Artisanal Sand Mining, Local Power Structures and Resource Governance in Nigeria

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Abstract: Rapid urbanisation and infrastructure development have transformed artisanal sand mining into one of the growing extractive activities in Nigeria. While existing studies have progressively documented the dire environmental implications of sand mining, there is a dearth of research on the political processes through which access to the resource is negotiated, controlled, and regulated. To this end, this paper examined the synergy between sand mining, local power structures, and resource governance in Nigeria, explaining how informal actors at the community level influence sand mining governance and the consequences of these dynamics for sustainable resource governance. The paper adopted a qualitative research design solely based on secondary data sources. The collected data were further analysed using content analysis to analyse evidential documents relating to resource governance and institutional coordination within the sand mining sector. The paper argued that artisanal sand mining in Nigeria has transcended a livelihood activity to become a locally embedded political economy characterised by overarching conflicts over access, authority, and economic benefits. It was further revealed that although the Nigerian Minerals and Mining Act 2007 provides the formal legal framework for mineral governance, regulatory responses to artisanal sand mining remain constrained by institutional fragmentation, centralised administrative control over resources, and limited policy focus on the peculiarities of sand extraction. As a result, sand resource governance in Nigeria operates through an informal structure that shapes the extraction patterns beyond the effective control of statutory institutions. The paper concluded that strengthening resource governance in Nigeria requires systemic institutional reforms that recognise the local realities of artisanal sand mining while enhancing regulatory coordination across all levels of government. To this end, this paper recommended that there should be a comprehensive review of the Nigerian Minerals and Mining Act 2007 to accommodate explicit regulatory provisions for artisanal sand mining with greater participation of state and local governments in monitoring and enforcement of sand extraction in the country thereby facilitating intergovernmental and interagency collaboration among the Federal Ministry of Solid Minerals Development, the Federal and State Ministries of Environment, and the Environment and Sanitation Departments of the Local Governments. This paper contributes to the emerging literature on natural resource governance by reconceptualising artisanal sand mining as a political economy and resource governance issue rather than a mere environmental or ecological concern. It further contributes to amplifying SDG 16, which advocates peace, justice, and strong institutions.

Keywords: Artisanal sand mining, Nigerian Minerals and Mining Act, Political economy, Resource control, Resource governance, Sustainable development goals

1. Introduction

Sand has emerged as one of the most critical natural resources supporting rapid urbanisation and economic growth in peri-urban areas. It is the most important aggregate in concrete, asphalt, glass, land reclamation, and other building materials, and plays an irreplaceable role in the construction of houses, roads, and railways, as well as in industrial expansion (Hemmler et al., 2024). With the unprecedented rate of urbanisation worldwide, sand has become one of the most mined solid resources in the world (Bendixen et al., 2023; UNEP, 2022).

Previous studies have progressively documented the environmental impacts of sand extraction. Empirical studies in Asia, Europe and Latin America clearly show that unsustainable sand mining leads to erosion of riverbanks, loss of biodiversity, groundwater depletion, land degradation, and increased exposure to flooding (Mia, 2026; Tra et al., 2025; Park, 2024; Yang & Ho, 2019). In furtherance of this, sand has transformed into a natural resource of strategic importance that is increasingly recognised as requiring more coordinated governance, both within and across countries (UNEP, 2022). However, while there is now a growing body of literature on the ecology of sand resources, there has been relatively little focus on the politics of access to sand resources and on how this access is negotiated, controlled and contested, especially in environments with weak regulatory institutions.

In this context, sand mining is often not just an economic pursuit but also an integral part of intricate local political dynamics that involve traditional leaders, customary landowners, community elites, youth groups, and

informal interest groups. The actors frequently have significant influence over access to mining sites, rent collection, dispute resolution, and the day-to-day regulation of extraction activities, often without the involvement of formal state institutions or alongside them (Akanwa & Idakwo, 2025). This leads to a hybrid governance system in which statutory rules and regulations coexist with informal rules of authority.

Nigeria is a country that exhibits these dynamics. Over the years, the country has experienced continuous urbanisation and a growing need for housing and infrastructure investment, which has greatly enhanced the commercial value of sand as a construction resource. In numerous communities, most of which are in peri-urban areas undergoing urbanisation, artisanal sand mining has become an important source of livelihood and local income generation (Aliu et al., 2022).

