

CONSTRAINTS TO REFLEXIVE GOVERNANCE OF SAND MINING BY STATE INSTITUTIONS IN ZIMBABWE

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Abstract: Illegal sand mining continues to cause severe social and environmental degradation in Zimbabwe despite legal frameworks intended to regulate the sector. This qualitative case study of Harare Metropolitan Province examines constraints to the reflexive governance of sand mining by state institutions. Guided by the reflexive governance framework, the study employed semi-structured interviews with purposively selected informants, including government officials, industry representatives, community leaders, residents, and illegal sand miners. Findings reveal that reflexive governance is constrained by macroeconomic, political, and institutional barriers, particularly weak law enforcement, limited stakeholder participation, and resource shortages. Corruption, bribery, and political interference further undermine regulatory effectiveness and sustain illegal operations. The study concludes that governance systems lack the adaptability needed to address unemployment-driven informality and recommends formalising informal sand mining, strengthening stakeholder engagement, and enhancing institutional capacity for sustainable mining practices.

Keywords: *reflexive governance of sand mining in Zimbabwe, illegal sand mining, sustainable sand mining, stakeholder engagement, resource scarcity*

Introduction

Internationally, sand mining governance is framed by instruments such as UNEP's (2019) "Sand and Sustainability" report and the African Mineral Governance Framework, which emphasise sustainability, inclusivity, and adaptive governance. These principles align closely with Sustainable Development Goals 8, 11, 12, and 15, providing a normative lens for assessing national governance practices. Despite the existence of comprehensive legislative and institutional frameworks governing extractive resources,

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illegal sand mining continues to proliferate in many African cities, generating severe socio-environmental consequences. These governance frameworks emphasise principles such as sustainability (ensuring resource use does not exceed ecological limits), inclusivity (involving affected communities in decision-making), and adaptive governance (the ability of institutions to learn and adjust policies in response to changing socio-economic and environmental conditions). In practice, this means that sand mining governance should not only regulate extraction but also account for local livelihoods, continuously monitor environmental impacts, and revise policies in response to emerging challenges. Estimates suggest that a significant proportion of global sand mining occurs outside formal regulatory systems, with illegal extraction accounting for nearly one-third of total production annually (UNEP 2014; Mahadevan 2019). This persistence of illegality points to deeper governance failures rather than mere regulatory absence. It raises critical questions about the reflexivity of sand governance, that is, the capacity of state institutions to learn, adapt, and respond to evolving socio-environmental risks associated with sand extraction. These include land degradation, water pollution, social conflict, and criminal networks, which all reveal a governance paradox in which intensive regulation coexists with escalating environmental harm and institutional ineffectiveness (Komnitsas 2020; Azhary et al. 2020; Mark 2021).

These global governance challenges are particularly pronounced in Zimbabwe, where prolonged economic crisis and urban informality have reshaped natural resource use. The Zimbabwean mining and environmental laws require sand miners to obtain permits, conduct Environmental Impact Assessments, and comply with local authority by-laws (Mandondo 2000; Chigudu and Chirisa 2020). Enforcement responsibilities are shared between the Environmental Management Agency (EMA), local authorities, and the police, theoretically enabling coordinated oversight across extraction, transport, and land-use planning. The present article argues that the persistence of illegal sand mining in Zimbabwe reflects not only enforcement failures, but deeper constraints in the reflexive capacity of state institutions to adapt governance practices to evolving socio-economic realities. Illegal sand mining has emerged as a critical livelihood strategy for unemployed and informally employed youths. Particularly, Harare Metropolitan Province, home to over two million residents, is characterised by high unemployment, expanding informal settlements, and declining urban services. These conditions have intensified reliance on informal livelihood activities, including sand mining, particularly in peri-urban

areas such as Epworth, Retreat, and Zengeza (Mushonga 2022; George and Steven 2022). Rather than viewing sand mining solely as criminality, this study situates it within broader processes of economic decline, informality, and survival, while still interrogating the capacity of governance systems to manage its socio-environmental impacts.

Guided by the reflexive governance framework, this study examines how institutional, political, and socio-economic constraints shape the governance of illegal sand mining by state institutions in Harare Metropolitan Province. By foregrounding sand mining, an often overlooked but ubiquitous extractive activity, this study extends reflexive governance debates beyond large-scale mining to everyday urban resource extraction, offering new insights into governance under conditions of informality and economic stress.

