local institutions is a precondition for sustainable management. Both point to institutional design rather than to enforcement intensity as the operative variable.

Fiscal stake and regulatory behaviour

A distinct empirical literature establishes that a government's revenue stake in an activity affects how it polices that activity. Saavedra and Romero (2021) exploit a Colombian reform that reduced the share of mining royalties transferred to producing municipalities, and find, using satellite

detection of mine sites and difference-in-differences estimation, that reducing the local revenue share caused unreported mining to increase. Xiao (2020) finds the converse in China: when local governments lost corporate income tax revenue, they intensified enforcement on the bases still assigned to them.

This literature is relevant to the present analysis in a specific and limited way. It establishes that the incentive leg of the triad is not merely theoretical, and that altering which tier retains revenue from an activity alters enforcement behaviour toward it. It does not establish that the same holds for a licensing authority as distinct from a revenue or enforcement authority, and that step is treated here as an inference requiring test rather than as a finding.

Shared bases, assignment and the fiscal interest of each tier

The separation examined here is a case of two tiers holding different functions over one activity, and public finance theory supplies the framework for reading it. Hoyt (2017) shows that co-occupancy of a tax base between tiers is desirable, absent another corrective instrument, where the taxed commodities are substitutes, and that an upper-tier rate differentiated between the shared and the exclusive segment can attain the same second-best outcome as an intergovernmental transfer. A shared base is therefore capable of carrying a corrective function, which is the reading this study applies to the surcharge.

Vincent (2023), across forty-nine economies, finds that granting subnational governments greater taxing discretion and administrative control is associated with lower compliance, operating through enforcement intensity, compliance costs and perceived legitimacy. Chalil (2020) finds significant fiscal spillovers among Indonesian municipalities coexisting with no significant electoral response to neighbourhood performance. Together they indicate that the tier holding a taxing function does not automatically hold either the capacity or the accountability that would make its exercise self-correcting.

What extraction revenue does to the receiving government

Three studies indicate that revenue reaching a subnational government from extraction does not reliably produce the outcomes assumed. Aragon and Winkler (2023), examining a long-running resource transfer to producing localities, find sizeable increases in municipal revenue, personnel and equipment producing no significant improvement in access to public services, poverty or inequality, with only weak evidence of additional local infrastructure. Corral et al. (2019), using allocation rules as a natural experiment, find a positive effect on capital expenditure alongside a negative effect on current expenditure, indicating substitution rather than expansion.

Banda (2023) demonstrates the design tension directly, modelling alternative mining fiscal regimes over project life and finding that the regime with the higher revenue-raising potential and the regime more attractive to mobile capital are different regimes. The divergence between revenue-maximising and behaviour-steering configurations is what makes the licensing-taxation

separation consequential rather than merely untidy: each authority is optimising a different objective, and no single instrument satisfies both.

Detecting extraction that holds no licence

The enforcement gap identified in this study presupposes that unlicensed extraction is hard to observe, and two recent studies indicate that this is decreasingly true. Gruel and Latrubesse (2021) built a monitoring system from freely available radar satellite imagery that detected mining vessels across approximately 703 kilometres of channel over three years, finding eighty-two per cent of activity occurring between November and June and half of all detected vessels within a 141-kilometre reach, at near-real-time latency and no data cost.

Diaconu et al. (2023) demonstrate the site-scale complement, combining satellite imagery with uncrewed aerial survey to identify unlicensed extraction and quantify removed volumes of 314 cubic metres at one site and approximately 4,881 cubic metres at another. The implication for the separation of functions is pointed: the informational advantage that the taxing authority holds by virtue of site visits is no longer the only route to knowing where extraction occurs, so the licensing authority's dependence on the taxing authority's observation is now a choice rather than a constraint.

Two further studies establish why detection matters physically as well as fiscally. Rentier and Cammeraat (2022), reviewing the environmental impacts of river sand mining systematically, find impacts cumulative across physical, biological, chemical and anthropogenic categories and difficult to quantify, and record that illegal extraction occurs in approximately seventy countries. Hackney et al. (2020) quantify the consequence in one basin, finding extraction driving bed lowering of 0.13 metres per year on average and up to 0.59 metres, with consequent bank collapse threatening riverside settlements.

Research gap

Two gaps are addressed. First, the Indonesian legal literature on this mineral category consists of district case studies examining taxation or licensing separately; the relation between the two assignments has not been analysed. Second, the international governance literature on aggregate extraction and the Indonesian doctrinal literature have not been brought into contact, so the Indonesian arrangement has not been assessed against the failures the comparative evidence identifies. This study addresses both.

