

Appraisal of the Legal Framework of Environmental Pollution from Mining of Solid Minerals in Nigeria

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ABSTRACT

Nigeria is endowed with numerous mineral resources like tin, iron ore, limestone, gold, and columbite, along with fertile land for agricultural products such as cocoa, palm oil, and rubber, spread all over the country where mining activities are carried out daily. Despite Nigeria's abundant mineral wealth and the strategic potential of the mining industry to drive national development, the environmental consequences of mining activities have raised serious concerns. Thus, the need to strike a balance is not only desirable but compelling. Hence, laws, regulations and policies have been made to ensure the protection of the environment. The article employed the doctrinal research methodology to examine the legal and institutional framework for the regulation of environmental pollution from mining solid minerals in Nigeria. It argued that much as mining of mineral resources is important for economic growth and development, it is also harmful to human health, livelihood, biodiversity, climate change and sustainable development. It also argued that there are challenges associated with the effective enforcement of mining and environmental laws and regulations in Nigeria. The article found that some of the reasons for the occurrence of environmental pollution from mining of solid minerals in Nigeria are inadequate enforcement and non-compliance with the relevant laws and regulations. It was also found that there is lack of proper coordination between the relevant government agencies responsible for enforcement of environmental laws in the country. The article concluded that by addressing existing challenges such as security concerns, and illegal mining, Nigeria can harness the potential of its abundant mineral reserves to achieve sustainable economic growth. Similarly, improving legislation and regulations, proper environmental management systems, proper mines closure and site reclamation processes should be adopted as strategies to combat the negative effects of environmental pollution from mining solid minerals in the country.

Keywords: Appraisal, Legal Framework, Environmental Pollution, Mining, Solid Minerals, Nigeria

INTRODUCTION

Nigeria is blessed with abundant solid minerals like tin, iron ore, limestone, gold, and columbite, along with fertile land for agricultural products such as cocoa, palm oil, and rubber. Other resources include gypsum, kaolin,

and bitumen. The country was a significant exporter of minerals like tin and coal in the 1960s and 70s.¹ Despite its mineral potential, the sector contributes less than 1% to Nigeria's Gross Domestic Product (GDP).² For far too long, the chronicle of Nigeria's economic strength has almost been exceptionally knotted to crude oil. Yet, underneath the very soil that embraces enormous petroleum reserves, lies more diverse and sustainable wealth with untapped potential. The mining sector, often dominated, is now emerging, poised to change the nation's economic landscape and redefine its global place,³ but the environmental consequences have raised serious concerns.⁴ In most parts of Nigeria, where mining of solid minerals are taking place, for example, Zamfara and Jos, Plateau where open cast mining has been on for several decades, the environment is left un-regained with its harmful effects on humanoid growth.⁵

However, there are plethora of laws, regulations, policies, and guidelines relating to environmental pollution from mining of solid minerals in Nigeria; but compliance and implementation have become matters of vital concern. For example, the Nigerian Minerals and Mining Act⁶ (NAMA) created the offence of illegal mining without making provisions for punishment. Similarly, there is poor monitoring and inadequate enforcement of environmental regulations and standards/guidelines. Mining activities are carried out without the mandatory environmental impact assessment (EIA), as well as illegal or unregulated mining activities by unlicensed and artisanal miners that aggravate environmental ruins and health hazards to vulnerable communities, resulting in loss of revenue to government.

Furthermore, a lot of mining sites have been left un-mitigated, unclaimed, un-restored, un-remediated and un-rehabilitated with propensity for accidents and loss of lives.⁷ In addition, the mining industry in Nigeria, particularly in the informal and artisanal sub-sector, has become synonymous with deforestation, land degradation, water pollution, biodiversity loss, and public health hazards.⁸

It is, therefore, essential to mirror on the efforts made in Nigeria to safeguard sustainable mining activities in line with international practice to alleviate and, where possible prevent it adverse effects on the environment. Laws, regulations, guidelines, and policies by themselves without being diligently and effectively implemented by appropriate institutions would continue to constitute impotent provisions, until given life by their implementation in accordance with due process.⁹ This article, therefore, examines the legal regime for the regulation of mining of solid minerals in Nigeria focusing on the environmental pollution and degradation and other risk factors that are associated with such exploitation.

¹ Eric Kehinde Ogunleye, 'Natural Resource Abundance in Nigeria: From Dependence to Development' Resources Policy 13 3 (2008) ScienceDirect <https://www.sciencedirect.com/science/article/abs/pii/S0301420708000287>

² Aderemi Fagbemi and Oluchi Mgbenwelu, 'Overview of the Nigerian Mining Sector: Challenges and Prospects' (2024) Mondaq <https://www.mondaq.com/nigeria/oil-gas-electricity/1475366/overview-of-the-nigerian-mining-sector-challenges-and-opportunities>

³ Obinna Ede, Nigeria Mining Industry Overview: The Next Growth Frontier' (2025) <https://nigerianmineralexchange.com/nigeria-mining-industry-overview-the-next-growth-frontier/>

⁴ Mining Review Africa, 'Mining in Nigeria: Challenges, Opportunities and Prospects' (2023) <https://www.miningreview.com/gold/mining-in-nigeria-challenges-opportunities-and-prospects/>

⁵ J. S. Ndace and M. H. Danladi, 'Impacts of Derived Tin Mining Activities on Landscape/Land Use in Bukuru, Plateau State, Nigeria' 95 5 (2012) *Journal of Sustainable Development*

⁶ ss. 46 and 131

⁷ J. S. Ndace and M. H. Danladi, (n. 5)

⁸ U. Okonkwo, 'The Legal Effect of Undomesticated International Treaties in Nigerian Environmental Law' 6 2 (2022) 6 *Nigerian Journal of International Law* 22:36

⁹ A. O. Salu, 'Can Laws Protect the Environment in Nigeria?' 2 (2012) *Modern Practice Journal of Finance and Investment Law* 140

CONCEPTUAL FRAMEWORK

The article adopts six concepts, viz: Environment, solid mineral resources, mining, pollution, sustainable development, and Environmental, Social and Governance (ESG). These are discussed below.

2.1.1 Environment

Environment refers to the surroundings in which living organisms, humans and animals, and plants exist. It involves the natural environment, which contains ecosystems, landscapes, air, water, and biodiversity. It also covers the built environment, which includes human-made structures, such as buildings, roads, and cities.¹⁰ The environment encompasses everything that affects an organism's life from physical influences on chemical, biological, and human factors. The environment comprises both natural and man-made surroundings that provides ample resources that are essential for life to stay intact on earth like oxygen, water, food, and raw materials.¹¹

2.1.2 Solid Mineral Resources

Solid minerals are naturally occurring, non-renewable substances found in the Earth's crust, which are valuable or useful to humans and can be extracted for economic purposes. This category includes a diverse range of materials like coal, metal ore, limestone, granite, clay, and precious stones, differing from liquid or gaseous resources like crude oil.¹² Solid mineral resources are essential for economic development, providing raw materials for industries, creating wealth, and supporting national goals like economic diversification.¹³

2.1.3 Mining

Mining is the process of extracting valuable minerals and ecological materials, such as metals, coal, gemstones, and gravel, from the Earth's surface and subsurface. This process is done for economic profit and requires careful planning, specialized technology, and can involve various methods, including digging deep underground tunnels or creating large surface pits, to uncover and collect these resources.¹⁴ The two types of mining methods are surface mining *and* underground mining. Surface mining encompasses extracting minerals from the earth's surface, particularly for mineral or ore deposits that are close to the surface. This method is cost-effective but with environmental trail. On the other hand, underground mining is vital for retrieving deeper mineral deposits

