AN APPRAISAL OF THE LEGAL AND INSTITUTIONAL FRAMEWORK FOR REGULATING THE IMPACTS OF MINING OF MINERALS ON THE ENVIRONMENT IN NIGERIA

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OCTOBER, 2017

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FACULTY OF LAW,

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ZARIA, NIGERIA

OCTOBER, 2017

DECLARATION

I declare that thework in the thesisentitled “An Appraisal of the Legal and Institutional Framework for Regulating the Impacts of Mining of Minerals on the Environment in Nigeria” has been written by me under the supervision of Dr. I.F. Akande, Prof. A.I. Bappahand Dr.Abdulkarim Ibrahim.

The information derived from the literature has been duly acknowledged in the thesis and a list of references provided. No part of this thesis was previously presented for another degree or diploma at any University.

Adamu Sani ISAKOTO _____ _____

Signature Date

CERTIFICATION

This thesis entitled: “An Appraisal of the Legal and Institutional Framework for Regulating the Impacts of Mining of Minerals on the Environment in Nigeria,” by Adamu Sani ISAKOTO meets the regulation governing the award of the degree of Doctor of Philosophy of Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This PhD thesis is dedicated to the memory ofmy late GrandfatherAlhaji Isa Koto for his enduring and indelible contributions to the educational development, unity and progress of Nigeria; and for providing enduring legacy of selfless service, discipline, exemplary life style and forthrightness. May Allah grant him Aljanatfirdaws (ameen).

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ABBREVIATIONS

Abbreviation	Meaning
AC	Appeal Cases
ACJA	Administration of Criminal Justice Act
AfDB	African Development Bank
All FWLR	All Federation Law Report
All NLR	All Nigeria Law Report
ASM	Artisanal and Small Scale Miners
ASMD	Artisanal and Small Scale Mining Department
CBD	Convention on Biological Diversity
CDA	Community Development Agreement
CFRN	Constitution of the Federal Republic of Nigeria, 1999
CPA	Criminal Procedure Act
CPC	Criminal Procedure Code
CSD	Commission on Sustainable Development
ECOWAS	Economic Community of West African States
E.I.A	Environmental Impact Assessment
E.I.A Act	Environmental Impact Assessment Act
E. L.R	English Law Report
FWLR	Federation Weekly Law Report
GDP	Gross Domestic Product
GEF	Global Environmental Facility
HL	House of Lords
H.W.A	Harmful Waste (Special Criminal Provisions, etc) Act
L.A.	Labour Act
LDCs	Less Developed Countries
LFN	Laws of the Federation of Nigeria

LFN &L	Laws of the Federation of Nigeria and Lagos
LUA	Land Use Act
MEC	Mines and Environmental Compliance Department
MID	Mines Inspectorate Department
NECO	National Examination Council
NEITI Act	Nigeria Extractive Industries Transparency Initiative Act
NESREA	National Environmental Standards and Regulatory Enforcement Agency
NESREA Act	National Environmental Standards and Regulatory Enforcement Agency (Establishment) Act
NIALS Journal	Nigerian Institute of Advanced Legal Studies Journal
NLR	Nigerian Law Report
NMMA	Nigerian Minerals and Mining Act
NMMP	National Minerals and Mining Policy
NMMR	Nigerian Minerals and Mining Regulations
NPE	National Policy on Environment
NSCQR	Nigerian Supreme Court Quarterly Review
NSOER	Nigeria National State of the Environment Report
NSRPA	National Safety and Radiation Protection Act
PPP	Polluter Pays Principle
POPA	Public Officers Protection Act
PPE	Personal Protective Equipment
S.C	Supreme Court
SMMRP	Sustainable Management of Mineral Resources Project
TNC	Trans-national Corporations
UN	United Nations

UNCED	United Nations Convention on Environment and Development
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
USSC	United States Supreme Court
WACA	West African Court of Appeal