Generally, mining governance in Nigeria falls under the exclusive legislative list, which gives the national government sole rights over extractive resources in the state. The Nigerian Minerals and Mining Act 2007, which repealed the Minerals and Mining Act, No. 34 of 1999, is the principal Act regulating mining in the country. However, access to mining sites is often negotiated through complex chains of local actors, including artisanal miners, customary landowners, traditional rulers, youth groups, local elites and informal revenue collectors. These groups can influence access and control over the resources. They are actors who negotiate extraction rights, collect informal rents, resolve conflicts, and exercise varying levels of control over mining areas, and undertake governance functions typically reserved for the state (Abe, 2022).

The implication is that there is a need to examine how local power structures influence patterns of resource control and regulatory outcomes, to complement existing knowledge of the environmental impacts of sand mining in Nigeria. Against this background, this paper explores the nexus among sand mining, local power relationships, and resource governance in Nigeria. In particular, the paper examines the local coalitions of actors involved in the governance of sand mining and the ways in which informal networks of authority shape, mediate, challenge, or, in certain cases, undermine formal regulatory bodies governing sand mining.

This paper highlights the importance of considering the political dimension of artisanal sand mining and argues that an effective statutory approach to resource governance is needed to address unsustainable mining practices in resource-rich communities. Furthermore, this paper aligns with Sustainable Development Goal 16 (peace, justice, and strong institutions) and is situated within the broader debate on resource governance and local political authority, as well as on the capacity of formal state institutions to better connect to community-level governance bodies for the management of increasingly strategic natural resources.

2. Review of Related Literature

This section presents a review of the related literature to unravel the extent to which existing studies have addressed power dynamics in natural resource governance. In Nigeria, this subject has attracted contributions from diverse fields of study, with crude oil governance and control emerging as the dominant focus in previous studies. In light of this, this section will review relevant conceptual and empirical studies to situate this paper within existing scholarship.

2.1 The Concept of Artisanal Sand Mining

The surge in global demand for sand has led to unchecked extraction practices, leading to ecological degradation, loss of biodiversity, riverbank erosion and rising governance issues, especially in developing states. Artisanal sand mining is a type of small-scale sand mining, which is relatively labour-intensive and practised by individuals or local groups using basic tools and unsophisticated mechanisation. Artisanal sand mining is different from industrial-type mining, which is more formal and technologically advanced. It is rampant in local communities where it is often used as a livelihood coping strategy due to sparse employment opportunities (Abdulai et al., 2025). Artisanal sand mining plays a major role in creating jobs in local communities and provides raw materials for the construction sector; however, in many developing countries, informal extraction is expanding due to the lack of regulation (Mia et al., 2026). Therefore, in the context of this paper, artisanal sand mining is the extraction of sand on a small scale by local actors in such a way that access to sand and the pattern of extraction are influenced both by statutory regulations and the governance system at the community level.

2.2 Resource Governance and Resource Control

While they are often used interchangeably, resource governance and resource control are two different analytical concepts. Resource control broadly refers to the right to define ownership, access, and benefits from natural resources. In Nigeria, the idea has mostly been linked to issues of oil resource ownership and how oil revenues are shared between the Federal Government and the oil-producing states. Conversely, resource

governance refers to the broader institutional framework through which natural resources are governed (Orogun, 2010). It transcends ownership to encompass the formulation of resource management policies, institutional coordination, regulatory oversight, environmental compliance, stakeholder engagement, and accountability mechanisms, all of which help to determine the outcome of resource management.

This paper focuses on resource governance as its main analytical lens, offering a more comprehensive approach to understanding the political economy of sand mining. This paper, therefore, conceptualises sand resource governance as the statutory institutional processes, policy structures, and mechanisms that govern mining by state institutions.

2.3 Local Power Structures

Local power structures are perceived as a systemic circle of groups, and institutions that have power to influence decisions, allocate resources and shape social order, within a community. This structures often bypass formal political authority recognised by statutorily, as it can be established through customary institutions, traditional leadership, and economic influence with an existing community connection. Previous studies indicate that local power dynamics are crucial in the governance of natural resources in terms of who has access and benefits from the resources and how conflicts are resolved within the local community **(**Amusan & Sowale, 2026; Saka, 2025**)**. These are often overlapping or in some cases, replacing formal state institutions in natural resource governance in many resource dependent communities.

In the context of this paper, local power structures are the set of actors that operate within the community who influence sand mining governance in Nigeria. These range from traditional rulers, land custodians, community leaders to other local elites, who have varying degrees of influence on the access to mining sites and organisation of mining activities in the community. This knowledge serves as the basis for analysing the relationship between informal community authority and formal state control in Nigeria's sand mining industry.