¹⁰ Sukhpreet Monga, 'What is Environment? Definition, Component, and Importance' (2025)

<https://plutuseducation.com/blog/what-is-environment/>

¹¹ Gerardo Morales-Jasso and Ernesto Ivan Badano, 'Environment: A key Concept for Science Development and Decision Making' (2024)

https://www.researchgate.net/publication/386983780_Environment_a_key_concept_for_science_development_and_decision_making

¹² N. G. Obaje, 'Solid Mineral Resources' (2009) ResearchGate

https://www.researchgate.net/publication/251299512_Solid_Mineral_Resources

¹³ Weihang Du, Yi Wei and Muhammad Abubakar Naeem, 'Solid Mineral development and Chinese Economic Growth: Role of Technological Advancement' '95 (2024) Resource Policy

<https://www.sciencedirect.com/science/article/abs/pii/S0301420724005063>

¹⁴ Fraser Perry, 'Understanding mining Methods: Key Concepts for Investors' (2023)

<https://resourcecapitalfunds.com/insights/mining-and-minerals-101/understanding-mining-methods/>

and has a smaller surface trail. It involves digging into the earth and is largely used for deposits that are too deep to be mined by surface mining methods.¹⁵

2.1.4 Pollution

Pollution is the existence of harmful materials in the air, land, and water, which has adverse effects on living beings and the environment. It is also poisonous material that pollutes and contaminates the soil and air or harmful materials that make the environment unsafe for human existence.¹⁶ The different types of pollution are air, water and oil, which are interconnected and can indirectly be a source for each other. Thus, as air pollution is directly related to thermal pollution, light pollution is caused by energy companies that require burning fossil fuels. In return, they increase air and water pollution.¹⁷

2.1.5 Sustainable Development

The concept of sustainable development is to meet the needs of the present without compromising the ability of future generations to meet their own needs. It involves a balanced approach that harmonizes three interconnected elements: economic growth, social inclusion, and environmental protection.¹⁸ Achieving sustainable development requires concerted global, national, and local efforts to build a future that is inclusive, equitable, and resilient for both people and the planet. However, despite its universality and the immense popularity it has gathered over the years, the concept still seems unclear as many people continue to ask questions about its meaning and history, as well as what it entails and implies for development theory and practice.¹⁹

2.1.6 Environmental, Social and Governance

Environmental, Social, and Governance (ESG) principles aim to create a framework for responsible operations that mitigate negative impacts, foster sustainable development, and build trust by addressing environmental degradation, community displacement, social inequalities, and governance failures.²⁰ A strong ESG framework in the mining sector involves implementing strict environmental standards, conducting thorough environmental and social impact assessments, ensuring community benefit sharing, fostering transparent governance, and investing in robust community development initiatives.²¹

THEORETICAL FRAMEWORK

¹⁵ibid

¹⁶ Vedantu, 'What is Pollution? How many types of Pollution? Define it' (2024) <https://www.vedantu.com/question-answer/what-is-pollution-how-many-types-of-pollution-define-it-5b82f97ae4boa50233a8b468>

¹⁷ ibid

¹⁸ UNDP, 'The SDGs in Action' (2022) <https://www.undp.org/sustainable-development-goals>

¹⁹ Justice Mensah and Sandra Ricart Casadevall, 'Sustainable Development: Meaning, History, Principles, Pillars and Implications for Human Action: Literature Review' 5 1 (2019) Cogent Social Sciences <https://www.tandfonline.com/doi/full/10.1080/23311886.2019.1653531#abstract>

²⁰ Danny Trishna Jaya and Mahendra Vardhan, 'Environmental, Social and Governance Implementation Strategy in Mining Companies with Design Thinking Methods' (2025) ResearchGate https://www.researchgate.net/publication/388455937_Environmental_Social_Governance_ESG_Implementation_Strategy_in_Mining_Companies_with_Design_Thinking_Method

²¹ ibid

The article adopts four theories, viz: the polluter pay principle, the rent theory, the tragedy of the commons, and the efficient pollution taxes. These are considered seriatim.

3.1.1 Polluter Pays Principle (PPP)

The Polluter Pays Principle (PPP) was first introduced in 1972 by the Organization for Economic Cooperation and Development (OECD). The main idea of the principle is that each polluter must achieve an economically efficient level of production and pollution, and polluters must not see only benefits of the activity causing the pollution but also the harm imposed on others or environment. The strategy was to make those who produce waste responsible for its recycling and disposal.²² It is a cornerstone of environmental policy, holding that the individual or entity responsible for causing pollution should bear the costs of preventing, controlling, and cleaning it up, rather than the taxpayer or public.

It is enshrined in international environmental law and various domestic regulations to ensure that economic actors are incentivized to reduce their environmental impact and are held accountable for environmental damages.²³ A key Nigerian case applying the "polluter pays" principle is that of *Nigerian Agip Oil Co Ltd v Akpati & Ors*,²⁴ where the Court of Appeal (CA) held Agip Oil liable for an oil spill that damaged a respondent's fishpond. Nigerian courts have affirmed the principle by holding polluters responsible for damages, particularly in the oil and gas sector.

3.1.2 Rent Theory

The Rent Theory was developed by classical economists such as David Ricardo and Adam Smith. The theory was based on the idea that land is a finite resource, and its ownership allows the owner to charge a premium for its use.²⁵ Rent theory can be applied to resource extraction industries such as mining and oil and gas. In this way, landowners charge rent to companies for the use of their land to extract resources. Thus, the value of the land is determined by the revenue generated from the extraction of resources.

Therefore, this principle is crucial in determining the value of mineral rights, which are the rights to extract minerals from a piece of land.²⁶ In the case of *Chief A. S. Amos & Ors v SPDC Limited*,²⁷ the Supreme Court (SC) established that prospective miners must pay fair compensation to private landowners for disturbances and damages. Similarly, in the case of *Alhaji Yakubu Olaju v Commissioner for Lands & Housing, Kwara State & Ors*,²⁸ the Court reaffirmed that prompt compensation is required for valid land acquisition for public interest, including mining.

²² Abhishek Gaur and Sangeeta Chaudary, 'Polluter Pays Principle' (2024) ScienceDirect

<https://www.sciencedirect.com/topics/earth-and-planetary-sciences/polluter-pays-principle>

²³ Kate Andrew Nwasi and Bariyima Sylvester Kokpan; 'The Polluter Pays Principles and the Nigerian Legal Framework for Aviation Pollution Mitigation' 17 2 (2023) Journal of Jurisprudence, International Law and Contemporary Legal Issues 145 155

²⁴ CA/OW/109/2018

²⁵ Faster Capital, 'Application of Rent theory in Modern Times' (2024) <https://fastercapital.com/topics/application-of-rent-theory-in-modern-times.html/1>

²⁶ Arunas A. Lapinskas, 'Influence of Mining Rent on the Efficiency of Using Natural Potential: The Paradox of Plenty and Its Russian Specifics' (2023) Journal of Mining Institute <https://pmi.spmi.ru/pmi/article/view/15918>

²⁷ SC 42/ 1976

²⁸ (2011) 12 E-ERN/36 CA

3.1.3 Tragedy of the Commons

The tragedy of the commons²⁹ describes the overexploitation and depletion of a communal and limited resource by individuals acting in their own self-interest, ultimately leading to the ruin of the resource for everyone.³⁰ The theory argues that the logic of inevitable over-use applies not just to cows and pastures but to any commonly held resource, so long as the resource is finite, and its consumption is unrestricted. Hardin intends the word "tragedy" to capture the unintended but nevertheless unavoidable destiny of ruin built into the unregulated use of common resources.³¹ As the world's population rises and demands more access to resources, the issues associated with the commons become more severe. As resources become more limited, some argue, managing the commons may have neither a technical nor a political solution. This, indeed, may be the ultimate tragedy.³²