ABSTRACT

Mining of solid minerals is one of the world's important industries. Nigeria is blessed with about 44 solid minerals spread over the six geo-political zones of the country where mining activities occur. No matter the type of technology used, environmental degradation is a natural consequence of mining of solid minerals. While mining of solid minerals is important for economic growth and development it has deleterious consequences or impacts on the environment. The need to strike a balance between these issues is sacrosanct. Hence, laws, regulations and policies have been enacted or specified to ensure sustainable development of the sector. Also, government ministries, agencies and establishments have been set up and given powers, functions and responsibilities to implement relevant laws and regulations. In spite of measures put in place to ensure protection of the environment from the impacts of mining of solid minerals, poor enforcement and non-compliance with extant laws and regulations continue to constitute bane to the protectionof the environment against the negative impacts of mining activities in Nigeria.The aim of this research is to appraise the role of legal and institutional frameworksfor regulating the impacts of mining of solid minerals on the environment in Nigeria. This thesis therefore *inter alia* examines the impacts of mining on environment, human health, livelihood, biodiversity, climate change and sustainable development goals; and analysis of legal responses to environmental degradation. One of the objectives of this research is to identify and analyse the problems and challenges associated with the effective enforcement of mining and environmental laws and regulations in the mining industry in Nigeria. The doctrinal and empirical methods of research were utilised in the research work. Under the doctrinal method, both primary and secondary sources of documents were consulted; while the empirical method entailed the administration of questionnaires to populations and data obtained were accordingly analysed. Consequent upon the foregoing, the findings of the research on the reasons for the prevalent cases of environmental degradation by the mining of solid minerals include the lack of enforcement of relevant laws and regulations. Therefore, the work recommends that our laws should be enforced by relevant government agencies charged with such mandate.

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CHAPTER ONE

GENERAL INTRODUCTION

1.1 Background to the Study

Nigeria is endowed with vast reserves of solid minerals.[1] Almost all corners of Nigeria is blessed with solid mineral assets.[2] Minerals extraction is an integral part of human civilization.[3]No matter the method and technology used, mineral mining generally has some damaging effects on the environment.[4] Consequently, the exploitation of solid minerals has been viewed from different perspectives by various scholars, analysts and interest groups.[5] While some view the exploitation of such resources as necessary to provide basic societal or national needs, and thus ensure human sustenance and development[6], others have considered the exploitation of these resources as a curse,[7] cavalier, wanton waste and selfish; asserting that someAfrican and Asian countries, have exploited theseresources in unsustainable and inequitable manner.[8]

Solid minerals belong to the category of non-renewal resources;[9] meaning that, their quantities as endowed by nature, once exhausted, cannot be replenished neither can they renew themselves. It

[1]Ajayi, A. et al (2012). "Nigerian Mining Sector." https://www.kpmg.com, p.1; accessed on 14th November, 2016

[2]"Nigeria's Solid Minerals Sector: Alternative Investment Opportunities." Being Paper Presented by Dr. Kayode Fayemi at Chatham House Royal Institute of International Affairs, London on 19th May, 2016 p.4; http://www.chathamhouse.org; accessed on 14th November, 2016

[3] James I. (2005). "Minerals Mining and the Nigerian Environment Today".*The African Journal for Environmental Law & Development Studies,* Vol. 1 Part 1, p.204

[4]*Ibid*, p.205

[5]Amponsah-Tawaih, K. &Dartey-Baah, K. (2011). "The Mining Industry in Ghana: A Blessing or Curse", International Journal of Business and Social Science, Vol. 2, No.12, p.67. www.ijbssnet.com. Assessed on 22nd August, 2017.

[6]Mobtaker, M.M. &Osanloo, M. (2014)."Positive Impacts of Mining Activities on Environment." www.researchgate.net. Assessed on 29th September, 2017.

[7]Oke, Y. (2009). "Philosophical Basis of Mining Sustainability in Africa: A Nigerian Perspective". In: Akanki, E.O *et al*. (eds.) *OlabisiOnabanjo University Law Journal* (2009) 1, p.164 where the scholar made reference to the "Dutch Disease" and "Resource Curse" theories of mining of mineral resources.

[8]*Ibid*, pp.171 & 172

[9]Akper, P.T. (2011). "Addressing Environmental Concerns in the Exploitation of Solid Minerals in Nigeria:

is therefore clear that mineral resources are non-renewable assets and mining activities impact negatively on the environment.[10]

Mining of solid minerals is one of the world's important industries and is the world's second oldest industry after agriculture.[11] Mining is a global industry, contributing to both national and global economic growth for over 100 years. Mineral resource exploitation may have the likelihood of degrading the environment and contributing to Green House Gas (GHG) emissions and Climate Change. Climate Change may also have possible implications on mining activities.[12] A discussion of the contributions of mining activities to the economic development of nations has also been highlighted in terms of *inter alia* wealth creation and Gross Domestic Products. Few examples of countries considered in terms of the contribution of mining to their GDP include Canada, Ghana, Botswana, DRC, South Africa and Nigeria.

