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From Oil to Minerals? Governance Mechanisms and Federalism Challenges in Nigeria's Solid Mineral Development Agenda

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Abstract

Nigeria's renewed emphasis on solid mineral development reflects a strategic shift from oil dependency toward economic diversification. However, despite the sector's significant potential for revenue generation and industrial transformation, persistent governance and fiscal federalism challenges continue to constrain its developmental outcomes. This study examines the relationship between governance mechanisms, fiscal federalism arrangements, and sustainable solid mineral development in Nigeria. It is anchored on Fiscal Federalism Theory, which emphasizes the importance of balancing central authority and subnational participation in resource governance. The study adopts a mixed-methods research design, combining quantitative survey data from 305 respondents with qualitative insights from key informants within mining communities and regulatory institutions. The results reveal that stakeholders perceive mining revenue distribution as highly centralized, inequitable, and lacking transparency. Respondents strongly indicate that the federal government retains an excessive share of mining revenues, while state governments and host communities receive limited developmental benefits. Furthermore, governance weaknesses are found to contribute significantly to illegal mining activities, intergroup conflicts, and inefficiencies in regulatory enforcement. Existing literature has largely focused on the economic potential of Nigeria's solid minerals sector and the environmental consequences of mining activities, with limited attention to the governance and federalism structures that shape sectoral outcomes. This study addresses this gap by providing empirical evidence on how governance effectiveness, institutional coordination, regulatory enforcement, and federal-state relations jointly influence sustainable mineral development. The study concludes that without significant governance reforms, Nigeria risks replicating the institutional failures of the petroleum sector within its emerging solid minerals industry. Strengthening fiscal decentralization, transparency, and stakeholder inclusion is therefore essential for achieving sustainable mineral-led economic diversification.

Keywords: Solid minerals, governance, fiscal federalism, illegal mining, Nigeria, economic diversification.

INTRODUCTION

For decades, Nigeria's economy has remained heavily dependent on petroleum exports as the principal source of foreign exchange earnings and government revenue. While the petroleum sector has contributed significantly to national income, fluctuations in global oil prices, declining production levels, oil theft, and the growing global transition towards renewable energy have exposed the vulnerabilities associated with excessive dependence on crude oil exports. Consequently, successive governments have emphasized economic diversification as a strategic pathway towards sustainable development, revenue stability, and economic resilience. Among the sectors identified as capable of driving this transformation, the solid minerals sector has emerged as one of the most promising alternatives.

Nigeria is endowed with vast deposits of solid minerals distributed across virtually all states of the federation. These resources include gold, lithium, tin, limestone, bitumen, coal, iron ore, lead, zinc, marble, and columbite. Geological assessments indicate that many of these mineral resources remain underexplored and underutilized despite their considerable economic potential. Recent global demand for critical minerals, particularly lithium and rare earth elements required for renewable energy technologies and electric vehicle production, has further increased the strategic importance of Nigeria's

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mineral resources. This emerging global market presents significant opportunities for the country to diversify its economy beyond petroleum dependence while simultaneously creating employment opportunities, stimulating industrialization, and expanding government revenue generation (Ministry of Solid Minerals Development, 2024).

Recognizing these opportunities, the Nigerian government has intensified efforts to reposition the solid minerals sector as a critical component of national development strategy. Recent policy initiatives have focused on attracting both domestic and foreign investment, strengthening regulatory frameworks, formalizing artisanal mining operations, improving geological data availability, and enhancing institutional oversight. These initiatives are intended not only to increase mineral production but also to ensure that mineral resources contribute meaningfully to economic growth, poverty reduction, and sustainable development. The establishment and strengthening of specialized regulatory agencies, alongside renewed efforts to curb illegal mining activities, demonstrate the government's commitment to transforming the sector into a major pillar of the national economy.

Despite these policy ambitions, significant governance challenges continue to undermine the effective development of Nigeria's solid mineral resources. Illegal mining remains widespread across many mineral-producing regions, resulting in substantial revenue losses, environmental degradation, security challenges, and weak regulatory compliance. Reports from government agencies and industry stakeholders suggest that large quantities of valuable mineral resources are extracted and traded through informal channels, thereby depriving the government and host communities of legitimate economic benefits. The persistence of these challenges raises important questions regarding the effectiveness of existing governance mechanisms within the sector.

Beyond the challenge of illegal mining, the constitutional and institutional framework governing mineral resource ownership has generated increasing debate among policymakers, state governments, and host communities. Under the provisions of the Constitution of the Federal Republic of Nigeria and the Nigerian Minerals and Mining Act, ownership and control of mineral resources remain vested in the Federal Government. While this arrangement is intended to promote national coordination and uniform regulation, many state governments have argued that the existing framework limits their capacity to participate effectively in mineral resource management within their territories. Host communities have similarly expressed concerns regarding inadequate participation in decision-making processes, uneven distribution of benefits, and insufficient attention to local developmental needs. These concerns have intensified discussions surrounding resource control, fiscal federalism, and the appropriate balance of authority between federal and subnational actors.