3. METHOD

The study employs doctrinal legal analysis supported by a structured review. It generates no primary field data and offers no estimate of extraction volumes or of the extent of unlicensed operation.

Legal materials

Primary materials comprise the mineral and coal law establishing licensing authority, the 2022 law on fiscal relations between central and regional government and its implementing regulation establishing the district tax and the provincial surcharge, the spatial planning framework governing where extraction may occur, and regional regulations on mineral taxation. All are public documents. No non-public administrative record, permit file or taxpayer record was accessed, and no individual operator, official or business is identified.

Analytical procedure

Analysis proceeded in three steps. Each function in the field — licensing, tax assessment and collection, spatial designation, environmental monitoring, and the surcharge — was assigned to the tier holding it under the current framework. Each was then characterised by the information its performance generates and by the tier's revenue or expenditure interest in the underlying activity. The resulting matrix was examined for combinations in which authority, information and incentive rest in different tiers, and each such combination was traced to the legal consequences it produces.

Comparative material and limits

Peer-reviewed studies published between 2017 and 2024 addressing extraction governance, regulatory fragmentation, illegal extraction and Indonesian mineral regulation were identified and retained where bibliographic details could be verified against a publisher page, digital object identifier record or the journal's own site. Works with inconsistent metadata or unstable indexing status were excluded. The comparative material is used to test whether the pathology identified in the Indonesian case appears under other constitutional arrangements; it does not support any claim about relative severity, since no common measure exists.

4. RESULTS AND DISCUSSION

The distribution of functions

Applying the procedure yields the distribution set out in Table 1. Read across the rows, no tier holds authority, information and incentive together in respect of the same activity.

Table 1. Function, information and incentive by tier of government

Function	Tier holding it	Information generated	Interest in continued extraction
Extraction licensing	Province	Permit records; declared production plans	Historically none direct
Mineral tax assessment and collection	District	Site visits; assessed production volumes	Direct and substantial
Spatial designation of extraction zones	Province and district plans	Permitted land use; zoning	Indirect
Environmental monitoring	Environmental agencies	Impact reporting where required	None

Criminal enforcement against unlicensed mining	Central and provincial organs	Reports received; case files	None
Provincial surcharge (from 2025)	Province	Derived from district assessment	Direct, proportional to reported production

Source: authors' analysis of the licensing, taxation and spatial planning framework.

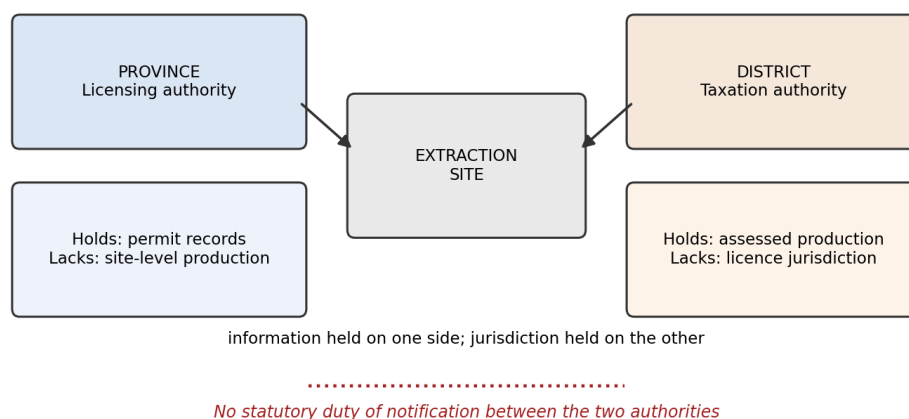


Figure 1. Non-correspondence of information and jurisdiction at the extraction site (authors' construction)

The district generates the richest operational information in the system. Assessing the mineral tax requires estimating production, which requires visiting sites, observing equipment and recording quantities removed. The province issues the licence and holds the permit file, which records what an applicant proposed rather than what an operator does. Environmental agencies receive impact documentation where it is required, which by construction excludes operations that never applied.

The incentive column completes the picture. The district's interest in the activity is fiscal and direct: extraction generates its revenue. The province's interest, before the surcharge, was regulatory only. Neither tier has held both the operational knowledge that an operation is unlicensed and a reason to act on that knowledge.