Study Area

Figure 1 illustrates the spatial distribution of the study sites within Harare Metropolitan Province. The highlighted areas represent identified hotspots of illegal sand mining, based on prior studies (Mushonga 2022) and preliminary field observations. The different colours on the map distinguish administrative boundaries and land-use zones, including peri-urban settlements where informal economic activities are concentrated. These zones are particularly relevant to this study because they combine high population pressure, weak land-use control, and the presence of accessible sand deposits, making them highly susceptible to illegal extraction. The map, therefore, provides a spatial context for understanding where governance challenges are most acute and why these sites were selected for in-depth investigation.

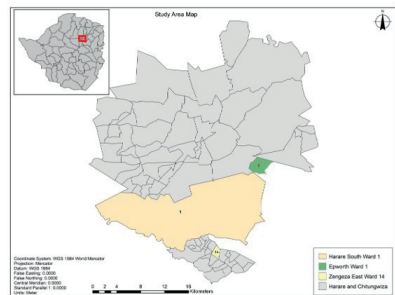


Figure 1. Map of Zimbabwe Showing Study Sites within Harare Metropolitan Province
Source: first author

Literature Review and Research Framework

Reflexive governance is a key factor in addressing global socio-environmental issues (Zahiri et al. 2022; Asare et al. 2021; Hasibuan et al. 2021; Mekuria et al. 2021). According to Brown and Marsden (2013), reflexive governance

refers to governance arrangements that enable institutions to critically reflect on existing rules, learn from societal feedback, and adapt policies in response to changing socio-economic and environmental conditions. Vadrot et al. (2022) add that reflexive governance involves the development of capacity among the governed to influence the construction of governance objectives. Similarly, Desportes et al. (2016) assert that reflexive governance is characterised by the participation of both formal and informal actors in making decisions implemented through both formal and informal structures. All the scholars emphasise that engaging indigenous peoples and local communities in natural resource governance promotes stewardship, responsibility, and accountability of their own resources – and this ultimately results in sustainable development.

The governance challenges associated with illegal sand mining can also be understood through the lens of common-pool resource (CPR) theory. Ostrom (1990) highlights those natural resources, such as sand, which are difficult to exclude users from and are subtractable in use, are highly vulnerable to overexploitation under weak governance conditions. Ostrom's design principles, including clearly defined boundaries, collective-choice arrangements, monitoring, graduated sanctions, and conflict-resolution mechanisms, provide a useful framework for analysing institutional weaknesses in sand mining governance. In contexts such as Zimbabwe, where enforcement is inconsistent and stakeholder participation is limited, the absence of these institutional design principles contributes to unsustainable extraction and regulatory failure.

However, various factors influence reflexive governance success, such as resource availability, human effort, and commitment (Gondo et al. 2019), and technologies (Gavriletea 2017). Leal Filho et al. (2021) asserted that transfer of investment technologies from source countries is associated with high environmental impacts, which recipient countries may not be able to withstand due to limited resources and appropriate technologies. In Zimbabwe, a study by Rajah et al. (2012) revealed that governance of environmental management is marred by institutional inefficiencies, resource scarcity, and lack of transparency. Many studies confirm that poor enforcement and corruption are the main barriers to sustainable mining governance (Chevallier 2014; Chilamkurthy et al. 2016; Chen 2017). Chilamkurthy et al. (2016) point out the lack of monitoring systems; regulatory policies, and environmental impact assessments for indiscriminate mining and environmental problems. Green (2012) noted that the regulatory regime in South Africa was undermined by regulatory

conflicts, local governance failures, and deficient compliance monitoring and enforcement systems. In similar studies, lack of reflexive by-laws (Pölönen et al. 2020), lack of adequate information on the level of impacts of illegal sand mining (Shaji and Anilkumar 2014), and lack of scientific mining methodologies and technologies for environmental management (Saviour 2012) emerged among other key issues constraining reflexive governance of natural resources in developing countries.

Despite significant studies examining governance issues in the extractive sector and natural resources (Pahl-Wostl and Patterson 2021; Poncian 2021; Asare et al. 2021; Beevers 2019; Franco and Ali 2017; Mandondo 2000), the above authors focused on either governance in general or on other extractive natural resources – and not on sand. In Zimbabwe, no study has examined the reflexive governance of sand mining despite the growing concern over illegal sand mining.