The governance challenges currently emerging within the solid minerals sector bear notable similarities to issues that historically characterized Nigeria's petroleum industry. Experiences from the Niger Delta demonstrate how weak institutional coordination, inadequate community engagement, environmental neglect, and inequitable benefit-sharing arrangements can generate social tensions, resource conflicts, and governance failures. As Nigeria seeks to expand mineral exploitation as part of its economic diversification strategy, there is growing concern that the country may inadvertently replicate similar governance deficiencies unless proactive reforms are implemented. Consequently, understanding the effectiveness of existing governance mechanisms within the solid minerals sector has become both a scholarly and policy imperative.

Existing studies on Nigeria's solid minerals sector have largely concentrated on investment opportunities, economic contributions, environmental impacts, and the activities of artisanal miners. While these studies provide valuable insights, relatively limited attention has been devoted to the governance architecture underpinning mineral resource development, particularly the interaction between federal institutions, state governments, local communities, and private sector actors. Furthermore, few studies have examined how governance effectiveness influences the broader objective of sustainable solid mineral development within the context of Nigeria's economic diversification agenda. This gap is particularly significant given the increasing policy emphasis on expanding the sector's contribution to national development.

It is against this background that this study investigates the relationship between governance

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mechanisms and sustainable solid mineral development in Nigeria. Specifically, the study examines how institutional coordination, regulatory enforcement, community participation, federal-state collaboration, and governance effectiveness influence the achievement of sustainable outcomes within the sector. By focusing on governance rather than merely resource availability, the study contributes to ongoing debates concerning economic diversification, resource management, and sustainable development in Nigeria.

The significance of this study extends beyond academic discourse. Its findings are expected to provide evidence-based insights for policymakers, regulatory agencies, investors, community leaders, and development practitioners seeking to strengthen governance frameworks within the extractive sector. At a time when Nigeria is increasingly positioning solid minerals as a strategic alternative to petroleum dependence, understanding the governance factors that shape sectoral performance remains critical for achieving long-term developmental objectives.

LITERATURE REVIEW

Conceptual Review

Solid Mineral Development

Solid mineral development refers to the systematic exploration, extraction, processing, regulation, and utilization of mineral resources for economic and social advancement. It encompasses a broad range of activities including geological surveys, mining operations, mineral beneficiation, environmental management, revenue generation, employment creation, and the establishment of institutional frameworks for sustainable resource utilization. According to Hilson (2009), mineral development extends beyond extraction activities to include policies and institutional arrangements designed to maximize the socioeconomic benefits derived from mineral resources while minimizing associated environmental and social costs.

In resource-rich countries, solid mineral development is increasingly viewed as a strategic instrument for economic diversification and sustainable development. The sector contributes to national income through royalties, taxes, export earnings, foreign direct investment, and industrial growth. The United Nations Economic Commission for Africa (UNECA, 2011) argues that effective mineral development can stimulate structural transformation by fostering industrialization, technological innovation, infrastructure development, and employment generation. However, the developmental benefits of mineral resources are often contingent upon the effectiveness of governance systems responsible for regulating extraction and ensuring equitable distribution of resource benefits.

Nigeria possesses over forty commercially viable mineral resources distributed across different parts of the federation. These include gold, lithium, iron ore, coal, bitumen, limestone, lead, zinc, marble, and tin. Despite this abundance, the sector has historically contributed only a modest proportion of national Gross Domestic Product due to weak investment, inadequate infrastructure, policy inconsistencies, and widespread illegal mining activities (Ministry of Solid Minerals Development, 2024). Recent government initiatives aimed at repositioning the sector underscore its growing importance within Nigeria's economic diversification agenda.

For the purpose of this study, solid mineral development refers to the sustainable exploitation and management of mineral resources in ways that promote economic growth, environmental sustainability, institutional accountability, social inclusion, and long-term national development.

Governance Mechanisms

Governance refers to the processes, institutions, rules, and practices through which authority is exercised and collective decisions are made and implemented. Within the extractive sector, governance mechanisms encompass the institutional arrangements, regulatory systems, enforcement procedures, accountability structures, stakeholder engagement processes, and policy frameworks that guide resource management and utilization.

According to the World Bank (2017), governance in natural resource sectors involves the capacity of public institutions to formulate policies, regulate industry activities, enforce legal standards, ensure transparency, and manage resource revenues for public benefit. Effective governance mechanisms facilitate coordination among government agencies, private investors, host communities, and civil society

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organizations while ensuring compliance with legal and environmental standards.