3.1.4 Efficient Pollution Taxes

The Theory of Efficient Pollution Taxes, also known as Pigouvian taxation, posits that an ideal tax on pollution, set at the marginal external cost, forces polluters to internalize the societal costs of their actions, thereby achieving an economically efficient level of pollution.³³ The theory proposes that environmental taxes are the most cost-effective method for reducing pollution by internalizing external costs, thereby shifting the burden of pollution from society to polluters, which incentivizes companies to reduce emissions at the least possible cost. Efficiency is achieved by setting the tax rate equal to the marginal external cost of pollution, ensuring that the tax rate incentivizes polluters to reduce emissions to the optimal level.³⁴ In practice, this policy can be difficult to achieve, due to difficulties in measuring and differentiating damage by source, difficulties in monitoring and enforcing pollution policies, and the financial and political costs of pollution taxes.³⁵

4.1 Legal Framework

The regulation of environmental pollution from mining of solid minerals in Nigeria is anchored on successive legal instruments, regulations and treaties which lay down its objectives, institutional design, and working modalities. Some of these treaties and laws are discussed below.

4.1.1 Constitution of the Federal Republic of Nigeria (CFRN) 1999

The Constitution of the Federal Republic of Nigeria (CFRN) 1999 is the highest law in Nigeria. Therefore, any law that is not in consonance with its provisions is null and void to the degree of its contradiction.³⁶ By implication, all laws relating to the environment including those in respect of mining of solid minerals in Nigeria will have to be consistent with the provisions of the Constitution. Though the Constitution did not make specific

²⁹ The phrase comes from the title of a much-cited essay published in 1968 by the Biologist Garrett Hardin (1915-2003).

³⁰ Micheal J. Boyle, 'Understanding the Tragedy of the Commons in Economics: Causes and Solutions' (2025) Investopedia <https://www.investopedia.com/terms/t/tragedy-of-the-commons.asp>

³¹ William Byrant and Elizabeth Friedi, 'What is the Tragedy of the Commons' (2023) StudyCom <https://study.com/academy/lesson/tragedy-of-the-commons-theory-definition-examples.html>

³² *ibid*

³³ Dwight R. Lee, 'The Economics of Enforcing Pollution Taxation' 11 2 (1984) *Journal of Environmental Economics and Management* 147 160

³⁴ Pinglin He, et al, 'Can Environmental Tax Policy Help to Reduce Pollutant Emission? An Empirical study of a Panel ARDL Model Based on OECD Countries and China' 11 16 (2019) *MDPI Journal* <https://www.mdpi.com/2071-1050/11/16/4384>

³⁵ Helfand Gloria, Berck Peter and Mauli Tin, 'The Theory of Pollution Policy' in *Handbook of Environmental Economics* 1 6 (2003) 249 303

³⁶ s. 44(3)

provisions for the protection of the environment from degradation by mining of solid minerals, its provisions³⁷ provides a general framework within which the environment could be protected from all forms of pollution and degradation including those arising from the mining of solid minerals in Nigeria. Environmental matters are provided in the Constitution under Fundamental Objectives and Directive Principles of State Policy.³⁸ The Constitution³⁹ provides that the State shall protect and improve the environment and safeguard the water, air and land, forest, and wide life of Nigeria. The above provision forms the nucleus around which environmental rights and remedies could be pursued, but the force and strength of the provision is removed in the light of the fact that this provision has been categorized under the Fundamental Objectives and Directive Principles of State Policy which are by the clear provisions of the Constitution non-justiciable.

4.1.2 Nigerian Minerals and Mining Act (NMMA) 2007

The Nigerian Minerals and Mining Act (NMMA)⁴⁰ vests control of all properties and minerals in Nigeria, in the states and prohibits unauthorized exploration and exploitation of minerals.⁴¹ The NMMA⁴² places critical obligations and responsibilities on mine operators for the prevention of environmental pollution, refurbishment of mines land and restoration of mined sites. The Act is anchored on the principles of prevention, protection, polluter pays, remediation and specifies punitive regime. In its forward-looking stride, the NMMA provides for a tax-deductible reserve for environmental protection and mine closure costs to be established by companies involved in mining activities, subject to certification by an independent qualified person.⁴³

4.1.3 National Environmental Standards and Regulatory Enforcement Agency (Establishment) Act, 2007

The National Environmental Standards and Regulatory Enforcement Agency (NESREA) Act⁴⁴ provides for the enforcement of compliance with laws, guidelines, policies, and standards on environmental matters, excluding the oil and gas sector.⁴⁵ The Act⁴⁶ gives the NESREA the powers in relation to collaborative activities in the solid minerals sector. It empowers the NESREA to make regulations, guidelines and standards for the protection and enhancement of the quality of the land resources, natural watershed, coastal zone, dams, and reservoirs including prevention of flood and erosion.

4.1.4 Environmental Impact Assessment Act, 1992

The Environmental Impact Assessment (EIA) Act contains the general principles, process, and approaches that allows for the prior consideration of environmental impact assessment on certain projects.⁴⁷ The aim is to restrict the execution of public or private project without prior consideration of the environmental impact.⁴⁸ The underlining principle of the EIA Act is that of precaution, that is, taking all necessary factors that will affect the

³⁷ ss. 17 (2) (d) and 20

³⁸ Chap. II

³⁹ s. 20

⁴⁰ NMMA 2007 repealed the Mineral and Mining Act of 1999

⁴¹ s. 2

⁴² ss. 111, 114, 115 and 118

⁴³ s. 30

⁴⁴ s. 1(1)

⁴⁵ s. 7

⁴⁶ ss. 8 (k)-(i)(ii)(iv)(vi)(xiii)(xiv), (m), (n) & (o)

⁴⁷ See also Explanatory Note to the NESREA Act.

⁴⁸ O. A. Fagbohun, 'Public Environmental Litigation in Nigeria- An Agenda for Reform' In O. A. Osunbor and S. Simpson, et al (eds.) (2000) Environmental Law and Policy, Law Centre Faculty of Law, Lagos State University, Lagos 144

environment from such project/activity into consideration before such project/activity is embarked upon. By this, the environment is better protected as the negative effects of such projects/activities including those related to mining will either be prevented or mitigated.⁴⁹ The Act⁵⁰ provides that EIA should be undertaken where the mining lease covers a total area more than 250 for Ore processing, including concentrating for aluminum, copper, gold, or tantalum; sand dredging involving an area of 50 hectares or more.

4.1.5 National Environmental (Mining and Processing of Coal, Ores, and Industrial Minerals) Regulations, 2009

The National Environmental (Mining and Processing of Coal, Ores, and Industrial Minerals) Regulations (NEMPCOIMR)⁵¹ has as its kernel the application of the precautionary principle, polluter pays principle and mitigation/remediation mechanism as canons for ensuring the protection of the environment and attaining sustainable development in the sector. The Regulations provides for the use of modern and effective clean manufacturing technologies to curtail pollution.⁵² It also allows the use of conventional operating approaches to reduce risks. Essentially, old technologies should be used side by side with new ones if their owners desired.