Reflexive Governance Framework

The study utilises a reflexive governance framework to examine the constraints to reflexive governance of sand mining in Zimbabwe using a case study of illegal sand mining in Harare metropolitan province. Governance has eight major characteristics that include participation, consensus-oriented, transparency, accountability, responsiveness, effectiveness and efficiency, equity and inclusivity, and the rule of law (Pahl-Wostl & Patterson 2021; Moore 2021). Building from the governance concept, Feindt and Weiland (2018) noted that reflexive governance entails reflexive adaptation of regulations or policies by institutions. These scholars emphasise that reflexive governance should involve rules that allow for reflexive learning and capacity building within a given normative framework. Using these definitions, reflexive governance is a governance tool that institutions can use to promote sustainable development across sectors.

In our study, institutional practices and issues for addressing illegal sand mining including the roles of various stakeholders are examined. As noted by Vadrot et al. (2022), reflexive governance involves capacity building of the governed to influence the construction of governance objectives. That way, reflexive governance can address the socio-ecological vulnerabilities of societies, fragmented governance regimes on human-nature relations, and conditions for sustainability transition. In Zimbabwe, sand mining is regulated by local authorities and the Environmental Management Agency.

However, illegal sand mining remains problematic and causes a myriad of socio-environmental problems in society. Against that backdrop, the study unpacks key constraints to reflexive governance of illegal sand mining with a focus on stakeholder participation, transparency, accountability, and the rule of law among other elements of good governance. Particularly, reflexive governance provides an analytical lens through which institutional practices are assessed against criteria such as stakeholder participation, adaptability, transparency, and responsiveness, allowing empirical findings to be systematically interpreted.

Methods

Informed by interpretivism philosophy, a qualitative research approach was utilised (e.g., Creswell 2014), with purposively sampled officials from the government, non-governmental organisations, industry, and local community (see Table 1). Sample sizes for key informants and the local community that include residents and illegal sand miners were determined by official responsibility in sand governance, and saturation respectively. Qualitative data were collected using face-to-face and telephone interviews in non-permissive workplaces due to COVID-19, for the latter from three selected hotspots namely Epworth, Retreat, and Zengeza. The identification of these hotspots was informed by a combination of secondary data and preliminary field insights. Specifically, prior studies (e.g., Mushonga 2022; George and Steven 2022), reports from local authorities and the EMA, and initial scoping visits by the authors identified Epworth, Retreat, and Zengeza as areas with high concentrations of illegal sand mining activities. These areas are characterised by readily accessible sand deposits, high levels of informality, and documented environmental degradation, making them appropriate case sites for examining governance dynamics.

Hence, the researchers observed all World Health Organisation (WHO) guidelines on the COVID-19 pandemic. Although telephone interviews equally provided room for interrogations and clarifications, face-to-face interviews relatively provided for more in-depth data collection. Open-ended interviews utilised provided room for both the interviewer and interviewee to discuss related issues in more detail. Hence, the researchers were able to probe into potentially sensitive illegal issues from the illegal sand miners to link mining drivers, implications, and governance with conflicts. All the interviews were scheduled and conducted after

informed consent was acquired. The researchers developed a set of respective interview guides to keep them aligned with the research questions during interviews. Interview guides focused on governance roles, enforcement practices, stakeholder engagement, and perceptions of sand mining impacts. Grounded theory techniques were used to code and group emerging themes (Charmaz 2014). Methodological limitations include access constraints and potential response bias due to the illegal nature of the activity.

To enrich data quality and reliability of findings, all interviews were recorded by a digital voice recorder after informed consent of participants. A diary was also used to prepare some notes after each interview. Each interview was fully transcribed, using the notes and interview recordings.

Target population	Name of organisation	Participants' Codes	Number of interviews conducted
Government Officials	Environmental Management Agency (EMA) Local authorities (Harare city council, Epworth local board, and Chitungwiza municipality)	GE GL	9
Local Community Leadership	Ward Chairpersons: Epworth, Retreat, and Zengeza East	CL	3
Local Residents	Epworth, Retreat, and Zengeza East	CR	10
Industrialists (Mining company officials)	Derbyshire Quarry and Eye Court Quarry	IN	3
Illegal Sand Miners	Epworth, Retreat, and Zengeza (self-employed)	IL	15

Table 1. Interview Data

Results

The study noted that reflexive governance of illegal sand mining was restrained by a combination of macroeconomic, political and institutional factors in Zimbabwe. Economic obstacles include resource scarcity and high unemployment while institutional obstacles include corruption and bribery and limited stakeholder engagement. Politically, the interference of political actors in land access and use processes constrained reflexive governance of sand mining. Analysis of interview data generated five dominant themes: poor law enforcement, limited stakeholder engagement, resource scarcity, corruption and bribery, and political interference.