The governance of extractive resources has attracted significant scholarly attention due to its influence on development outcomes. Kaufmann, Kraay, and Mastruzzi (2011) argue that governance quality is a critical determinant of whether natural resources become drivers of economic development or sources of conflict and underdevelopment. Weak governance often manifests through corruption, institutional fragmentation, regulatory failures, illegal extraction activities, and inequitable benefit-sharing arrangements.

Within the Nigerian solid minerals sector, governance mechanisms involve multiple actors including federal regulatory agencies, state governments, local authorities, mining companies, traditional institutions, host communities, and security agencies. The effectiveness of these governance arrangements influences investment confidence, revenue generation, environmental sustainability, conflict management, and community development. Consequently, governance mechanisms constitute a central factor in determining the success of mineral-led economic diversification.

Fiscal Federalism and Resource Governance

Fiscal federalism refers to the allocation of governmental responsibilities, financial resources, and decision-making authority among different levels of government within a federal political system. The concept focuses on how powers relating to revenue generation, expenditure responsibilities, and resource management are distributed between national and subnational governments (Oates, 1972).

Within resource-rich federations, fiscal federalism assumes particular significance because natural resources often generate disputes regarding ownership, control, revenue allocation, and benefit distribution. Resource governance therefore becomes closely linked to broader questions of political autonomy, economic equity, accountability, and intergovernmental relations. Bahl and Bird (2018) argue that effective fiscal federal arrangements can enhance accountability, improve resource management, and strengthen local participation in development processes.

Nigeria's resource governance framework assigns ownership and control of mineral resources to the Federal Government through constitutional provisions and the Nigerian Minerals and Mining Act (2007). While this centralized arrangement seeks to ensure uniform regulation and national coordination, it has generated increasing debate concerning the role of state governments and host communities in resource management. Many stakeholders have argued that limited subnational participation creates governance inefficiencies, weakens accountability, and reduces local support for resource development initiatives.

The debate surrounding fiscal federalism in Nigeria has historically focused on petroleum resources within the Niger Delta. However, the growing importance of solid minerals has expanded these discussions into mineral-producing states where questions regarding resource ownership, benefit-sharing, and community participation continue to emerge. Understanding these dynamics is essential for designing governance frameworks capable of promoting sustainable mineral development while minimizing resource-related conflicts.

Theoretical Framework

Fiscal Federalism Theory

Fiscal Federalism Theory provides the theoretical foundation for this study. The theory is principally associated with the works of Richard Musgrave and Wallace Oates, who examined the distribution of governmental functions and financial responsibilities within federal systems. The theory seeks to explain how powers relating to taxation, expenditure, service delivery, and resource management should be allocated among different levels of government to achieve efficiency, accountability, and equitable development.

According to Oates (1972), governmental functions should be assigned to the level of authority capable of performing them most efficiently while responding effectively to local preferences and conditions. The theory assumes that decentralization can improve resource allocation, strengthen accountability, and enhance citizen participation by bringing decision-making processes closer to affected populations. At the same time, certain functions requiring national coordination may remain under central authority.

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The relevance of Fiscal Federalism Theory to extractive resource governance lies in its emphasis on balancing centralized control with subnational participation. In resource-rich federal states, tensions often arise regarding ownership rights, revenue distribution, environmental responsibilities, and community development obligations. These tensions become particularly pronounced when local stakeholders perceive that resource benefits are concentrated at the national level while environmental and social costs are borne by host communities.

Within Nigeria's solid minerals sector, the theory provides a useful framework for understanding the relationships between federal institutions, state governments, local communities, and private sector actors. It facilitates analysis of how governance arrangements influence regulatory effectiveness, stakeholder participation, accountability, and sustainable development outcomes. The theory further helps explain why disputes over resource control and revenue allocation continue to shape governance debates in mineral-producing regions.

The central proposition of this study is that sustainable solid mineral development depends not only on the availability of mineral resources but also on the effectiveness of governance structures that coordinate relationships among federal, state, and local stakeholders. Fiscal Federalism Theory therefore provides an appropriate lens through which the governance challenges and opportunities associated with Nigeria's mineral diversification strategy can be examined.

Empirical Review

Solid Mineral Development and Economic Diversification

The growing interest in solid mineral development across resource-rich countries has been driven largely by efforts to diversify national economies and reduce dependence on single-resource exports. Existing empirical studies generally suggest that the mineral sector can serve as an important catalyst for economic transformation when supported by effective institutional and governance structures.