4.1.6 Nigerian Minerals and Mining Regulations 2011

The Nigerian Minerals and Mining Regulations (NMMR) gives effect to the implementation of the provisions of the NMMA and states the procedures and processes for the regulation of exploitation and mining operations.⁵³ It prescribes measures that will protect and ensure the safety of workers engaged in mining operations, the general public and the mining environment.⁵⁴ It also regulates the processes and procedures for enforcement and compliance with the provisions of the Act.⁵⁵ The NMMR establishes the procedure for monitoring compliance with community development agreements by mineral title holders and operators, prescribe guidelines and standards for the operations of departments, agencies and units of the Ministry to ensure the proper discharge of their functions particularly, the monitoring of mining environment and operations and safety of miners.⁵⁶ The NMMR also empowers the Ministry of Mines and Steel Development to arrest without warrant any person found committing or reasonably suspected to have committed an offence under the NMMA and the Regulations⁵⁷ and by order in writing, direct that exploration or mining operation be suspended where any machine, equipment, situation or practice at the mine is considered to be dangerous or defective.⁵⁸

4.1.7 National Environmental (Noise Standards and Control) Regulations, 2009

The National Environmental (Noise Standards and Control) Regulations 2009 aims at the preservation of a healthy environment, the tranquility of surroundings and psychological well-being of all people in Nigeria, by regulating noise levels and for giving effect to the provisions of Section 22 of NESREA Act.⁵⁹ By the provision of Regulation,⁶⁰ the maximum permissible noise level from a quarry or mine to which a may be exposed shall

⁴⁹ s. 63(1), EIA Act, Cap. E12, LFN 2004

⁵⁰ Schedule to the Act titled "mandatory study activities" particularly item 11 thereof.

⁵¹ NEMPCOIMR 2009

⁵² Ibid, 2(1)

⁵³ s. 3(a)

⁵⁴ s. 3(b)

⁵⁵ s. 3(d)

⁵⁶ s. 5

⁵⁷ s. 6(1)(c)(i)

⁵⁸ Reg. 6(1)(c)(iv)

⁵⁹ Reg. 1

⁶⁰ Reg. 2(g) and the First Schedule, Table IX, Column I

not exceed the level specified for any building used as a hospital, school, convalescent home, old age home or residential buildings and for any building in an area used for residential and one or more of the following purposes: commerce, small scale production, entertainment and industry.⁶¹ The Regulation⁶² also made it mandatory for the owner of machinery, or the owner or occupier of an industry or mine or any other such facility to undertake measurements of noise levels within facility as well as within the ambient environment of the premises using noise level meters, measurement schedules and protocols that meet the Agency's standard and such data shall be submitted periodically to the Agency at intervals to be determined by the Agency.

4.1.8 National Environmental (Quarrying and Blasting Operations) Regulations, 2013

The objective of the National Environmental (Quarrying and Blasting Operations) Regulations,⁶³ is to control the effects of quarrying and blasting operations on the environment and human health⁶⁴ and specifically, the Regulations aims to prevent environmental pollution;⁶⁵ ensure the use of environment-friendly technologies in quarrying operations;⁶⁶ prevent the contamination of both surface and ground water;⁶⁷ prevent air and noise pollution;⁶⁸ ensure control and use of commercial (blasting) explosives;⁶⁹ and ensure the safety of workers in the quarry and the public in general.⁷⁰ Regulation 3 (1) resonates the long-standing principle of precaution engrained in the Rio Declaration.⁷¹ Furthermore, the polluter-pays-principle⁷² shall be applied to discourage air, water, and land pollution, quarrying, and blasting operations are to be conducted using the best available technologies that are environment-friendly. Extraction of rocks shall be carried out with adequate protection of the environment, plant, man, animal, and the general ecosystem.⁷³ To this extent the quarry operator shall ensure that all field workers shall be equipped with Personnel Protection Equipment (PPE) for safety, the provision of functional fire hydrant; the availability of health, safety, and environment personnel; restriction of access to the pit or quarry and other safety measures.

4.1.9 National Environmental (Sanitation and Wastes Control) Regulations, 2009

The purpose of the National Environmental (Sanitation and Wastes Control) Regulations (NESWCR)⁷⁴ is the adoption of sustainable development and environment- friendly practices in environmental sanitation and waste management to minimize pollution.⁷⁵ The NESWCR is relevant to the area of waste management and minimization of pollution particularly as it concerns the protection of the environment from the mining of solid minerals in Nigeria. The NESWCR engrained the precepts of polluter pays principle and sustainable practices for protection of the environment as it provided that all generators of wastes, owners, or occupiers of premises where wastes are generated shall be legally and financially responsible for safe disposal of their wastes; generators and managers of wastes are to apply sustainable practices to minimize pollution.

⁶¹Regs. 3 & 7(3)

⁶² Reg. 4

⁶³ 2013

⁶⁴ Reg. 2

⁶⁵ Reg. 2(a)

⁶⁶ Reg. 2(b)

⁶⁷ Reg. 2(d)

⁶⁸ Reg. 2(f)

⁶⁹ Reg. 2(g)

⁷⁰ Reg. 2(i)

⁷¹ Principle 15

⁷² Rio De Janeiro Conference in 1992

⁷³ Regulation 43

⁷⁴ Regulation 106 (1)

⁷⁵ Ibid, 2

4.1.10 National Environmental (Surface and Ground Water Quality Control) Regulations, 2011

The National Environmental (Surface and Ground Water Quality Control) (NESGWQCR) recognises mining activities as one of human activities that degrades water quality through the release or dumping or dumping of substances in waters and therefore prohibits same. The purpose of the NESGWQCR is to restore, enhance and preserve the physical, chemical, and biological integrity of the nation's surface waters, and to maintain existing water uses. It provides for the protection of surface waters from pollutants so that the waters shall be used, developed, conserved, managed, and controlled in ways which *inter alia* take into account the reduction and prevention of pollution and degradation of surface water sources and recognition of the preventive, precautionary and polluter-pays-principles.⁷⁶ The NESGWQCR prohibits the discharge of pollutants into any waters of the nation or activities which will likely result in the violation of water quality.⁷⁷

4.1.11 United Nations Conference on Environment and Development (UNCED) 1992

The United Nations Conference on Environment and Development (UNCED), also known as the 'Earth Summit'⁷⁸ brought together political leaders, diplomats, scientists, representatives of the media and non-governmental organizations (NGOs) from 179 countries for a massive effort to focus on the impact of human socio-economic activities on the environment. A 'Global Forum' of NGOs was also held in Rio de Janeiro at the same time, bringing together an unprecedented number of NGO representatives, who presented their own vision of the world's future in relation to the environment and socio-economic development. The Conference highlighted how different social, economic, and environmental factors are interdependent and evolve together, and how success in one sector requires action in other sectors to be sustained over time.⁷⁹ The primary objective of the 'Earth Summit' was to produce a broad agenda and a new blueprint for international action on environmental and development issues that would help guide international cooperation and development policy in the twenty-first century. The 'Earth Summit' concludes that the concept of sustainable development was an attainable goal for all the people of the world, regardless of whether they are at the local, national, regional, or international level. Similarly, the conference recognizes that integrating and balancing economic, social, and environmental concerns in meeting our needs is vital for sustaining human life on the planet and that such an integrated approach is possible.⁸⁰

4.1.12 United Nations Framework Convention on Climate Change (UNFCCC) 1992

The ultimate objective of the Convention is to stabilize greenhouse gas concentrations "at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system." It states that "such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner." The idea is that, as they are the source of most past and current greenhouse gas emissions, industrialized countries are expected to do the most to cut emissions on home ground. They are called Annex I countries and belong to the OECD. They include 12 countries with "economies in transition" from Central and Eastern Europe. Annex I countries were expected by the year 2000 to reduce emissions to 1990 levels. Industrialized nations agree under the Convention to support climate change activities in developing countries by providing financial support for action on climate change-- above and beyond any financial assistance they already provide to these

⁷⁶ Ibid, 1

⁷⁷ Ibid, 6-8

⁷⁸ Held in Rio de Janeiro, Brazil, from 3-14 June 1992

⁷⁹ United Nations, 'A new Blueprint for International Action on the Environment' (2025) <https://www.un.org/en/conferences/environment/rio1992>