For instance, in Canada, mining is one of the most important economic sectors and a major job creator. Approximately 375,000 people across Canada work in the mining and processing industries. Mining is the largest employer of Aboriginal peoples in Canada on a proportional basis and employment is poised to increase.[13]Mining contributed S36 billion to the country's GDP in 2010; 29% of the value of exports and earned S84 billion in taxes and royalties to the government. In addition, Canada has over 5,000 companies that have created jobs and economic growth for over 115 communities and employed 308,000 Canadians in 2010.[14] In 2014, mining

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Issues, Problems and Prospects." In: Fagbohun O. (ed.) *NIALS Journal of Environmental Law,* Vol. 1, p.183, foot note1; also at p.187

[10]National Minerals and Metals Policy, 2008p.8

[11]Amponsah-Tawaih, K. &Dartey-Baah, K., *op cit*, p.62.

[12]"Solutions to Climate Change." http://www.greenpeace.org. Accessed on 30th November, 2016

contributed S57 billion to the GDP and accounted for 18.2% of the value of Canadian goods export.[15]

In another instance, despite a declining contribution to GDP and employment, South Africa's minerals value chain remains a pillar of its economy and makes South Africa major global player, accounting for a significant proportion of world production and reserves. The South Africa mining sector contributes 8.6%- some R263 million to GDP, creating over 500,000 direct jobs and an additional 500,000 indirect jobs. It accounts for 50% of forex, 12% of investment and 13.2% of corporate tax receipts.[16]

The mining industry in Ghana is known to play a significant role in the country's growth and development as well as different economic sectors. The industry is the largest contributor, contributing to 35% of the country's export and 5% of GDP; it provides 1% of the country's total employment.[17] Mining activities have ensured the development of infrastructure within different parts of the Country and enhanced the creation of industries. It generates USD 79m as government proceeds, the most significant of all is the direct royalty worth USD 42m it contributes. Mining in general also creates 7% employment opportunities in the informal sector. It contributes 5% of GDP.[18]

In Nigeria, the contribution of the sector to the GDP was 0.28% in 2006, 0.34% in 2010, 0.36% in 2011, 0.6% in 2012, 2013 and 2014.[19]In a recent publication,[20] it was stated that the mining sector accounts for 0.3% of the national economy, 0.2% of exports and about USD 1.4 billion to

[15]http://mining.ca. Accessed 7th November, 2016
[16]http://www.brandsouthafrica.com; accessed on 3rd November, 2016
[17]http://www.bestessayservices.com; accessed on 21st November,2016
[18]*Ibid*
[19]Ladan, M. T (2014).*Natural Resources and Environmental Law and Policies for Sustainable Development in Nigeria*. AhmaduBelloUniversity Press Limited, Zaria, p.358
[20]*Nigeria's Mining and Metal Sector Investment Promotion Brochure, August 2016*. Prepared by Deloitte for Federal Ministry of Mines and Steel Development; http://www.deloitte.com; accessed 13th November, 2016

the Nigerian GDP. In 2015, the contribution of the sector to the economy was put at between 0.5%-0.6% of the Country's GDP. These contributions appear to be insignificant when viewed particularly against the potentials and opportunities that could be derived from the industry. In other African Countries contribution to GDP is higher; for example, in Botswana it is 40%and DRC 25%.[21]

On the flip side of the foregoing account, are the negative impacts of mining on local and global environment, resulting in the degradation of the environment and its bearing on general earthly livelihood and sustainability. The devastating and deleterious impacts or effects of mining all over the world is by degradation of the general environment-land, air and water; human health; biodiversity and sustainable development. An important area or aspect of the contribution of mining to the degradation of the environment worth mentioning is the emerging issue of climate change and how climate change can impact on the mining sector.[22] Consequently, a discourse of the projected or potential effects of climate change on the mining industry and the reverse effects of climate change on mining activities would, be considered in due course.