2.4 Empirical Studies on Sand Mining and Resource Governance

Previous studies on sand mining have predominantly focused on the environmental implications, including riverbank erosion, biodiversity loss, and degradation of landscapes. Some studies have also examined its implications for food security (Amusan & Sowale, 2026; Hemmler et al., 2024; Park, 2024).

Gavriletea (2017) highlighted that the demand for sand in developing countries is increasing at a much faster rate than regulatory response, leading to environmental degradation and institutional challenges. From a socio-economic perspective, Aliu et al. (2022) revealed that despite the role sand mining plays in promoting urban growth and employment in Lagos, Nigeria, it also has severe environmental impacts and sustainability issues for the communities.

Collectively, these studies have highlighted sand mining as an environmental governance challenge across the globe, focusing on ecological sustainability rather than local power structures that shape access to sand resources and their governance. However, in relation to this paper, Hougaard and Vélez-Torres (2020) agreed that the formal and informal regulation of sand mining goes beyond environmental regulation, and that legal institutions and competing claims to sand sites also affect sand mining practices. Consequently, the governance of sand mining is often examined from an environmental management standpoint, while significantly less attention is paid to the political economy of sand mining and the institutional processes that influence resource governance at the community level. The present paper aims to address this gap by analysing the local power structures often involved in community-based resource governance.

3. Methodology

This paper adopted a qualitative research design with secondary sources of data collection from peer-reviewed journals, books, internet sources, and official documents. The researchers sourced these documents using, SCOPUS, Google Scholar, Springer Nature, and the Web of Science database. The credibility of the authors of the cited documents and the outlets where they were published are the primary criteria for selecting documented sources. The paper also adopted content analysis to analyse evidential documents relating to sand mining and the challenges of resource governance in Nigeria. By synthesising insights across these existing studies, the methodology enables a holistic understanding of sand mining, local power structure, and resource governance in Nigeria.

3.1 Local Power Structures and the Political Economy of Sand Mining in Nigeria

The demand and significance of sand resources have altered the extractive process across many Nigerian communities. Prior to its growing demand and commercialisation, sand was often perceived as a common natural resource with little economic relevance, but in contemporary times, it has emerged as a driver of local competition, negotiation and accumulation. This is evident in its exchange value increasing, thereby turning diverse extraction regions into sites of contestation over economic interests, and competing claims to authority, ownership and territorial control. The resultant effect of these struggles for resource control is that sand mining governance has extended beyond statutory regulatory provisions to include a network of informal relations in which the rights to access mineral resources are negotiated and maintained by informal power structures within resource-rich communities (Abdulai et al., 2025)

Artisanal sand mining takes place in a fragmented governance landscape with decentralised authority, as opposed to large-scale mining, where the actors have direct engagement with the state and have clear regulatory processes. Formal institutions only dictate who is allowed to extract sand through the issuance of operational licenses, where extraction should occur, and the conditions for extraction (Adeyemi et al., 2023). On the contrary, the reality across diverse mining communities in Nigeria, is that a complex chain of local actors exists whose power derives from customary legitimacy, social recognition, economic power, and territorial presence (Oyewo, 2026). The implication is that this hybrid form of sand governance coexists with formal structures of resource administration, thereby undermining the state's effectiveness in controlling its resources and contradicting the general objectives of SDG 16.

More specifically, the informal governance system is centred on the customary landowners, traditional institutions, community elites, youth groups, artisanal miners, heavy truck transport operators and other local intermediaries whose interests intersect in the economic opportunities offered by sand extraction. These actors play varying roles in the resource economy but are interlinked by reinforcing relationships. Empirical evidence from Amusan and Sowale (2026) revealed that landowners often released their land for mining purposes rather than utilising it for agricultural use. Perhaps another issue in sand governance in Nigeria is informal revenue collection by the indigenous people in extraction areas. In the case of diverse mining sites across Southwestern Nigeria, these indigenous local power structures often position themselves as land custodian with a widely known appellation "omo onile" in local parlance, which means "the owners of land". A crucial issue associated with informal revenue collection is its propensity to spark communal clashes between this group, the local people affected by the environmental impacts of sand mining, and the artisanal miners who are exploiting the earth resources at an alarming rate (Saka, 2025).