The lawful taxation of unlicensed extraction

Ardiansyah et al. (2023) report that a district revenue authority levies the mineral tax on all extraction businesses in its territory, including those operating without any licence, and conclude that this does not constitute a violation because licensing authority no longer rests with the district. The doctrinal reasoning is sound on its own terms. The tax is imposed on the taking of the material, and the taxable event does not incorporate the licensing status of the taker. A revenue authority that declined to assess an unlicensed operator would be forgiving a tax lawfully due on grounds outside its competence.

Three legal consequences follow, and they are consequences of the design rather than of the district's conduct.

The first is de facto legitimation. An operator holding a tax assessment notice, tax receipts and a taxpayer registration possesses documentary evidence of official dealings with the state in respect of the very activity that is unlawful. Nothing in that documentation asserts that the operation is licensed. But in practice, and particularly in dealings with buyers, transporters and local officials, the distinction between having papers and having the right papers erodes. The state has, without intending it, issued an unlicensed operation a document confirming that it operates.

The second is the absence of a notification duty. No provision located obliges the district revenue authority to inform the provincial licensing authority when it assesses an operator whose licence status is absent or unknown. Nor is licence status a required field in tax registration for this category. The information that would allow the licensing authority to act exists, is held by the state, and does not move, because no rule requires it to move and the tier holding it has no reason to send it.

The third is an enforcement void. Criminal enforcement against unlicensed mining rests with central and provincial organs. These bodies act on reports. The tier best positioned to report is the district, which receives revenue from the operation and would lose it were the operation closed. The design thus places the reporting function with the tier holding the strongest fiscal reason not to exercise it. This is not an allegation of misconduct; it is a description of an incentive that the framework creates and does not counterbalance.

Generality of the pathology

Whether this configuration is peculiarly Indonesian can be tested against the comparative material. Table 2 sets the three cases side by side.

Table 2. Separation of regulatory knowledge from regulatory authority: three settings

Setting	Form of separation	Observed outcome	Source
Indonesian districts and provinces	Licensing and taxation assigned to different tiers	Unlicensed operations lawfully taxed; no notification duty	Ardiansyah et al. (2023)
Accra, Ghana	Multiple agencies regulating one activity	Minimal inter-agency collaboration; illegal mining persists	Asare et al. (2024)
Salween, Myanmar-Thailand	Authority constituted within states, resource crossing them	Frameworks fail to capture livelihood-embedded extraction	Lamb & Fung (2022)

Source: authors' synthesis. The three settings differ in constitutional form and are not comparable in severity; the comparison concerns the structure of the separation only.

The three settings share no constitutional feature. One is a unitary state with tiered decentralisation, one a unitary state with sectoral agencies, one a border between sovereigns. The recurrence of the same pathology across all three supports treating it as a property of governing a dispersed, low-value, high-volume resource rather than as a defect of any particular constitutional arrangement. It follows that importing another jurisdiction's assignment would not resolve it.

The spatial leg and its silence

A third function deserves separate attention because it is the one most often assumed to compensate for the others. Spatial designation determines where extraction may lawfully occur, and it operates through spatial plans adopted at both provincial and district level. In principle this gives the district a planning instrument bearing on extraction even though it holds no licensing power, and it is tempting to treat that instrument as the district's regulatory remedy.

The analysis in Table 1 indicates otherwise. Spatial designation generates information about permitted land use, not about actual extraction, and it is revised on multi-year cycles rather than in response to observation. A district that discovers extraction proceeding outside a designated zone holds a planning violation, but the sanction attaching to it is a planning sanction, addressed to land use rather than to the mineral taken, and the authority to withdraw the extraction permit remains provincial. The spatial leg therefore adds a third body of partial knowledge rather than joining the two that already exist, and it illustrates the general point: adding functions to a non-corresponding assignment multiplies the fragments without creating a tier that holds authority, information and incentive together.

What a fiscal instrument can and cannot bridge

The provincial surcharge introduced by the 2022 law gives the province a revenue entitlement calculated on the district's assessment of the same tax base. Read against Table 1, its structural effect is to supply the licensing authority with an interest in the accuracy of production reporting, and thereby with a reason to attend to whether reported producers hold licences at all. On the triad, it addresses the incentive leg.

The empirical literature makes that a reasonable expectation rather than a demonstrated one. Saavedra and Romero (2021) show that a jurisdiction's revenue share in extraction affects its tolerance of unreported extraction, and Xiao (2020) shows enforcement effort responding to which base a tier retains. Both concern revenue and enforcement authorities. Extending the finding to a licensing authority is an inference from analogous incentives, and it should be stated as such.