In a cross-country analysis of mineral-dependent economies in Africa, the United Nations Economic Commission for Africa (UNECA, 2011) found that countries that successfully integrated mineral exploitation into broader industrial development strategies experienced higher levels of economic diversification, employment generation, and infrastructure development than countries that relied solely on raw mineral exports. The report emphasized that the developmental contribution of mineral resources depends largely on governance quality, value addition policies, and institutional effectiveness.

Within the Nigerian context, Ajakaiye, Jerome, Nabena, and Alaba (2018) examined the prospects of the solid minerals sector as a driver of economic diversification. Their findings revealed that despite Nigeria's substantial mineral deposits, the sector's contribution to national output remained relatively low due to inadequate investment, poor infrastructure, weak institutional coordination, and widespread informal mining activities. The study argued that the sector possesses considerable potential for enhancing economic resilience but requires substantial governance reforms to realize its developmental objectives.

Similarly, Lawal and Akinrinola (2020) assessed the contribution of solid minerals to Nigeria's non-oil export earnings. The study found a positive relationship between mineral production and export diversification but noted that regulatory inefficiencies, revenue leakages, and illegal mining significantly constrained sectoral performance. The authors concluded that sustainable growth within the sector would require stronger institutional oversight and improved policy implementation mechanisms.

Although these studies provide valuable insights into the economic significance of the solid minerals sector, they focus primarily on its contribution to economic diversification and national development. Limited attention is devoted to understanding how governance mechanisms influence the sustainability of mineral development outcomes. Consequently, questions regarding the institutional factors that facilitate or constrain sustainable mineral governance remain insufficiently explored.

Governance Mechanisms and Extractive Sector Performance

A substantial body of literature has examined the relationship between governance quality and extractive sector performance. The dominant

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argument within this literature is that governance effectiveness determines whether natural resource wealth translates into sustainable development or contributes to economic inefficiency, corruption, and conflict.

Kaufmann et al. (2011) demonstrated that countries characterized by strong governance institutions tend to achieve better developmental outcomes from natural resource exploitation than countries with weak regulatory frameworks. Their analysis identified government effectiveness, regulatory quality, accountability, and rule of law as critical determinants of successful resource management.

Similarly, Acemoglu and Robinson (2012) argued that inclusive and accountable institutions are essential for transforming resource wealth into sustainable development outcomes. According to the authors, resource-rich countries frequently experience developmental challenges when institutional weaknesses permit elite capture, corruption, and ineffective resource management.

Focusing on African extractive industries, Campbell (2012) found that institutional fragmentation, weak enforcement mechanisms, and inadequate stakeholder participation significantly undermine mining sector governance. The study observed that regulatory agencies often face capacity limitations that restrict their ability to monitor compliance with environmental, fiscal, and operational standards.

In Nigeria, Hilson and McQuilken (2014) investigated governance challenges associated with artisanal and small-scale mining activities. Their findings indicated that weak regulatory enforcement and inadequate institutional coordination contributed significantly to the persistence of informal mining operations. The study further revealed that ineffective governance structures facilitated illegal mineral extraction and reduced government capacity to capture revenue from mining activities.

Likewise, Ovadia (2016) examined governance dynamics within Nigeria's extractive industries and concluded that institutional weaknesses remain a major obstacle to achieving sustainable resource-based development. The study emphasized that governance reforms aimed at enhancing transparency, accountability, and stakeholder participation are critical for improving sectoral performance.

While these studies establish an important relationship between governance quality and extractive sector outcomes, many focus broadly on extractive industries without specifically addressing the governance dimensions of Nigeria's emerging solid minerals sector. Furthermore, relatively few studies examine governance as a multidimensional construct encompassing regulatory enforcement, institutional coordination, community participation, and intergovernmental collaboration.

Federalism, Resource Control and Sustainable Resource Governance

Questions surrounding resource ownership, revenue allocation, and intergovernmental relations have occupied a central position within debates on resource governance in federal political systems. Existing empirical studies suggest that tensions between national and subnational governments often shape the effectiveness of resource management institutions.

Ross (2015) observed that disputes over resource control frequently emerge in federations where natural resource ownership is centralized while extraction activities occur within specific subnational jurisdictions. According to the study, governance challenges become more pronounced when host communities perceive that they bear disproportionate environmental and social costs without receiving corresponding developmental benefits.

Within Nigeria, Suberu (2001) examined the political economy of resource control and fiscal federalism. The study found that centralized resource ownership arrangements generated recurring tensions between the Federal Government and resource-producing regions. Although the analysis focused primarily on petroleum resources, the identified governance dynamics remain relevant to emerging debates surrounding solid mineral development.

Similarly, Ikelegbe (2005) argued that resource governance conflicts often arise when local communities perceive exclusion from decision-making processes and benefit-sharing arrangements. The study demonstrated that inadequate stakeholder

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participation can undermine the legitimacy of governance institutions and increase the likelihood of resource-related conflicts.