Another category of existing local power structures in sand governance in Nigeria are traditional institutions within mining communities. The traditional rulers often act as mediators in conflict resolution, they may sometimes back miners in return for sand royalty, while youth groups and some residents are usually employed in the extractive processes as sand loaders (Akanwa, & Idakwo, 2025). Put together, this suggests that, despite its undesirable environmental implications, sand mining has economic benefits as it supports the people's livelihoods. In addition, heavy truck transport operators are a key part of this informal power network, connecting extraction sites to urban construction markets, ensuring industry commercial viability. All these actors together form an informal power structure that relies less on statutory authority but on reciprocal interests. The relationship between these actors shows that control over resources in artisanal sand mining goes beyond the legal land ownership or statutory mining rights. In reality, resource governance is exercised through the ability to determine access, enforce compliance with informal negotiated rules, collect sand rent, adjudicate disputes resulting from communal clashes with sand mining operators, and manage participation in extraction activities. In this sense, sand governance is always maintained through routine interaction of social relations, rather than solely through formal rules by state institutions. Resource control is thus local in nature, often secured through customary norms, historical land claims, social influence or the capacity to muster community support (Chukwudi & Owoh, 2024).

By implication, this power structure is widely observed in informal resource governance across many developing societies, especially in sub-Saharan Africa, where the de facto distribution of authority often deviates from the formal institutional and regulatory framework. Although in the Nigerian context, the Nigerian Minerals and Mining Act 2007 gives the Federal Government the power to regulate the use of mineral resources, the coordination of artisanal mining shows that control over the extraction process is often negotiated at the community level. While formal institutions can help establish the legal framework for resource governance, the day-to-day practice of resource extraction is often decided by local actors who have a better understanding of

the local dynamics, territorial boundaries, customary institutions, and informal enforcement mechanisms (Akpoghome & Nwano, 2025). The formal and informal power structures have major implications for the political economy of sand mining. Instead of being mutually incompatible in all cases, they may become related in an accommodative and mutually dependent pattern. This institutional hybridity blends a formal state regulatory framework with informal or indigenous structures.

The above analysis of local power structures shows that resource governance in Nigeria's artisanal sand mining sector involves locally embedded power dynamics and diverse interests over access to and control of resources. Sand mining sites are thus arenas characterised by the intersection of state institutions, customary authority, community interests and private economic incentives, which are constantly reshaping the notion of resource governance. It is important to understand these local power arrangements to explain why formal regulatory measures often face implementation challenges even when detailed legislation is enacted to manage mineral resources. In this context, issues of institutional effectiveness and resource control are pertinent to comprehending the governance of artisanal sand mining in Nigeria.

3.2 Resource Governance and Institutional Responses to Sand Mining in Nigeria

The institutional architecture of resource governance in Nigeria is highly centralised, with ownership, administration and regulation of mineral resources being the constitutional mandate of the Federal Government through diverse specialised regulatory bodies. The overall legal framework governing mineral exploration, environmental obligations, licensing procedures, and institutional responsibilities in Nigeria is established by the Nigerian Minerals and Mining Act 2007. The governance framework in the Act, while technically broad in scope, has received relatively little scholarly or policy debate regarding artisanal sand mining, which is now prevalent across the country.

Institutional governance of mineral mining in Nigeria is complex, with multiple agencies involved at various stages of resource management. The Federal Ministry of Solid Minerals Development is tasked with the administration and licensing of minerals, while the Federal Ministry of Environment oversees environmental impact assessment surrounding extraction activities (Akpoghome & Nwano, 2025).

At the sub-national level, State Ministries of Environment are responsible for environmental monitoring and pollution control tasks in their respective areas, while the local governments have functions related to environmental sanitation and community administration (Ogunnubi, 2022). These institutions have different statutory powers; however, the governance of artisanal sand mining is often interdependent among them. One notable limitation of the Mining Act is its inability to expressly address artisanal sand mining; the existing institutional structure poses a significant governance challenge. Sand mining governance involves a range of policy domains, including mineral resource management, environmental management, land-use planning and local development. As a result, regulatory effectiveness depends more on how well institutions' mandates are incorporated into an integrated governance framework. When institutions have limited responsibilities, regulatory actions focus on addressing individual aspects of extraction, rather than the socio-economic and environmental realities of artisanal mining. Resource governance consequently becomes uncoordinated, with administrative functions spread across several institutions with varying priorities and arrangements for operating and managing the resources (Gbadebo, 2025).