What the surcharge does not do is supply the missing legal machinery. It creates no duty of notification between tiers, adds no licence-status field to tax registration, confers no joint inspection power, and establishes no shared register of extraction sites. The province acquires an interest in information it still has no legal means to obtain, and the district retains information it is still under no obligation to transmit. An incentive without a channel produces frustration rather than enforcement.

Implications for statutory design

Four amendments follow from the analysis, each addressing a specific leg of the triad.

First, a statutory duty of notification: where a revenue authority assesses an extraction operation whose licence status is absent or cannot be established, it should be obliged to notify the licensing authority within a defined period. This converts existing information into a legal flow without requiring any new observation.

Second, licence status as a mandatory field in tax registration and periodic reporting for this category. The field costs nothing to collect at the point where the operator is already being registered, and it makes the absence of a licence a recorded administrative fact rather than an unasked question.

Third, joint inspection authority, allowing provincial licensing officers and district revenue officers to conduct site inspections together with shared legal effect. This addresses the asymmetry directly: the tier that visits sites gains licensing significance for what it sees, and the tier with jurisdiction gains access to the visit.

Fourth, a single register of extraction sites maintained at provincial level and populated from both licensing and revenue records. Asare et al. (2024) identify the absence of shared records as central to the Accra failure, and a register is the minimum artefact through which two authorities can discover that they are describing the same site.

A fifth measure follows from the livelihood literature rather than from the triad. Lamb et al. (2019) and Purnomo et al. (2021) indicate that many unlicensed operators are households rather than enterprises, and Asare et al. (2024) identify convoluted permitting as a driver of illegality. Closing the informational gap will therefore expose a population of small operators to enforcement. A simplified permit tier for small-scale extraction is a necessary companion to the amendments above, failing which an administrative reform becomes a distributive measure aimed at the least resourced participants in the sector.

Limitations

Four limitations qualify these findings. First, the central Indonesian evidence is a single published district case study, and its generalisability across districts is unestablished. Second, the analysis concerns regulatory design rather than observed outcomes; the surcharge is too recent for implementation evidence and the amendments proposed have not been tested anywhere. Third, the inference that a revenue stake will alter licensing behaviour rests on studies of revenue and enforcement authorities and is therefore an extrapolation. Fourth, no non-public administrative record was consulted, so the extent to which informal notification already occurs between tiers is unknown and may be greater than the formal framework implies.

5. CONCLUSION

Assigning regulatory functions across tiers of government determines not only who may act but who comes to know. Where the tier that observes an activity and the tier empowered to act on it

are different, and no mechanism joins them, the system can hold all the information required for enforcement and remain unable to enforce, with every official acting correctly throughout.

Indonesian regulation of non-metallic minerals and rocks exhibits this configuration. Licensing sits with the province, taxation with the district, and a published case study records a district lawfully levying the mineral tax on operations holding no licence, on the correct reasoning that licensing is not its function. Tax payment then operates as de facto recognition; no duty compels the taxing authority to report what it sees; and enforcement rests with a tier dependent on reports from the one tier with a fiscal reason not to make them. Comparable separations in Ghana and on the Salween produce comparable outcomes under quite different constitutional forms, which locates the defect in the structure of the problem rather than in Indonesian arrangements specifically.

The provincial surcharge introduced in 2022 addresses the incentive leg of this failure by giving the licensing authority a revenue interest in accurate production reporting, and the comparative empirical evidence makes it plausible that such an interest changes enforcement behaviour. It does not, however, supply the legal channel through which information could move. Four amendments would: a duty of notification, licence status as a recorded field in tax registration, joint inspection authority, and a single site register. Each is modest, none requires new observation, and together they would place authority, information and incentive within reach of one another for the first time. Without a simplified permit tier for small-scale operators, however, their principal effect would fall on households that entered extraction because other livelihoods closed, which is a defensible outcome only if it is chosen deliberately.

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Author contributions (CRediT)

Muhammad Raffy Faeruz Zaman: conceptualisation; methodology; formal analysis; writing - original draft; writing - review and editing.

Conflict of interest

The authors declare that they have no competing interests.

Data availability

All data supporting the findings of this study are available within the article and from the publicly accessible sources cited therein.

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Declaration on the use of artificial intelligence

No generative artificial intelligence tool was used in the preparation of this manuscript.

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