⁸⁰ Ibid

countries. A system of grants and loans has been set up through the Convention and is managed by the Global Environment Facility. Industrialized countries also agree to share technology with less-advanced nations.⁸¹

4.1.13 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal⁸² is the most comprehensive global environmental agreement on hazardous wastes and other wastes. The Convention aims to protect human health and the environment against the adverse effects resulting from generation, transboundary movements and management of hazardous waste and other wastes. The Basel Convention obliges its Parties to ensure that such wastes are managed and disposed of in an environmentally sound manner. The Convention covers toxic, poisonous, explosive, corrosive, flammable, ecotoxic and infectious wastes. Parties also have an obligation to minimize the quantities that are transported, to treat and dispose of waste as close as possible to their place of generation and to prevent or minimize the generation of waste at source.⁸³

4.1.14 Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa

The illicit transboundary movement of hazardous waste remains a serious global challenge and Africa remains a prime destination for hazardous waste generated in the Global North. This situation obtains despite the existence of international and regional legal frameworks regulating the transboundary movement of hazardous waste. Hazardous waste poses a serious threat to the enjoyment of human rights and specifically, the right to a healthy environment. Although not captured in a global treaty, the right to a healthy environment is provided for in the African Charter on Human and Peoples' Rights (ACHPRs), the domestic constitutions of numerous African states and it was also recognised by the United Nations General Assembly (UNGA) in 2022.⁸⁴

Prior to the *Ligue Ivoirienne des Droits de l'Homme and Ors v Côte d'Ivoire (LIDHO case)*,⁸⁵ neither the African Court nor the African Commission had considered the right to a healthy environment in the context of harm caused by hazardous waste. This decision contributes to the jurisprudential growth of the right to a healthy environment and the obligations of states and private entities in upholding this right, especially in the face of harm caused by hazardous waste. Given the recurrence of incidents of dumping of hazardous waste from the Global North in African states, the *(LIDHO case)*⁸⁶ presented a seminal opportunity for the African Court on Human and Peoples' Rights to decide on the consequences of illicit transboundary movement of hazardous waste on the right to a healthy environment and other rights, generally. It broke new ground in the interpretation of the right to a healthy environment and related commitments.⁸⁷

⁸¹ United nations Climate Change, 'What is the United Nations Framework Convention on Climate Change?' (2024) <https://unfccc.int/process-and-meetings/what-is-the-united-nations-framework-convention-on-climate-chang>

⁸² Adopted in 1989 and it came into force in 1992.

⁸³ UN Environment Programme, 'Basel Convention on the Control of Transboundary Movements of Hazardous Wastes' (2019) <https://www.unep.org/resources/report/basel-convention-control-transboundary-movements-hazardous-wastes>

⁸⁴ *ibid*

⁸⁵ Application 041/2016 decided by the African Court on Human and Peoples' Rights (African Court).

⁸⁶ *ibid*

⁸⁷ Simon Waswa, 'HAZARDOUS WASTE AND THE RIGHT TO A HEALTHY ENVIRONMENT: REFLECTIONS ON THE LIDHO DECISION OF THE AFRICAN COURT ON HUMAN AND PEOPLES' RIGHTS' PhD Candidate, Amsterdam Centre for European Law and Governance, University of Amsterdam, Amsterdam, The Netherlands, 2024

4.1.15 African Charter on Human and Peoples' Rights (ACHPRs)

The African Charter on Human and Peoples' Rights (ACHPRs)⁸⁸ is the first regional human rights charter to have engrained a legally binding and justiciable right to a suitable environment. The Protocol to the ACHPRs on the Rights of Women of 2003 also enshrined environmental rights. In addition, the African Commission on Human and Peoples' Rights and the African Court on Human and Peoples' Rights elucidated the scope of environmental rights, as well as the rights of Indigenous Peoples in environmental matters, including the framework of environmental conservation efforts. There is also an increasing acknowledgement among African civil society of the need for a regional framework on environmental rights, including the rights of Indigenous Peoples and communities who rely on natural resources for their cultural, spiritual, or material welfare.⁸⁹

In the case of *the Registered Trustees of the Socio-Economic Rights and Accountability Project (SERAP) v Federal Republic of Nigeria*,⁹⁰ the ECOWAS Court of Justice held the Nigerian government liable for failing to address environmental damage in the Niger Delta. Similarly, in the case of *Gbemre v Shell Petroleum Development Company of Nigeria Ltd & Ors*,⁹¹ the Federal High Court (FHC) ruled that the fundamental rights to life and dignity include the right to a clean and healthy environment.

5.1 Institutional Framework

This section reviews the structure of the institutions, their compliance with the relevant laws and effectiveness in translating the letters of law in the domain of implementation and execution for the regulation of environmental pollution from mining activities in Nigeria.

5.1.1 National Environmental Standards and Regulations Enforcement Agency (NESREA)

The National Environmental Standards and Regulations Enforcement Agency (NESREA) was established by the NESREA Act⁹² for the protection and development of the environment, biodiversity conservation and sustainable development of Nigeria's natural resources in general and environmental technology, including coordination and liaison with relevant stakeholders within and outside Nigeria on matters of enforcement of environmental standards, regulations, rules, laws, policies, and guidelines.⁹³

The functions of NESREA as articulated in NESREA Act⁹⁴ relate directly or indirectly to the issue of mining of solid minerals and its effects on environmental degradation could be found in enforcing compliance with viz; laws, guidelines, policies and standards; international agreements, protocols, conventions and treaties on the environment; importation, exportation, production, distribution, storage, sale, use, handling and disposal of hazardous chemicals and waste other than in the oil and gas sector; coordinating and liaising with stakeholders

⁸⁸ As of 2025, all 54 African nations have formally recognized the right to a healthy environment in their constitutions, national legislation, and/or by ratifying the African Charter on Human and Peoples' Rights.

⁸⁹ Tawonga Chihana, 'Advancing a Regional Framework on Human Rights and the Environment' (2025) Natural Justice <https://naturaljustice.org/advancing-a-regional-framework-on-human-rights-and-the-environment/>

⁹⁰ ECW/CCJ/APP/07/10

⁹¹ FHC/CS/B/153/2005 (Unreported)

⁹² s. 1(1) of the NESREA (Establishment) Act.

⁹³ s. 2

⁹⁴ ss. 7 (a), (b), (c), (d), (e), (g), (h), (j), (k) of NESREA Act

on enforcement; ensure environmental control measures through registration, licensing and permitting systems and to establish data bank on regulatory and enforcement mechanisms of environmental standards.⁹⁵

The other powers of NESREA include to prohibit the processes and use of equipment or technology that undermine environmental quality;⁹⁶ conduct field follow-up of compliance with set standards and take procedures prescribed by law against any violator;⁹⁷ conduct public investigations on pollution and the degradation of natural resources, except investigations on oil spillage;⁹⁸ submit for the approval of the Minister, proposals for the evolution and review of existing policies, regulations and standards on environment other than in the oil and gas sector including atmospheric protection, air quality, ozone depleting substances, noise control, other forms of pollution and sanitation, and control of hazardous substances and removal control methods;⁹⁹ establish programmes for setting standards and regulations for the prevention, reduction and elimination of pollution and other forms of environmental degradation in the nation's air, land and oceans, seas and other water bodies and for restoration and enhancement of the nation's environment and natural resources, etc.¹⁰⁰ However, the functions and powers of the Agency do not extend to the oil and gas sector, as the Act¹⁰¹ exclude the oil industry from its activities.