Against the above backdrop of the general impacts of mining on the environment, global, regional and national legal standards have been developed and complied with by the mining industry to address environmental impacts towards ensuring that mining becomes more sustainable and responsible in its contribution to development, especially Sustainable Development Goals (SDGs) today. At the global level numerous conventions, treaties and agreements including, but not limited to, the United Nations Conference on the Human Environment (Stockholm Convention) 1972, United Nations Conference on Environment and

[21] *Ibid*, p.6
[22] *Projected Impacts of Climate Change on Mining.*http://www.dpi.nsw.gov.au; accessed 30th November, 2016

Development (UNCED) 1992, United Nations Framework Convention on Climate Change (UNFCCC) 1992, United Nations Convention to Combat Desertification (UNCCD) 1996, Convention on Biological Diversity (CBD) 1992, Vienna Convention for the Protection of the Ozone Layer 1985, Montreal Protocol on Substances that Deplete the Ozone Layer 1987, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989 have been adopted by countries of the world, while other global goals (such as Millennium Development Goals 2000 which terminated in 2015 and Sustainable Development Goals[23] which is the offshoot of the former) that impact on the environment in general and other aspects or sectors such as mining, in particular have been developed.

At the level of the Africa continent numerous germane efforts have also been made to prevent or mitigate the impacts of mining of minerals on the environment through the adoption of conventions and treaties by member states. Some of these include the African Charter on Human and peoples' Rights, Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa 1991 and the Revised African Convention on the Conservation of Nature and Natural Resources 2003.

At the sub-regional level, the Ecowas Treaty was entered in 1975 and revised in 1993. In the revised version, Chapter VI thereof,[24] deals with co-operation on environment and natural resources. By Article 29(1) member states undertake to protect, preserve and enhance the natural environment of the region and co-operate in the event of natural disasters. Also, by Article 30(1) member states undertake individually and collectively, to take every appropriate step to prohibit the importation, transiting, dumping and burying of hazardous and toxic wastes in their

[24] Comprising of Articles 29, 30 and 31

respective territories; while Article 31(1) states that member states shall harmonise and co-ordinate their policies and programmes in the field of natural resources.

All of these conventions, treaties and agreements at the global, continental and regional levels have been articulated with a view to protect the environment from the impacts of mining, other activities that may constitute danger to health or environment and ensuring sustainability in the mining sector. However, to have the desired virile positive impacts, these conventions and treaties would have to be holistically domesticated by various national governments.

On this note, it needs to be reiterated that the mining industry's potential for degrading the environment is recognized worldwide.[25] But, despite the obvious disadvantages, man's quest for development and improvement of his living conditions has led to the continuous exploitation of the world's mineral resources with attendant negative consequences for the environment.[26] In most parts of Nigeria, where mining of solid minerals has taken place or is still taking place, the environment is left un-reclaimed with its deleterious effects on human development. For example, "general land degradation is quite pronounced in some mining regions, typified by large stretches of the Jos Plateau where open cast mining has been on for several decades.[27]

Unlike in Europe and other advanced countries, the principle/practice of remediation is yet to be properly imbibed and adopted in Nigeria. There are plethora of laws, regulations, policies and guidelines relating to mining of solid minerals which are targeted at ensuring just and equitable exploitation of these mineral resources in Nigeria and for the protection of the environment; but compliance and enforcement regime have become issues of grave concern.

[25]Akper, P. T. (*op. cit.*)

In the circumstances of Nigeria, it is necessary to reflect on what efforts are being made to ensure sustainable exploitation and mining of resources in line with international standards and best practices in order to reduce or mitigate and, where possible completely prevent negative effects of mining of solid minerals on the environment.

The environment is the source of sustenance for mankind, and therefore, its degradation should be an issue of concern for all Nigerians since the effects and impact of a degraded environment on the economic, social, cultural, spiritual and political activities of the citizenry may be far reaching. The need to ensure sustainable mining in order to bequeath a balanced, healthful and harmonious environment to future generations is an obligation for all.[28]

This thesis appraises the various laws for the protection of the environment from mining activities of solid minerals in Nigeria and brings to fore, the challenges of environmental degradation and other risk factors that are associated with such exploitation. According to Ikhariale, "today the new world focus is on the need to revive the ailing earth whose only disease is a degraded environment."[29] It must be pungently stated, that a contributor to this malaise or disease of a degraded environment in Nigeria is mankind's quest for development and sustainability through the exploitation and mining of solid minerals whose impact have been deleterious.