Poor Law Enforcement

Results indicated that there is poor law enforcement by responsible authorities such as the EMA and local authorities. Multi-stakeholder blitz operations conducted to monitor and regulate illegal sand mining activities have a very low frequency rate. The lag between inspections and monitoring exercises in hotspots such as Retreat is too large paving the way for rapid illegal sand extraction. Interviews conducted with the local community exposed the inadequacy of enforcement to curb illegal mining in Harare Metropolitan Province. Informant IL 14, a resident and illegal sand miner from Zengeza (Personal Communication, 13 August 2020) noted that,

“EMA visits these areas but not often. We can operate for two weeks or more without seeing any EMA official here. Sometimes EMA comes with police, but we have since established with most police officers such that this doesn’t affect our operations much. We talk to them and continue operating.”

The above excerpt reveals a limited frequency of on-site regulatory exercise by responsible institutions. This is further worsened by counteracting mechanisms adopted by offenders in the case of on-site raid operations. The syndicated system of communication makes it difficult for police and regulators to conduct successful raids. Explaining the syndicated system, Informant CR 8, resident of Zengeza East (Personal Communication, 5 August 2020) highlighted that,

“Some council officers connive with illegal sand miners with whom they work in the sand business and alert their peers on dates and times a blitz will be conducted. By the time officers

come on the sites the state of activity would have already changed including temporary vacation of miners and removal of any heaps of sand at homes and sites.”

Even illegal sand miners themselves confirmed that they have adopted communication systems that alert and protect them against police or any law enforcement personnel visiting their sand mining sites. Informant IL 4, resident and illegal sand miner from Retreat (Personal Communication, 10 August 2020) noted that,

“Even when the police come with EMA, it doesn’t really work because once their car is spotted along First Street in Waterfalls, we call each other and alert each other by cell phones. By the time they arrive here, we would have vacated the mining sites. Some of their officers also alert us, so literally it’s a waste of their time. It will not work.”

The narration above exposes the complexity in apprehending illegal sand miners. There are clear acts of omission and commission by both offenders and law enforcement officers respectively. This also suggests weak regulation systems by responsible institutions. Confirming these findings, Informant IL 13, a resident and illegal sand miner from Zengeza (Personal Communication, 14 August 2020) affirmed that, “We have never seen EMA’s presence here,” he says. “If they come and teach people about the importance of the environment, I am sure we will see an improvement in our environment.”

Affirming the foregoing sentiments, industrialists also attributed illicit sand mining activities to the weak local governance system in the country. Due to poor law enforcement by EMA and local authorities, and persistent illegal sand mining activities, most officials highlighted that they have since adopted their own self-defence systems against illegal sand miners. Informant IN 3, Deyshire Quarry official (Personal Communication, 28 August 2020) explained that,

“Umm, these government offices no longer perform as we expect. EMA used to come and check with us on these issues more regularly and even assess our level of compliance, but they no longer come here more often. I do not remember the last time EMA came here but it’s a long time since they last came. The same applies to municipal officers; they no longer come here more often. We have since assumed local authority

responsibility to protect our territories on our own. We have turned all open spaces around these premises into plantations in order to deprive illegal sand miners of sand endowments.”

The above excerpts clearly expose the governance gap on illegal sand mining in Zimbabwe. Limited activity monitoring creates a fertile space for illegality, and in response, the private sector has implemented alternative sand mining restrictive measures. Even the local community expressed concern over the poor governance of illegal sand mining by authorities. Informant CR 5, resident of Zengeza East (Personal Communication, 7 August 2020) noted that, “the police relatively come here more often than EMA and council. The latter can go for a month before coming here to check on these illegal and informal activities.”

Weak enforcement of environmental laws is a key restraint to reflexive governance of sand mining in Zimbabwe.

Limited Stakeholder Engagement

Besides poor governance, limited stakeholder participation in governance processes emerged as a key restraint to reflexive governance of illegal sand mining in Zimbabwe. Key stakeholders such as the local community, industry, civil society, and other non-governmental organisations are generally marginalised in either planning, implementation, or review processes. Few observed engagements often involve government-to-government institutions such as environmental authorities, police, and local authorities under the purview of government mandates. Exposing the limited engagement stakeholder gap, Informant GE 5, EMA official (Telephone Interview, 18 August 2020) noted that,

“In terms of illegal sand mining, so far, we have only worked with police and office of the DA. We have not worked with any community except just raising awareness to the public. As for local authorities, we work with them on several programs, but we have not implemented sand mining program together yet. The feedback from local authorities is not positive.”