More recently, Ayoade and Agiobenebo (2022) examined resource governance challenges within Nigeria's mining sector. Their findings indicated that overlapping institutional mandates, weak coordination among governmental actors, and limited community involvement continue to constrain effective mineral resource management. The study recommended greater collaboration among federal institutions, state governments, and host communities to enhance governance effectiveness.

Likewise, Ejiogu and Okeke (2023) investigated governance challenges in selected mining communities across Nigeria. Their findings revealed widespread concerns regarding inadequate consultation, limited developmental benefits, and weak community participation in resource governance processes. The study concluded that sustainable mineral development requires governance frameworks capable of balancing national interests with local developmental priorities.

Although existing studies have contributed significantly to understanding resource governance and federalism-related challenges, relatively few have examined how federal-state collaboration, governance effectiveness, and stakeholder participation collectively influence sustainable solid mineral development. This omission becomes particularly significant given Nigeria's recent efforts to reposition the solid minerals sector as a cornerstone of economic diversification.

Empirical Gap

The reviewed literature demonstrates substantial scholarly interest in economic diversification, extractive sector governance, and resource federalism. Existing studies have examined the economic potential of Nigeria's solid minerals sector (Ajakaiye et al., 2018; Lawal & Akinrinola, 2020), the importance of governance quality in extractive industries (Kaufmann et al., 2011; Ovadia, 2016), and the implications of resource control within federal systems (Suberu, 2001; Ikelegbe, 2005). However, several important gaps remain.

First, much of the existing literature examines solid mineral development primarily from economic and investment perspectives, with limited emphasis on governance mechanisms as determinants of sustainable development outcomes. Second, studies addressing governance within extractive industries often focus broadly on natural resource management without specifically examining the governance architecture of Nigeria's solid minerals sector. Third, existing studies frequently investigate governance variables in isolation, paying insufficient attention to the interconnected roles of governance effectiveness, institutional coordination, regulatory enforcement, community participation, and federal-state collaboration. Fourth, despite increasing policy attention on solid minerals as a vehicle for economic diversification, limited empirical evidence exists regarding how governance mechanisms influence the sustainability of this diversification strategy.

Accordingly, this study seeks to fill these gaps by examining the influence of governance mechanisms on sustainable solid mineral development in Nigeria. Unlike previous studies, it adopts an integrated approach that combines governance effectiveness, institutional coordination, regulatory enforcement, community participation, and federal-state collaboration within a single analytical framework. Through this approach, the study contributes to ongoing debates on resource governance, fiscal federalism, and economic diversification in Nigeria.

MATERIALS AND METHODOLOGY

This study adopted a mixed-methods research design, specifically the convergent parallel design. The choice of this design was informed by the need to obtain both quantitative and qualitative evidence on the relationship between governance mechanisms and sustainable solid mineral development in Nigeria. The mixed-methods approach enables the integration of numerical data and stakeholder perspectives, thereby providing a more comprehensive understanding of the governance dynamics influencing mineral resource development. The quantitative component focused on measuring the influence of governance-related variables on sustainable solid mineral development, while the qualitative component explored stakeholder perceptions regarding institutional effectiveness, regulatory enforcement, community participation, and

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intergovernmental relations within the sector. The combination of both approaches enhanced the validity and robustness of the study findings through methodological triangulation. The study was conducted in Nigeria, a federal state endowed with extensive solid mineral resources distributed across its thirty-six states and the Federal Capital Territory. Nigeria possesses significant deposits of gold, lithium, iron ore, limestone, coal, tin, lead, zinc, marble, and bitumen, among other commercially viable minerals.

Recent policy initiatives have repositioned the solid minerals sector as a critical component of the country's economic diversification agenda. However, the sector continues to face numerous governance challenges, including illegal mining, institutional fragmentation, regulatory weaknesses, community grievances, environmental concerns, and disputes relating to resource ownership and control. These characteristics make Nigeria an appropriate case for examining the relationship between governance mechanisms and sustainable solid mineral development.

The target population comprised stakeholders directly involved in the governance, regulation, management, and utilization of solid mineral resources in Nigeria. These included:

1. Officials of the Federal Ministry of Solid Minerals Development.
2. Officials of relevant state ministries responsible for mining and natural resources.
3. Mining regulators and inspectors.
4. Licensed mining operators.
5. Artisanal and small-scale mining operators.
6. Traditional rulers and community leaders in mining communities.
7. Representatives of civil society organizations involved in extractive sector governance.
8. Environmental management officials.
9. Security personnel involved in combating illegal mining activities.