[28]Erhun, M. O., "The contribution of the Minerals and Mining Industry: A Legal Perspective". Faculty of Law, Awolowo University, Ile-Ife published in *Journal of Energy Technologies and Policy*, Vol. 5, No.8,2015; ISSN 2225-0573; pp.99 & 100.http://www.iiste.org . Accessed 20th November, 2016

[29]Ikhariale, M.A. (Reprint 2000). "A Constitutional Imperative on the Environment: A Programme of Action for Nigeria."In: Osunbor, O.A. and Simpson S. et al. (eds.) *Environmental Law and Policy*, Law Centre, Faculty of Law, Lagos State University, Lagos, p.53

1.1.1 Brief Historical Development of Solid Minerals Mining in Nigeria

The history of mining of solid minerals in Nigeria is no doubt old. The Blacksmith industry is an offshoot of the mining of iron ore. Blacksmith industry commenced in Africa 1500 B.C and in the Nok area of present day Nigeria in 600 B.C.[30]The attempt to protect mankind from issues of environmental degradation and concerns which are largely as a result of man's activities on the environment became most prominent with the quest for industrialization and economic development. These concerns were evident from numerous activities of mankind including those relating to the mining of solid minerals e.g iron, coal, gold, uranium, kaolin, tin and clay.

The world over, particularly in areas bestowed and blessed with one form of mineral resource or the other, some forms of mining activities were carried on by man in the past for the main purpose of improving his subsistence ways of livelihood. In Nigeria today, the mining of solid minerals is gaining prominence and its contribution to the Gross Domestic Product is slightly on the increase. In spite of this, it must be reiterated that the mining industry's potential for degrading the environment is recognized worldwide.[31]

The historical perspective of environmental degradation by the mining of solid mineral resources in Nigeria can therefore be classified basically into viz- the pre-colonial period, the colonial era and post-independence era.

The pre-colonial mining activities in areas within the geographical entity now called Nigeria was regulated by the various native laws and customs of the people or communities within whose

[30]Blacksmith in Africa. Nigerian Television Authority (NTA) Documentary, NTAi Channel 251 DSTV, Saturday, 17th January, 2015

[31]Akper, P.T., *op cit*, p.183

territories those resources were found or embedded.[32] Man being gregarious in nature and with un-quenching desire to conquer his environment, mined or exploited solid minerals for his multifarious needs including the mining of iron ore for use in the making of farm implements and war weapons; the smelting of bronze for use as utensils and ornaments for beautification, coal to provide the domestic needs of the various communities and kaolin for decoration and beautification amongst other uses. The propensity of such mining activities to degrade the environment was least visible. This is as a result of numerous factors including the customs of the natives relating to the exploitation of these minerals (which sometimes established taboos for mining of such resources); and the fact that mining of solid minerals was carried out on a low scale during this period

The emphasis of mining was on catering for the basic needs of members of the community. Apart from the norms and customs of such communities which regulated the mining of such resources including the patterns of the harvest and sharing of proceeds, there were no codified laws and regulations governing the exploitation and exploration of those resources. This agrees with the main feature of customary laws which are largely unwritten or un-codified.

Traditional African societies including societies that conflated to become part of the present Nigerian nation had, as asserted by a scholar,

> established institutional arrangements for the management of common property resources on behalf of the community. Both men and women enjoyed access, though limited by traditional taboos, beliefs and customs, to living and non-living resources. They enjoyed a life interest in these resources. Institutions were organized under Kingdoms, Chiefdoms and elders with their cultural taboos, norms, beliefs and ethics taking resource management considerations as dictated by and in harmony with the environment they lived in. Such practices were established to rationalize the use of a particular resource.[33]

[32]Kaniaru, D., *locit*

[33]Kaniaru, D. (1998). *Environmental Imperatives for the African Region in the Next Decade: Strategies for Advancement.*In: Ogbuigwe, A. (ed.), Anpez Lecture on the Environment and Development, held at Hotel Presidential, Port-Harcourt, Nigeria on March 18, 1998, pp. 4 &5

The above postulation was amplified by the same author when he categorically enthused that: "generally, African societies lived in harmony with nature ensuring a balance between people and the environment. Environmental management was practiced, though rudimentary, to ensure sustainability of resources."[34]