Evidence above suggests that there is very limited stakeholder participation such as the local community and local authorities in sustainable sand mining matters. This is despite empirical evidence suggesting that the local community experiences the worst impacts of illegal sand mining such as

land degradation, displacement, and health hazards. The lack of community participation in designing and implementing solutions for sustainability suggests far fetching, non-inclusive, and non-reflexive governance system.

In our study, the community's experience of a myriad of socio-economic and environmental problems caused by illegal sand miners, coupled with limited engagement, fuelled socio-environmental conflicts. Most participants, the residents of all three selected areas lamented over their marginalisation in the decision-making process over local environmental issues affecting them. Informant CR 1, resident of Retreat (Personal Communication, 12 August 2020) cited that,

“...we only know that EMA and Council officers come here chasing the illegal sand miners. I do not remember any program when these authorities engage our communities or conducting any public consultations.”

The findings above expose the inadequacy of local community participation in decision process on sand mining issues. The same applies to industrialists who lamented over poor engagement programs by the government's environmental authorities in addressing illegal sand mining issues affecting them. Despite government authorities routinely visiting mining premises, the study noted that the industry is not much involved in the decision-making process on illegal sand mining issues. This is despite the industry's ever attempting to find assistance from responsible authorities on illegal sand mining issues affecting their operations. Pinpointing gaps in public-private engagement in sand mining governance, Informant IN 3, Eye Court Quarry official (Personal Communication, 28 August 2020) lamented that,

“...when they [local authorities] come here, they visit our premises asking a few questions about our experiences with illegal sand miners but as for planning and consultations through workshops, I can't remember the last time we were consulted. It's a couple of years ago.”

The narration highlights the inadequacy of the consulting industry, particularly mining companies affected by illegal sand mining. This also emerged in other interviews held with key informants from the industry. Informant IN 1, Debyshire Quarry official (Personal Communication, 28 August 2020) explained that,

“We are actually surprised that local authorities, such as community leadership, EMA, and local authorities mandated

to deal with such illegal sand mining issues, are silent. We thought they would involve us in planning on how we can best address these issues since we are equally the victims. EMA last came here last year, but as part of their general environmental inspections. In some cases, authorities are only visible when they receive reports from the community. To me, we are neglected; we are marginalized yet seriously affected by territorial abuse, environmental destruction, and competition.”

Together, these findings show that there are no specially designed government engagement programs with industry, community, and other key actors to address illegal sand mining issues. Lack of adequate stakeholder participation in sand mining governance processes was one of the key barriers to reflexive governance of illegal sand mining. This further suggests that existing measures to curtail illegal sand mining were either ill-informed or non-reflexive of the current needs of society. In this study, such collaboration is deficient suggesting that industry remains a victim of illegal sand miners through environmental degradation and market loss.

Resource Scarcity

Results also indicated that a lack of adequate resources impeded effective governance of illegal sand mining in Harare Metropolitan Province. Despite being embedded in contemporary ideologies for sustainability, most institutions were not able to fully execute their environmental mandates due to limited resources. Viewed from wider macro-economic problems faced by the country, most participants pointed to the lack of adequate funds to support programs such as consultative workshops, capacity building, education, and awareness. Institutions such as EMA grappled with resource challenges to conduct on-site regulation that often involves multi-stakeholder blitz operations and requires adequate funds and equipment. Informant GE 2, EMA official (Personal Communication, 14 August 2020) highlighted that,

“The major challenge we have in organising successful programs towards illegal sand mining is limited funds. Usually, these programs for example blitz involve working with various actors, such as the community, media, and police, so once we plan to conduct them, there should be adequate resource support. At times, resources may not suffice. This explains why at times we take a long time before we conduct these programs.”

Similar to sentiments from EMA, local authorities confirmed that resource scarcity has a significant effect on institutional engagements in addressing illegal sand mining. Informant GL 1, HCC official (Personal Communication, 25 August 2020) noted that,

“We are trying our best to deal with illegal sand mining but sometimes resources pull us back. We have a shortage of vehicles to conduct frequent monitoring of all illegal sand mining sites. Some of our programs require approval and even financial support from the ministry, so as long we have no funds disbursed, it we can't make any no progress. At times, we even fail to cooperate with EMA because of resources. We need to work with EMA and other key partners in devising long-term solutions to illegal sand mining. We hope it will be a thing of the past soon.”