5.1.2 Federal Ministry of Environment

The Federal Ministry of Environment is responsible for an ecologically balanced and healthful environment, and for general protection of the environment in Nigeria.¹⁰² Since its establishment, the Ministry has impacted on raising the consciousness of Nigerians on the issue of environmental protection as well as ensuring improved interface and adoption of global environmental best practices.¹⁰³ Towards achieving its goal, the Ministry ensures the effective integration and co-ordination of all environmental matters and formulates policies and programmes on environmental protection and natural resources conservation for sustainable development in Nigeria.¹⁰⁴

In the area of environmental pollution from mining of solid minerals, the Ministry collaborates with the Federal Ministry of Mines and Steel Development (FMMSD) and other government Agencies like NESREA to holistically tackle the challenges of environmental degradation in Nigeria.¹⁰⁵ This is in the light of the realization that a conflict regime might arise in the exercise of relevant powers by the Minister of Mines and Steel Development and the Minister of Environment to make regulations pursuant to provisions of the NMMA and the NESREA Act, respectively.

5.1.3 Federal Ministry of Mines and Steel Development (FMMSD)

The Federal Ministry of Mines and Steel Development (FMMSD) was established in June 1995 as the Federal Ministry of Solid Minerals Development to accelerate the development of the country's solid mineral

⁹⁵ M. A. Adedayo, 'Environmental Risk and Decommissioning of Offshore Oil Platforms in Nigeria' 13 1 (2011) NIALS Journal of Environmental Law

⁹⁶ s. 8(d), NESREA (Establishment) Act, No. 25, 2007

⁹⁷ s. 8(e)

⁹⁸ s. 8(g)

⁹⁹ s. 8(k)

¹⁰⁰ s. 8(o)

¹⁰¹ Ss. 7 (k) and 8 (s)

¹⁰² ss. 147 & 148 CFRN 1999

¹⁰³ Ibid

¹⁰⁴ Nigeria National State of the Environment Report, Abuja, 2008 p.lxx

¹⁰⁵ V. O. A. Okhaevbo, 'Environmental Regulatory Standards: Problems of Enforcement in An Emerging Economy' 3 (2005) Igbinedion University Law Journal

resources.¹⁰⁶ The Ministry is charged with the responsibility of exploiting Nigeria's steel and solid minerals with a view to achieving the following: - import substitution; local infrastructural development; increased foreign exchange (FOREX) earnings; enhanced tax revenue; industrialization; poverty alleviation and job creation.¹⁰⁷

The Ministry has various departments, units and some agencies as provided for in the NMMA.¹⁰⁸ The key technical department of the Ministry is the Mines Environmental Compliance Department whose functions include reviewing all plans, studies and reports required to be prepared by the holders of Mineral title in respect of their environmental obligations under the NMMA; monitoring and enforcing compliance by holders of mineral title with all environmental requirements and obligations established pursuant to the Act.¹⁰⁹ The other key department is the Mines Inspectorate Department, responsible for exercising general supervision over all reconnaissance, exploration and mining operations, supervising and enforcing compliance by mineral title holders with all mine health and safety regulations, and any other law in force, carrying out investigations and inspections necessary to ensure that all conditions relating to mineral titles and requirements of the NMMA are complied with, and reviewing and recommending to the Minister, programmes for controlling mining operations. The Departments were created to coordinate their operations to protect the environment from degradation by the mining of solid minerals.¹¹⁰

5.1.4 Mining Cadastre Office (MCO)

The NMMA established the Mining Cadastre Office (MCO) as an independent body charged with the responsibility of processing and issuing of mining leases, licences and permits. It is charged with the primary responsibility for the administration of Mineral titles and maintenance of the cadaster registers in Nigeria.¹¹¹ The overall objective is to guarantee the protection of the environment from degradation from mining of solid minerals by ensuring that only eligible and qualified persons are granted licences, leases and permits in the solid mineral mining sector. The NMMA¹¹² provides that in the execution of his functions and relationship with the MCO, the Minister shall always ensure the independence of the MCO regarding the discharge of its functions and operations under the Act.

5.1.5 State Ministries of Solid Mineral Resources

By virtue of the provisions of the CFRN1999¹¹³ and the NMMA 2007¹¹⁴ all mineral resources are vested in the Federal Government of Nigeria. Despite the foregoing, some States blessed with solid minerals including Nasarawa, Kogi and Plateau have created Ministries of Solid Mineral Resources to promote the exploitation of these resources within their States. These State Ministries responsible for Solid Mineral Resources are to collaborate with the FMMSD and other relevant agencies for the exploitation of these resources. The NMMA¹¹⁵ establishes the MIREMCO whose membership includes representatives of States responsible for land matters or mineral related matters. The functions of MIREMCO includes discussing, considering, and advising the Minister on matters affecting pollution and degradation of any land on which any mineral is being extracted; considering such other matters relating to mineral resources development within the State as the Minister may, from time to

¹⁰⁶ NMMA, No. 20, 2007

¹⁰⁷ Mines & Steel Review 11 (2009) 6

¹⁰⁸ s. 16 (1)

¹⁰⁹ s. 18

¹¹⁰ s. 17(a) (b) (f) and (h)

¹¹¹ ss. 5 (1) and 15 of the NMMA

¹¹² s. 15

¹¹³ s. 44(3)

¹¹⁴ s. 1

¹¹⁵ s. 19(2)(b)

time, refer to MIREMCO; advising the Local Government Areas and communities on the implementation of programs for environmental protection and sustainable management of mineral resources.

5.1.6 Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF)

The Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF) supports its more than 80 member countries in advancing their sustainable development goals (SDGs) through effective laws, policies, and regulations for the mining sector. The work of the Organisation covers the full mining life cycle, from exploration to mine closure, and projects of all sizes, from artisanal mining to large-scale operations. The Organisation provides in-country assessments, capacity building, technical training, publications, and other events to advance best practices, peer learning, and engagement with industry and CSOs.¹¹⁶

The Organisation also provides a forum for dialogue between member- country governments, mining companies and industry players, and represents a growing network of leaders seeking to enhance the contribution of the mining sector to sustainable development. IGF annual sessions and regional meetings convene high-level representatives from developing-country governments, donor agencies, international organizations, CSOs, and the private sector, fostering coordinated action in strengthening good governance in the mining sector.¹¹⁷

5.1.7 United Nations Environment Programme (UNEP)

The United Nations Environment Programme (UNEP) is responsible for coordinating responses to environmental issues within the United Nations (UN) system. It is the principal global environmental power that sets the world's environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the UN system and serves as an authoritative promoter for the environment.¹¹⁸ UNEP key activities include promoting investment in clean technologies to reduce emissions, protecting biodiversity and ecosystems, alleviating poverty, and ecosystem-based adaptation to reduce human vulnerability and strengthen resilience to the impacts of climate change.¹¹⁹

6.1 Challenges of Environmental Pollution from Mining of Solid Minerals in Nigeria

Despite the importance of mining of mineral resources to Nigeria's economic development, it is not devoid of challenges. Some of the challenges are discussed below.