The diversity of the population ensured the inclusion of multiple perspectives on governance and sustainable mineral development. The study conceptualized sustainable solid mineral development as the dependent variable, while governance-related indicators constituted the independent variables.

Variable	**Indicators**
Governance Effectiveness	Transparency, accountability, policy implementation, administrative efficiency
Institutional Coordination	Inter-agency cooperation, information sharing, policy coherence
Regulatory Enforcement	Monitoring, compliance, sanctions, anti-illegal mining measures
Community Participation	Stakeholder engagement, consultation, benefit-sharing mechanisms
Federal-State Collaboration	Policy coordination, resource governance cooperation, conflict resolution
Sustainable Solid Mineral Development	Revenue generation, employment creation, environmental sustainability, community development

To ensure content and face validity, the questionnaire and interview guide were subjected to expert review by specialists in public administration, governance studies, extractive resource management, and research methodology. The observations and recommendations of these experts were incorporated into the final versions of the instruments to ensure that they adequately measured the intended concepts.

Quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 29. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize

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respondents' views. To examine the influence of governance mechanisms on sustainable solid mineral development, multiple regression analysis was employed using the following model:

$SSD = \beta_0 + \beta_1 GE + \beta_2 IC + \beta_3 RE + \beta_4 CP + \beta_5 FSC + \varepsilon$

Where:

SSD = Sustainable Solid Mineral Development

GE = Governance Effectiveness

IC = Institutional Coordination

RE = Regulatory Enforcement

CP = Community Participation

FSC = Federal-State Collaboration

β_0 = Constant

$\beta_1 - \beta_5$ = Regression Coefficients

ε = Error Term

Qualitative data generated through Key Informant Interviews were analyzed using thematic content analysis. Responses were coded and organized into themes reflecting governance effectiveness, institutional coordination, regulatory enforcement, federal-state relations, community participation, illegal mining, and sustainable development outcomes.

The findings from both quantitative and qualitative analyses were integrated during interpretation to provide a comprehensive understanding of the governance challenges and opportunities associated with solid mineral development in Nigeria.

RESULT AND DATA PRESENTATION

This session showcases an except from the data results

Table 4.1: showing descriptive analysis of result

Item	SA f(%)	A f(%)	N f(%)	D f(%)	SD f(%)	Mean	SD
Revenue from artisanal mining is fairly distributed among federal, state, and local governments.	35 (11.5%)	48 (15.7%)	40 (13.1%)	90 (29.5%)	92 (30.2%)	2.58	1.28
The federal government takes an excessive share of mining revenue, limiting state and local government capacity.	140 (45.9%)	112 (36.7%)	25 (8.2%)	18 (5.9%)	10 (3.3%)	4.21	1.02

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The revenue-sharing system ensures that mining communities benefit adequately.	38 (12.5%)	57 (18.7%)	45 (14.8%)	88 (28.9%)	77 (25.2%)	2.72	1.27
The allocation of mining revenue at the state and local levels is transparent.	30 (9.8%)	41 (13.4%)	50 (16.4%)	100 (32.8%)	84 (27.5%)	2.56	1.24
The principle of derivation is effectively applied to artisanal mining revenue distribution.	28 (9.2%)	49 (16.1%)	58 (19.0%)	98 (32.1%)	72 (23.6%)	2.62	1.19
Federalism has helped in addressing environmental degradation caused by artisanal mining.	32 (10.5%)	55 (18.0%)	60 (19.7%)	95 (31.1%)	63 (20.7%)	2.66	1.21
Governance weaknesses under federalism contribute to conflicts between miners and host communities.	118 (38.7%)	115 (37.7%)	28 (9.2%)	22 (7.2%)	22 (7.2%)	3.93	1.10
Federalism has improved employment and economic opportunities in artisanal mining.	44 (14.4%)	68 (22.3%)	55 (18.0%)	80 (26.2%)	58 (19.0%)	2.91	1.23
Poor governance under federalism has contributed to the rise of illegal mining activities.	132 (43.3%)	102 (33.4%)	25 (8.2%)	26 (8.5%)	20 (6.6%)	4.04	1.08
The over-centralization of mining governance at the federal level is a major challenge in Nigeria's artisanal mining sector.	140 (45.9%)	110 (36.1%)	20 (6.6%)	18 (5.9%)	17 (5.5%)	4.17	1.03

Source: Field Survey, 2025.

Brief Interpretation

The findings indicate widespread dissatisfaction with the fiscal federalism framework governing Nigeria's artisanal mining sector. Respondents generally disagreed that mining revenue is fairly distributed among the federal, state, and local governments (Mean = 2.58), that mining communities benefit adequately from the revenue-sharing system (Mean = 2.72), and that revenue allocation at the state and local levels is transparent (Mean = 2.56). Similarly, respondents expressed disagreement that the derivation principle is effectively applied in artisanal mining revenue distribution (Mean = 2.62).