This empirical evidence clearly reveals that resource scarcity is indeed one of the obstacles to good governance of illegal sand mining. Resource scarcity affected the capacity of responsible authorities or institutions to effectively and efficiently enforce laws that protect communities and the environment. The prevailing harsh socio-economic conditions in the country have added the burden of reflexive governance challenges on local authorities.

Corruption and Bribery

The study also identified corruption and bribery as impediments to reflexive governance of illegal sand mining in Harare Metropolitan Province. Most participants lamented that government officials get bribes from illegal sand miners to allow them to continue mining sand illegally without apprehension. Communities criticise joint inspections and patrols for being mere assumptions of duty rather than realistically serving the mandate of responsible organisations. Informant CR 1, resident of Retreat (Personal Communication, 3 August 2020) noted that,

“These government officers are just bribed with money and the deal is closed. They do visit these sites but surprisingly no mining stops at times. They receive bribes and no longer act. Only a few officers are genuine and when those ones do come, most illegal sand miners disappear because they surely apprehend you.”

Another informant, CR 4, Retreat resident (Personal Communication, 3 August 2020), affirmed that, “...close sources in Harare say capital city's top

municipal officers are accused of cashing in on sand poaching.” The industry also confirmed that local authorities and law enforcers perpetrate illegal sand mining through suspected corruption. Informant IN 3, Debyshire Quarry official (Personal Communication, 28 August 2020) highlighted that,

“The problem is everyone including the officials themselves, especially the ones from ZRP and Council, are greedy for money, so they always accept bribes and make relations with illegal sand miners. They are the same officers that communicate with the illegal sand miners about any on-site raids that will be planned.”

Whilst there are some notable stakeholder engagements between police and other stakeholders from the industry and the government, the above evidence suggests that corruption is inherent in local governance processes. The non-stop illegal sand mining activities irrespective of the presence of law enforcement personnel, reveal there was deliberate violation of the rule of law through corruptive practices. This is even though rule of law is an element of good and reflexive governance.

Political Interference

Political interference in land use and governance also emerged as an obstacle to reflexive governance of illegal sand mining in Harare Metropolitan Province. Political figures, such as war veterans, use political muscle to violate the property rights of private mining companies creating territorial conflicts between landowners and illegal sand miners. Despite concerted efforts by victims of illegal sand mining, and particularly the industry or mining companies, responsible authorities also find it difficult to exercise regulatory or enforcement powers for state-owned land. The chaotic land use, land rights, and mining systems prohibit efforts to address illegal sand mining in such areas. This is an obstacle to reflexive governance of sand mining, as emerged from concerned industry officials as Informant IN 3, a Debyshire Quarry official (Personal Communication, 28 August 2020) expressed,

“This area is dominated by war veterans. Sometimes when we raise our heads over illegal operations in our premises, they intimidate us trying to pacify us. Recently, we filed a case against one of the war vets who refuted formal warnings against operating in our premises.”

Clearly, this response reveals that illegal sand mining is not only a socio-economic and environmental issue but a politically driven issue. Supporting the above views, mining officials from the private sector also castigated the government for not addressing their conflict with politicians. Informant IN 1, Eye Court Quarry official (Personal Communication, 28 August 2020) noted that,

“We are deeply concerned by the manner politics is used to manipulate us as industry. Our voices are not heard despite repeated efforts to seek assistance from both local authorities, such as councils and EMA, and even the community leadership. Everything is politicized and you would notice that some community leadership is part of the whole system of illegal sand business. Surely, how can policies work in societies where policy formulators perpetrate illegality?”

These narratives from the private sector indicate that politics is used as an instrument of both human and environmental rights violations rather than an instrument for promoting sustainable sand mining as espoused by the stakeholder theory, and good governance, as advocated by the Constitution of Zimbabwe. Even some government officials further stated that state land is very difficult to regulate, as there is much political dominance and freedom of activity. Informant GE 4, an official from EMA (Telephone Interview, 14 August 2020) explained that “Retreat Farm is state land, and this is why it is difficult to regulate illegal sand mining there. No one specifically owns it hence, rampant illegal sand extraction is taking place there.”