6.1.1 Inadequate Regulation

Inadequate regulation and weak policy enforcement are central challenges for the regulation of environmental pollution from mining of solid minerals in Nigeria. Despite the wide powers, functions and roles articulated for NESREA and the relevant Regulations issued pursuant to the NESREA Act for the purpose of ensuring the protection of the environment, cases of environmental pollution still pervade all over the country with instances including but not limited to the ravage of the environment in Jos-Plateau, Okaba mines, Sagamu-Ewekoro and

¹¹⁶ Green Policy Platform, 'Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF)' (2024) <https://www.greenpolicyplatform.org/organization/intergovernmental-forum-mining-minerals-metals-and-sustainable-development-igf>

¹¹⁷ UN, 'Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development' <https://unctad.org/fr/meeting/intergovernmental-forum-mining-minerals-metals-and-sustainable-development-1>

¹¹⁸ UNEP, 'United Nations Environmental Programme' (2024) <https://www.linkedin.com/company/unep/about/>

¹¹⁹ UNEP, 'UN Environment Programme' (2024) <https://www.greenclimate.fund/ae/unep>

the Zamfara lead poisoning calamity.¹²⁰ Even where laws and regulations exist, government agencies lack the capacity to effectively enforce them. Similarly, unclear legal framework and inconsistent policies create uncertainty that deters investment from reputable mining firms.¹²¹

6.1.2 Rise in Illegal Mining Activities

Illegal mining presents several challenges such as increased environmental damage and health crises for residents in the mining areas. Illegal mining also constitutes security risks such as banditry, kidnapping, and other violent crimes. Illegal mining of solid minerals often bypasses environmental regulations and employs highly damaging methods.¹²²

In the case of *FRN v Nura Lawal & 1 Or*,¹²³ individuals were arraigned by the FHC in Ibadan for illegal mining and transporting solid minerals without lawful authority. Similarly, in *Federal Government v Lideal Mines Ltd and Etong Agrotech Nigeria Ltd*,¹²⁴ over N2.7 billion was ordered to be forfeited. This sum was identified as proceeds from illegal mining operations in the Endo community of Nasarawa State. These cases demonstrate the use of non-conviction-based asset forfeiture procedures in the mining sector to deprive criminals of the proceeds of their unlawful activities.

6.1.3 Poor Implementation of Environmental Protection Measures

Poor implementation of environmental protection measures can create environmental pollution, as well as social and economic tensions with immediate impact on the host communities.¹²⁵ This may result in inadequate environmental and social safeguards, leading to unchecked environmental pollution and health hazards in host communities.¹²⁶ In addition, compliance with the NMMA are minimal and enforcement and supervision are non-existent. Thus, the goal of the MMSD can hardly be achieved on the basis of inefficiencies and poor supervision.¹²⁷ In the case of *Gbemre v Shell Petroleum Development Company of Nigeria Ltd.*,¹²⁸ the FHC ruled that constant gas flaring was a violation of the fundamental human rights to life and dignity, as enshrined in the

¹²⁰ Victor Akidi, Ibeinmo Friday Cockey and Olu Isaac Oladosu, 'Solid Mineral production and Environmental Pollution' 8 11 (2024) International Journal of Research and Scientific Innovation 2321 2705

¹²¹ Aderemi Fagbemi and Oluchi Mogbenwelu, 'Overview of the Nigerian Mining Sector: Challenges and Opportunities' (2024) Mondaq [https://www.mondaq.com/nigeria/oil-gas-electricity/1475366/overview-of-the-nigerian-mining-sector-challenges-and-](https://www.mondaq.com/nigeria/oil-gas-electricity/1475366/overview-of-the-nigerian-mining-sector-challenges-and-opportunities#:~:text=There%20are%20a%20number%20of,greenfield%20and%20perhaps%20brownfield%20investors.)

[opportunities#:~:text=There%20are%20a%20number%20of,greenfield%20and%20perhaps%20brownfield%20investors.](https://www.mondaq.com/nigeria/oil-gas-electricity/1475366/overview-of-the-nigerian-mining-sector-challenges-and-opportunities#:~:text=There%20are%20a%20number%20of,greenfield%20and%20perhaps%20brownfield%20investors.)

¹²² Olusola Joshua Olujobi and Oshabugie Suleiman Irumekhai, 'Strategies and Regulatory Measures for Combating Illicit Mining Operations in Nigeria: A Comprehensive Legal Perspectives' 88 (2024) ScienceDirect <https://www.sciencedirect.com/science/article/abs/pii/S0301420723011704?via%3Dihub>

¹²³ Decided May 22, 2024

¹²⁴ Solomon Odeniyi, 'Court Orders Forfeiture of N2.7 bn Proceeds of Illegal Mining' Punch (Abuja, 16 October 2024) <https://punchng.com/court-orders-forfeiture-of-n2-7bn-illegal-mining-proceeds/>

¹²⁵ Ali Naibbi and Murtala Chindo, 'Mineral Resource Extractive Activities in Nigeria: Communities also Matter' 8 9 (2020) Journal of Geoscience and Environmental Protection 212 229

¹²⁶ Micah Ezekiel, Elton Mike and Ibitomi Taiwo, 'Problems and Strategies for Exploration of Solid Minerals resources in Nigeria' (2020) Semantic Scholar <https://www.semanticscholar.org/paper/Problems-and-Strategies-for-Exploration-of-Solid-in-Mike-Taiwo/a19bd112a8c02f6040fc365fed9d1dd0285bod75>

¹²⁷ Adeyinka O. Omotehinse and Bankole D. Ako, 'The Environmental Implications of the Exploration and Exploitation of Solid Minerals in Nigeria with a Special Focus on Tin in Jos and Coal in Enugu' 18 1 (2019) Journal of Sustainable Mining 18

¹²⁸ (n. 91)

Nigerian Constitution and the African Charter on Human and Peoples' Rights. The court, therefore, ordered the cessation of the activity.

6.1.4 Socioeconomic Challenges

The uneven distribution of wealth generated from mining activities in Nigeria can exacerbate inequality, leading to social tensions, conflicts, and issues related to land rights. In addition, the lucrative nature of the mining sector in Nigeria can fuel corruption, mismanagement of resources, and lack of transparency in decision-making processes. Moreover, overreliance on mineral resources can make the Nigerian economy vulnerable to fluctuations in global commodity prices, hindering diversification efforts and long-term sustainable development,¹²⁹ as well as loss of farmland, food insecurity, social conflicts, and disruption of community life.

6.1.5 Land Degradation and Soil Pollution

Mining of solid minerals in Nigeria causes significant land degradation (erosion, deforestation, pits) and soil pollution (heavy metals, chemical contamination from waste), destroying arable land, habitats, and ecosystem function, leading to poor soil fertility, altered public health, and health risks, largely due to unregulated artisanal mining and poor mine site management. These effects occur from the exploration stage to the closure stage of a mine's operation.¹³⁰

7.1 Way Forward for Environmental Pollution from Mining of Solid Minerals in Nigeria

The way forward for environmental pollution from mining of solid minerals in Nigeria are vast. However, some are discussed below.

7.1.1 Strong Regulatory Enforcement with Strict Penalties

Regulatory enforcement combined with strict and punitive penalties is a critical path to mitigating the severe environmental pollution caused by mining of solid minerals in Nigeria. While legal frameworks exist, such as the NMMA 2007 and the NESREA Act, weak oversight and low compliance rates have exacerbated land degradation, water contamination, and health hazards.

Existing fines are inadequate for deterrence and requires to be updated to reflect the gravity of the environmental harm. Criminal prosecution, including jail terms for corporate executives, forfeiture of machinery, land, and illegally acquired minerals as well as ensuring that victims of environmental pollution from mining of solid minerals receive adequate compensation¹³¹ should be introduced.