Compounding this is the unique characteristic of the artisanal sand mining industry. Artisanal sand extraction is highly decentralised, geographically dispersed, relatively small-scale, and can grow quickly when demand arises. These strains traditional regulatory frameworks, engineered around more formalised models of mineral extraction. Monitoring and enforcement of sustainable mining practices can become costly and cumbersome, leading to environmental and social consequences for host communities (Saka, 2025).

The other significant constraint in the current institutional configuration is the limited policy orientation that specifically acknowledges artisanal sand mining as a unique governance and environmental issue. Sand mining is predominantly localised and community-based and has largely driven domestic demand for sand and gravel for construction projects, as compared to high-value mineral resources like crude oil, which benefit national economies through export revenues and are subject to more regulatory oversight (Oladoyin, Pokubo, & Osimen, 2024). However, its overall environmental, economic and governance effects are growing at an alarming rate as many regions in Nigeria continue to experience rapid urbanisation (Pokubo, Osimen & Oladoyin, 2026). This governance gap indicates a need for a stand-alone policy to effectively address the sustainability of sand extraction in Nigeria.

From a resource-governance perspective, the institutional constraints analysed in the foregoing indicate a broader policy gap regarding the distribution of regulatory powers in the Nigerian federal system. While in principle, mineral resources are part of the Exclusive Legislative List, in practice, the impact of artisanal sand mining is felt much more at the state and community levels where it is carried out. This results in an institutional imbalance, where the government, constitutionally tasked with mineral governance, is not necessarily the institution best suited to engage in regular monitoring, quick response or continued community dialogue. The above analysis has shown that the governance of artisanal sand mining is not limited by a lack of laws but by the ability to adapt to changing circumstances in local resource extraction. Therefore, better vertical intergovernmental coordination among Federal, State, and Local governments is essential to ensuring effective resource governance regarding sand mining rather than a rigid centralised regulation.

4. Conclusion and Policy Recommendations

This paper has maintained that the governance of artisanal sand mining is not solely about the environment and mineral extraction, but also involves other concerns of local authority, resource control and institutional efficacy in Nigeria. Beyond the extensive focus on environmental implications of sand mining in existing literature, this paper shows that the prevalence of the unregulated extraction practice is also a product of informal local power relations and a regulatory system that has been ineffective in countering community-based resource extraction. There is therefore a need to shift the focus from ecological assessments to an understanding of the political and institutional dynamics of resource governance in Nigeria.

In addition, the analysis reveals the fact that Nigeria has a formal legal and institutional structure for mineral governance, which, however, is not fully geared to the specific nature of artisanal sand mining. The allocation of regulatory powers to the central government, the lack of institutional control, and the policy framework for the control of sand extraction have collectively limited effective resource governance. The analysis also indicates that effective environmental governance would require institutional reforms that account for artisanal sand mining.

Based on the above, the following policy recommendations are made. First, the Nigerian Minerals and Mining Act, 2007 must be comprehensively reviewed by the National Assembly of Nigeria in collaboration with the Federal Ministry of Solid Minerals Development, with a view to introducing a detailed provisions on artisanal sand mining rather than the existing Acts that categorise mining generically. It should include more specific policies on sand mining licensing, environmental responsibilities, site rehabilitation, monitoring, and sanctions for non-compliance to address the current policy void on sand mining.

Secondly, the Federal Government of Nigeria should accommodate the state and local governments to legislate on mining rather than performing the role exclusively, considering the fact that extraction activities usually take place in the local community, it is believed that the institutional framework should provide a clear distribution of the regulatory responsibilities to the state and local authorities, which are carried out in cooperation with the federal authorities, thereby facilitating routine control of extraction activities, speeding up the response to violations, and improving environmental compliance, while not reducing the overall level of national supervision of mineral resources.

Lastly, there is a need to enhance the enforcement of regulations by strengthening the institutional relationships among the Federal Ministry of Solid Minerals Development, the Federal Ministry of Environment, State Ministries of Environment and local government environmental departments. The development of coordinated monitoring systems, joint inspection exercises, and integrated monitoring and compliance systems would diminish institutional fragmentation and enhance the regulatory bodies' ability to address the environmental and governance issues arising from artisanal sand mining. These collaborative strategies would not only enhance sustainable sand extraction practices but also foster resource governance that aligned with Sustainable Development Goal 16. If these are not put in place, it is likely that the existing regulatory structure and governance of sand resources will remain a mismatch, with dire consequences for environmental management, community development and sustainability of Nigeria's extractive industry.

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