Indeed, political interference in land rights and mining rights is an obstacle to reflexive governance of illegal sand mining in Zimbabwe. As revealed by this study, politics was utilised for land acquisition and influence over sand mining rather than for promoting sustainable sand mining. The landowners used political power to override environmental laws at the expense of community welfare and environmental authorities creating stakeholder conflicts and restraining reflexive governance of sand mining.

Discussion

Findings from this study expose the urgent need for reflexive governance of sand mining in Zimbabwe. Despite the existence of a comprehensive legislative framework, institutions responsible for sand mining cannot combat illegal sand mining. Practices and programs adopted to address

illegal sand mining are not holistic, as evident in limited stakeholder engagement in planning, implementation, and review processes. Previous studies confirm that limited stakeholder participation is an obstacle to environmental policy integration (Lenschow 2002). Yet, research indicates that stakeholder participation is a key factor in the reflexivity of governance (Leonard and Lidskog 2021). In this study, key stakeholders such as the local community were not significantly engaged or capacitated to deal with illegal sand mining issues. Unfortunately, findings revealed that there was limited stakeholder capacity building towards sustainable sand mining. These findings also reflect the absence of key common-pool resource governance principles (Ostrom 1990), particularly in relation to monitoring, enforcement, and collective decision-making.

As noted by Feindt and Weiland (2018), reflexive governance is characterised by reflexive adaptation of regulations or policies by governments. Unfortunately, findings exposed the inadequacy of institutional practices in addressing illegal sand mining in Zimbabwe. Institutions such as EMA and local authorities lack adequate resources to apply mechanisms that are reflective of the current needs of sustainable sand mining. As a result, there is a general tendency to resort to old governance approaches and models that do not speak to environmental malpractices fuelled by harsh national socio-economic conditions in the country. As noted by Springer (2016), good governance requires a continual review of policies and practices to match societal needs. In contrast, existing policies neither speak to the prevailing socio-economic conditions that perpetuate corruption, social malpractice, and law defiance. Empirical evidence confirms that corruption is one of the obstacles to good governance (Cooray and Schneider 2018). Furthermore, the penalty system is not deterrent while provisions lack a serious call for stakeholder participation in policy formulation, implementation, and review. Clearly, these issues are a direct conflict with the reflexive governance framework. Illegal sand mining and subsequent malpractices are a deviation from the key elements of reflexive governance such as transparency, rule of law, accountability, and responsiveness.

As noted by Hendriks et al. (2007), reflexive capacity building is the ultimate goal for reflexive governance and is the means by which underlying assumptions, practices, and institutional practices are scrutinized and reconsidered. In contrast, results indicate that enforcement is generally weak, and rather allows offenders to successfully adopt a better system of counteracting such approaches. This has seriously affected the efficacy of enforcement efforts. Furthermore, politicians are also using their powers to override the law thus compromising effective

governance. Clearly, such circumstances cannot address the socio-ecological vulnerabilities of societies, fragmented governance regimes, and conditions of sustainability transition as noted by Vadrot et al. (2022). According to Leonard and Lidskog (2021), reflexive governance involves transition management and deliberative democracy for environmental governance and sustainability governance. In contrast, the transition management of natural resources, democracy in program, and policy implementation towards sustainable sand mining is hindered by political interference. Existing institutions including environmental authorities, mining authorities, local authorities, police, and political leadership remain fragmented in both policy and practice for reflexive governance. The findings further demonstrate that governance failures cannot be divorced from Zimbabwe's urban livelihood crisis, where informal sand mining functions as a survival strategy, complicating enforcement-led governance approaches

Conclusion

This study examined the constraints to reflexive governance of illegal sand mining in Harare Metropolitan Province using the reflexive governance framework, complemented by common-pool resource theory. The findings demonstrate that illegal sand mining cannot be explained simply by inadequate legislation or weak enforcement. Rather, it is sustained by interconnected institutional, political and socio-economic conditions that constrain the ability of state institutions to learn, adapt and respond to changing environmental and livelihood realities. Five interrelated constraints emerged: poor law enforcement, limited stakeholder engagement, resource scarcity, corruption and bribery, and political interference. These factors reinforce one another. Resource shortages limit monitoring and enforcement; weak enforcement creates opportunities for corruption; political interference undermines regulatory authority; and limited stakeholder participation prevents institutions from incorporating local knowledge and concerns into governance responses. Consequently, governance remains largely reactive rather than reflexive. From a reflexive governance perspective, effective institutions should critically assess existing practices, learn from societal feedback, and adapt policies as circumstances change (Feindt and Weiland 2018; Pahl-Wostl and Patterson 2021). The findings indicate that such capacities remain limited in Harare. Periodic enforcement operations have not adequately addressed the structural conditions that reproduce illegal extraction. The findings also demonstrate

the relevance of common-pool resource theory, particularly the importance of clearly defined rules, collective decision-making, monitoring and effective sanctions (Ostrom 1990).