¹²⁹ Gauth, "Five Problems Associated with Exploitation of Mineral Resources in Nigeria" (2025) <https://www.gauthmath.com/solution/1801506482460678/C-Describe-5-problems-associated-with-the-exploitation-of-mineral-resources-in-N>

¹³⁰ Adeyinka O. Omotahinse and bankole D. Ako, 'The Environmental Implications of the Exploration and Exploitation of Solid Minerals in Nigeria with a Special Focus on Tin in Jos and Coal in Enugu' 18 1 (2019) *Journal of Sustainable Mining* 1824

¹³¹ Ahmed Fate Ali, Amina S. Abdullahi and Aminu Suleiman Zangina, 'Environmental Issues and Prospects of Mining in Nigeria' (2018) ResearchGate

https://www.researchgate.net/publication/374416253_Environmental_Issues_and_the_Prospects_of_Mining_in_Nigeria

7.1.2 Mandatory Environmental Impact Assessments (EIAs)

Immediate enforcement activities, such as ending illegal mining activities and sanctioning those without approved EIAs, are necessary. A major factor in environmental pollution is the high rate of illegal, artisanal, and small-scale mining that bypasses regulation, requiring urgent formalization and monitoring. In addition, it is important to enforce mandatory site rehabilitation with stricter oversight to ensure that abandoned pits (like those in Jos and Zamfara) are remediated.¹³²

7.1.3 Land Reclamation

The Nigerian Mineral Mining Act 2007 requires mining companies to reclaim land concurrently with their operations, rather than waiting for mine closure. Land reclamation is a critical, albeit underutilized, strategy for mitigating the severe environmental, health, and safety hazards caused by mining of solid minerals in Nigeria. Decades of, often unregulated, mining, particularly for coal in Enugu and tin/columbite on the Jos Plateau have left behind over 1,200 abandoned mining sites characterized by degraded land, toxic mining ponds, and soil erosion. Implementing robust land reclamation is crucial to restoring ecosystem balance, agricultural land, and preventing further environmental pollution.¹³³

7.1.4 Integrating Sustainable Practices

Integrating sustainable practices into the mining of solid minerals sector in Nigeria is crucial to mitigating the severe environmental pollution caused by traditional mining. This involves a combination of adopting green technologies, strict regulatory enforcement, and community-focused rehabilitation efforts, with a significant shift toward formalized artisanal mining and circular economy principles. Essentially, future mining must adopt environmentally conscious methods, such as utilizing renewable energy and, in some cases, converting land to recreational or agricultural use.¹³⁴

7.1.5 Remediation

The struggle to earn a livelihood amidst unsafe mining practices releases tons of lead dust into the air, soil surfaces, drinking water, edible plant leaves and fruits, affecting residents, most of them children.¹³⁵ By combining green technologies with robust policy, funding, and direct cleanup actions, Nigeria can tackle environmental pollution from mining of solid minerals and restore degraded lands. Moving forward, government

¹³² Startup Tips Daily, '25+ Lucrative Mining Business Ideas and Opportunities in Nigeria' (2024) <https://startuptipsdaily.com/mining-business-ideas-and-opportunities/>

¹³³ Nicholas Nwede, 'Five Emerging Mineral Resources in Nigeria' (2025) <https://energycapitalpower.com/five-emerging-mineral-resources-in-nigeria/>

¹³⁴ D. G. Tsado and O. G. Ugwu, 'Development of Solid Minerals in an Environmentally and Socially Sustainable Mining' 32 2 (2017) Journal of Nigerian Society of Chemical Engineers https://www.nsche.org/Journal/assets/JNSChE/2017%20Edition/Articles/DEVELOPMENT_OF_SOLID_MINERALS_IN_AN_ENVIRONME_4948.pdf

¹³⁵ Anka S. A., Sanda A, et al, 'Environmental Effects of Lead Combination of Mining Communities in Zamfara State, Nigeria: A Review' 9 9 (2020) Journal Biology and Today's World' <https://www.iomcworld.org/articles/environmental-effect-of-lead-combination-of-mining-communities-in-zamfara-state-nigeria-a-review-56745>

must prioritize the enforcement of environmental laws and regulations and actively invest in the remediation of abandoned mining sites.¹³⁶

7.1.6 Fostering Community Involvement

Fostering community involvement is a critical pathway for mitigating environmental pollution from mining of solid minerals in Nigeria. Empowering host communities to engage in oversight and decision-making¹³⁷ as well as providing training and education on the dangers of pollution, their rights, and techniques for sustainable environmental management can reduce negative environmental impacts, such as water contamination, land degradation, and air pollution, resulting from both legal and ASM.¹³⁸ By addressing these challenges through formalization, education, and strengthening the legal voice of local communities, Nigeria can transform its solid mineral sector from a source of pollution into a driver of sustainable development.

RECOMMENDATIONS

To address challenges in Nigeria's solid mineral mining, the following recommendations are made.

1. Strengthening legal and regulatory frameworks and promoting responsible mining practices. Specific actions involve securing private investment through clear policies and land tenure, establishing a dedicated fund for environmental protection, using public-private partnerships for infrastructure, and enforcing CDAs to benefit host communities. In addition, create a stable and transparent regulatory environment to attract private and foreign investment.
2. Enforce environmental and social responsibilities by mandating and enforcing responsible mining practices, mine reclamation, and community benefit-sharing agreements. This can be achieved through collaboration with financial institutions to create tailored financial products to help businesses access capital. Thus, establishing a fund specifically for the environmental protection measures required by mining activities can serve this purpose.
3. Prioritize development of roads, power, and water access in mining regions, potentially through public-private partnerships as well as provide secure tenure for private operators to encourage long-term investment and clarify and consistently apply mining and land tenure regulations. In addition, invest in education and training to increase the number of qualified professionals in the sector.
4. Implement strategies to formalize artisanal and illegal mining operations, create a safer environment, require companies to engage with communities, ensure their participation, and respect the terms of their MOUs or CDAs. In addition, improve security in mining areas to ensure the safety of workers and communities and improve transparency in the sector to better track revenue and manage informal transactions.

CONCLUSION

¹³⁶ Ebinna Ede, 'Top 16 Investment Opportunities in Nigeria's Mineral Processing Industry' (2024) <https://nigerianmineralexchange.com/top-16-investment-opportunities-in-nigerias-mineral-processing-industry/?srsltid=AfmBOooHJKXaSIYSuWI7EA3D2Nk7ujJtIXHD6avC2qVg4sUQ2FvpBGBv>

¹³⁷ Aminu Salihu Muazu, Sarki Aliyu Salihu, Mustapha Saidu Abdullahi, et al, 'Environmental Impacts of Mineral Exploration and Mining in Nigeria: A Critical Review' (2025) ResearchGate https://www.researchgate.net/publication/397080632_Environmental_impacts_of_mineral_exploration_and_mining_in_Nigeria_A_critical_review

¹³⁸ Itohan Otoijamun, Moses Kigozi, Sikiru Ottan Abdulrahman, et al, 'Fostering the Sustainability of Artisanal and Small-Scale Mining (ASM) of Barite in Nasarawa State, Nigeria' (2021) MDPI <https://www.mdpi.com/2071-1050/13/11/5917>

Mining of solid minerals typically affects environmental components, such as air, water and land leading to the loss of biodiversity. It also has its toll on the health of the mining communities. However, if sustainable and modern methods are adopted, mining may have a positive impact on the environment and its host communities.

The challenges of environmental pollution from the mining of solid minerals in Nigeria are a complex mix of inadequate infrastructure, an unstable regulatory environment, significant security concerns including rampant illegal mining. The sector is plagued by unstable legal framework, policy inconsistencies, political interference, and weak enforcement of regulations. The absence of an independent regulatory commission means regulatory functions remain within a ministry, creating potential for conflicts of interest and lack of transparency. In addition, widespread illegal mining and associated community conflicts and banditry create an unsafe operating environment means that the sector is dominated by inefficient and often unsafe artisanal mining practices. The negative environmental and social consequences of unaddressed mining operations, such as land degradation, pollution, and health hazards, often lead to hostility between host communities and mining entities, further destabilizing the sector.

By addressing existing challenges such as security concerns, and illegal mining, Nigeria can harness the potential of its abundant mineral reserves to achieve sustainable economic growth. Similarly, improving legislation and regulations, proper environmental management systems, proper mines closure and site reclamation processes should be adopted as strategies to combat the negative effects of environmental pollution from mining solid minerals in the country.

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