Conversely, respondents strongly agreed that the federal government takes an excessive share of mining revenue, thereby limiting the financial capacity of state and local governments (Mean = 4.21). They also agreed that governance weaknesses under Nigeria's federal system contribute to conflicts between miners and host communities (Mean = 3.93), while poor governance has facilitated the growth of illegal mining activities (Mean = 4.04). Furthermore, respondents identified the over-centralization of mining governance at the federal level as a major challenge confronting the artisanal mining sector (Mean = 4.17).

Overall, the results suggest that existing fiscal federalism arrangements in Nigeria's mining sector are perceived as inequitable, insufficiently transparent, and overly centralized. The findings further indicate that governance deficiencies and revenue-sharing challenges are significant factors contributing to community dissatisfaction, illegal mining activities, and conflicts within mining areas.

Discussion of Findings

The findings reveal significant concerns regarding the effectiveness of fiscal federalism and governance arrangements within Nigeria's artisanal mining sector. The overall pattern of responses suggests that stakeholders perceive existing revenue-sharing mechanisms as inequitable, insufficiently transparent, and excessively centralized at the federal level. These findings support the core assumptions of Fiscal Federalism Theory, which emphasizes that

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effective resource governance requires an appropriate balance between central authority and subnational participation to ensure accountability, efficiency, and equitable development (Oates, 1972).

The study found that respondents generally disagreed that revenue from artisanal mining is fairly distributed among the federal, state, and local governments. Similarly, respondents expressed dissatisfaction with the extent to which mining communities benefit from existing revenue-sharing arrangements. This finding suggests that the current governance structure may not be effectively translating mineral wealth into tangible developmental benefits for subnational governments and host communities. The result aligns with the observations of Suberu (2001), who argued that centralized resource control in Nigeria has historically generated concerns regarding equity and distributive justice, particularly among resource-producing regions. The finding further reflects longstanding debates surrounding resource ownership and benefit-sharing in Nigeria's extractive industries.

The study also revealed widespread disagreement regarding the transparency of mining revenue allocation at state and local government levels. Transparency remains a critical component of resource governance because it promotes accountability, reduces opportunities for corruption, and enhances public trust in governance institutions. The perceived lack of transparency identified in this study supports the argument of Kaufmann et al. (2011) that weak governance institutions often undermine the developmental potential of natural resources. In the context of Nigeria's solid minerals sector, inadequate transparency may contribute to stakeholder distrust and weaken public support for government-led mineral development initiatives.

Another important finding concerns the application of the derivation principle in artisanal mining revenue distribution. Respondents largely disagreed that the principle is effectively implemented. This suggests that host communities and producing regions may not be receiving a proportionate share of the economic benefits generated from mining activities within their jurisdictions. Such perceptions can fuel grievances, weaken local support for mining projects, and create tensions between communities and government institutions. Similar concerns were identified by Ikelegbe (2005), who found that perceived exclusion from resource benefits often contributes to dissatisfaction and conflict in resource-producing areas.

One of the most striking findings of the study is the strong agreement that the federal government takes an excessive share of mining revenue, thereby limiting the developmental capacity of state and local governments. This result directly reflects one of the central criticisms of Nigeria's resource governance framework. Under the current constitutional arrangement, mineral ownership and control are vested in the Federal Government, leaving limited room for subnational participation in revenue generation and management. The finding supports the argument of Fiscal Federalism Theory that excessive centralization may reduce the responsiveness and effectiveness of governance institutions, particularly in sectors where resource extraction occurs within specific localities.

The study further established that governance weaknesses under Nigeria's federal structure contribute significantly to conflicts between miners and host communities. This finding demonstrates that governance challenges extend beyond fiscal concerns and directly affect social stability within mining regions. Weak regulatory oversight, inadequate stakeholder engagement, and limited conflict resolution mechanisms often create conditions that foster disputes over land use, environmental impacts, compensation, and access to mining benefits. This result is consistent with the findings of Campbell (2012), who observed that governance deficiencies frequently undermine social cohesion and sustainable resource management within extractive sectors across Africa.

Similarly, respondents agreed that poor governance has contributed to the rise of illegal mining activities in Nigeria. This finding is particularly significant because illegal mining has emerged as one of the most pressing challenges confronting the country's solid minerals sector. Weak enforcement capacity, institutional fragmentation, corruption, and inadequate monitoring systems create opportunities for unauthorized mining operations to flourish. The finding corroborates the work of Hilson and McQuilken (2014), who found that weak regulatory institutions often encourage the expansion of informal and illegal mining activities in developing countries. The persistence of illegal mining not only reduces

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government revenue but also exacerbates environmental degradation, insecurity, and community conflicts.