The study further shows that illegal sand mining is embedded within Zimbabwe's wider socio-economic crisis. Unemployment and economic hardship make sand extraction an important livelihood strategy for some participants. Enforcement alone is therefore unlikely to provide a sustainable solution. While environmentally harmful and unlawful extraction should remain subject to regulation and sanctions, governance should also recognise the livelihood dimensions of informality and consider appropriate pathways towards regulated activities. Corruption and political interference are significant because they undermine transparency, accountability and the rule of law. Therefore, addressing illegal sand mining requires attention not only to miners but also to the institutional and political practices through which environmental and land-use decisions are made and enforced. Overall, the study demonstrates that reflexive governance requires more than stronger regulation: it requires institutional learning, meaningful participation, adaptive policy, accountability, and attention to the socio-economic conditions shaping resource use.

Recommendations

- *Strengthen multi-stakeholder participation.* The Environmental Management Agency, local authorities and other responsible institutions should establish continuing platforms involving communities, informal sand miners, industry, civil society and relevant government agencies. Participation should extend beyond awareness campaigns to include planning, monitoring, conflict resolution, and policy review.
- *Establish regulated pathways for appropriate informal sand mining.* Where environmentally suitable, local authorities should identify controlled areas for small-scale extraction and introduce simplified registration or licensing arrangements. These should include extraction limits, environmental safeguards, monitoring, restoration requirements, and enforceable sanctions. Formalisation should provide controlled access rather than unrestricted legalisation.
- *Strengthen institutional capacity.* EMA, local authorities, police and other responsible institutions require adequate financial, human, transport and technological resources to undertake regular monitoring. Enforcement

should move beyond intermittent blitz operations towards continuous and risk-based monitoring of known and emerging extraction sites.

- *Strengthen transparency and anti-corruption measures.* Inspection and enforcement procedures should be documented transparently, with accessible mechanisms for reporting and investigating suspected bribery, collusion, and regulatory misconduct. Accountability should apply to both illegal miners and officials who facilitate unlawful extraction.
- *Strengthen the rule of law and reduce political interference.* Land-use and sand-mining decisions should be based on transparent and consistently applied legal and environmental criteria. Clear responsibilities and coordination mechanisms are also required where environmental, mining, land-use, and local government mandates overlap.
- *Integrate livelihood considerations into policy.* Government responses should address unemployment and economic insecurity as drivers of informal extraction. Formalisation should therefore be complemented by livelihood diversification, skills development, and alternative employment opportunities where feasible.
- *Institutionalise policy learning and review.* Sand-mining policies and local by-laws should be periodically assessed against environmental outcomes, enforcement effectiveness, stakeholder experiences, and changing socio-economic conditions. Monitoring and stakeholder feedback should inform revisions to governance arrangements, thereby strengthening institutional learning and adaptation.

Taken together, these measures would shift sand-mining governance from a predominantly reactive and enforcement-oriented approach towards a more inclusive, adaptive, and accountable system. The central implication is that sustainable sand governance in Zimbabwe cannot be achieved through enforcement alone. It requires state institutions to address the institutional, political and socio-economic conditions that reproduce illegal extraction while enabling affected stakeholders to participate meaningfully in governing the resource.

Disclosure Statement

No potential conflict of interest is reported by the authors.

Statement of Ethics

This study was conducted in accordance with the ethical standards of the University of South Africa. Informed consent was obtained from all participants before interviews, and participation was voluntary. Respondents were assured of confidentiality, and identifying details were anonymised to protect privacy. Given the sensitive nature of illegal sand mining, interviews were conducted with respect for participants' safety and dignity, and no coercion was applied. The research adhered to the World Health Organization's COVID-19 guidelines during fieldwork. The researchers acquired ethical clearance through the College of Agriculture and Environmental Sciences (CAES) Health Research Ethics Committee on 20 May 2020 (Reference: 2020/CAES_HREC/088).

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