Furthermore, respondents overwhelmingly agreed that the over-centralization of mining governance at the federal level constitutes a major challenge within Nigeria's artisanal mining sector. This finding reinforces broader concerns regarding the suitability of existing governance arrangements for managing an expanding mineral economy. While centralized control may facilitate policy uniformity, excessive concentration of authority can limit local participation, reduce institutional responsiveness, and hinder collaborative governance. The result lends empirical support to arguments advocating greater coordination and cooperation among federal, state, and community stakeholders in resource governance.

Collectively, these findings suggest that Nigeria's efforts to position the solid minerals sector as a vehicle for economic diversification may be constrained by persistent governance and federalism-related challenges. The study indicates that without reforms aimed at improving transparency, strengthening institutional coordination, enhancing community participation, and promoting more balanced intergovernmental relations, the sector risks reproducing many of the governance deficiencies historically associated with Nigeria's petroleum industry. Consequently, sustainable solid mineral development requires not only increased investment and mineral exploitation but also the establishment of governance structures capable of ensuring equitable benefit-sharing, effective regulation, and inclusive stakeholder engagement.

Conclusion and Recommendations

Conclusion

This study examined fiscal federalism, governance mechanisms, and their implications for sustainable solid mineral development in Nigeria. The central argument of the study was that while the solid minerals sector holds significant potential for economic diversification, its performance is strongly shaped by the nature of governance structures and intergovernmental relations governing resource ownership, control, and revenue distribution.

The empirical findings indicate that Nigeria's current fiscal federalism arrangement in the mining sector is widely perceived as centralized, inequitable, and insufficiently transparent. Stakeholders expressed dissatisfaction with the distribution of mining revenues, particularly the limited benefits accruing to mining communities and subnational governments. The study further revealed that weak governance structures contribute to illegal mining activities, conflicts between miners and host communities, and inefficiencies in revenue management.

The findings also demonstrate that over-centralization of mining governance at the federal level undermines institutional responsiveness and limits effective participation by state and local actors. This governance imbalance weakens accountability mechanisms and reduces the capacity of subnational governments to respond to local developmental needs in mining areas. Overall, the study concludes that governance deficiencies and fiscal imbalances constitute major constraints to sustainable solid mineral development in Nigeria.

In theoretical terms, the findings validate the central propositions of Fiscal Federalism Theory, which emphasizes that optimal resource governance requires a balance between central coordination and subnational autonomy. Where such balance is absent, as evidenced in the Nigerian mining sector, inefficiencies, inequities, and governance failures are likely to emerge.

Recommendations

Based on the findings of the study, the following recommendations are advanced:

1. **Decentralization of Mining Governance Functions**
   The Federal Government should consider devolving specific operational responsibilities in the solid minerals sector to state governments, particularly in areas of monitoring, artisanal mining regulation, and community engagement. This will enhance responsiveness and improve governance efficiency at the local level.
2. **Strengthening Revenue Transparency Mechanisms**
   A transparent mineral revenue reporting framework should be institutionalized across

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federal, state, and local levels. This may include digital tracking systems for mineral output and revenue flows to reduce leakages and improve accountability.

3. **Enhanced Derivation-Based Revenue Allocation**
   The principle of derivation should be more effectively integrated into artisanal mining revenue distribution to ensure that producing communities receive a fair share of mineral-derived revenues. This would reduce grievances and strengthen local support for mining activities.
4. **Improved Intergovernmental Coordination**
   A formal coordination mechanism should be established between federal and state mining authorities to reduce institutional fragmentation, policy duplication, and regulatory conflicts. Such coordination should also include joint monitoring and enforcement frameworks.
5. **Strengthening Enforcement Against Illegal Mining**
   Regulatory agencies should be equipped with improved technical capacity, funding, and security support to combat illegal mining activities. This should include enhanced surveillance systems and stricter sanctions for offenders.
6. **Community Participation in Mining Governance**
   Host communities should be formally integrated into decision-making structures governing mining activities. This will improve trust, reduce conflict incidence, and promote shared ownership of development outcomes.
7. **Environmental Governance Strengthening**
   Environmental monitoring frameworks should be reinforced to ensure compliance with sustainability standards in mining operations. This is essential to mitigate the long-term ecological consequences of artisanal and small-scale mining.

Policy Implication

The study underscores the need for a governance reform agenda that aligns Nigeria's solid minerals development strategy with principles of fiscal federalism, inclusiveness, and accountability. Without such reforms, the sector risks replicating the governance challenges historically associated with the petroleum industry, thereby limiting its contribution to national economic transformation.

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