In 1860, King Docemo of Lagos ceded his chieftain territory to the British. This marked the beginning of the era of British colonialism in the area. Subsequently, the northern part of the country was administered as the Northern Protectorate and the southern part as the Southern Protectorate. This continued until 1914 when the Northern and Southern Protectorates were amalgamated to form a single geographical/political entity - Nigeria. The British colonial administration continued until 1960 when Nigeria became independent; and in 1963, the country assumed a republican status.[35]

Mining as a traditional industry thrived amongst the people of Nigeria well before the on-set (sic) of Western Civilization and the birth of Nigeria as a nation in 1914. However mining on a large commercial scale especially for export became prominent under colonial rule.[36] In fact,mining of tin began in Nigeria in 1903-1904 in Jos.[37]

Upon the amalgamation of the two protectorates, mining of mineral resources was largely legislated upon with native communities only given a right to mine few mineral resources within

[34]*Ibid*, p.6
[35]Okorodudu-Fubara, M.T., *op cit*, p.2
[36]Osunbor, A.O. (1998 Reprint 2000). "Environmental Consideration in the Development of the Solid Minerals Industry in Nigeria." In: Osunbor, O.A and Simpson S. *et al*. (eds.) *Environmental Law and Policy*,Law Centre, Faculty of Law, Lagos State University, Lagos, p.396.
[37] Daily Trust Newspaper, Wednesday, May 1, 2013, p.18

their enclave and in respect of which they had rights to mine prior to colonial intervention in Nigeria.[38]

Up from the time of amalgamation of the two Protectorates of North and South in 1914 till about 1956 when oil was discovered in commercial quantity in Oloibiri in the present Rivers State of Nigeria, exportation of solid minerals together with cash crops constituted the main stay of the Nigerian economy.[39]

The exploitation of these solid minerals during the colonial era particularly was carried on without due consideration for the sustainable use of the resource and the environment. This was in spite of the factthat for example, the 1946 Ordinance contained measures aimed atenvironmental protection. At the inception of mining activities in Nigeria, the emphasis was not on environmental protection.[40]

Despite the inadequacies of the Minerals Act[41], the Act contained some commendable provisions. For example the provision of the Act which recognized and preserved the rights of members of local communities to mine particular mineral resources within particular areas, if it were the custom of such communities to mine such minerals before the coming into effect of the Act. It was therefore expected that since such communities were accustomed to the mining of such mineral resources in the traditional and customary ways, the traditional ethos relating to such mining were deployed so as to avoid or mitigate environmental degradation by the mining of solid minerals in their various communities. For the purpose of appreciating the cultural and

[38] Section 5(1), Minerals Act, Cap. 121, Laws of the Federation of Nigeria and Lagos, 1958

[39]Merem, E.C., et al (2017). "Assessing the Ecological Effects of Mining in West Africa, the Case of Nigeria." International Journal of Mining Engineering and Mineral Processing, Vol. 6, No. 1, 2017 p.2 doi:5923/I/mining.20170601.OI. https://www.researchgate.net. Accessed on 31st August, 2017

[40]Ehighelua, I., *Environmental Protection Law,* New Pages Law Publishing Co.,Effurun/Warri, p.115

[41]Minerals Act, Cap. 121, Laws of the Federation of Nigeria and Lagos, 1958

historical antecedents respecting mining of solid minerals in Nigeria, the relevant provision of the Minerals Act, is reproduced below:

> Nothing in this Ordinance contained shall be deemed to prevent any native of Nigeria from wining, subject to such conditions as may be prescribed, iron ore, salt, soda, potash or galena from lands (other than lands within the area of a mining lease or mining right) from which it has been since before the material date the customs of the members of the community to which he belongs to win the same.[42]

The colonial regime while attempting to bestow mining rights on local communities in respect of the mining of certain mineral resources, restricted and banned the local communities from being involved in the mining of some more commercially-beneficial mineral resources such as gold, diamond, coal, uranium etc (which had hitherto been their inalienable rights to mine).[43]

In spite of the above, the provision, in addition to creating a sense of belonging to members of such local communities, preserved the mining culture of the people and their economic, social, customary and spiritual rights in respect of continued mining of such mineral resources. It is a matter of great concern that Nigerians during this period were deprived from the legitimate exploitation and use of the high earning mineral resources such as gold, diamond, columbite, tin, coal etc.[44] These several decades of depravity may have constituted hindrance to the development of the full potentials of Nigerians particularly their innate desires to bequeath a virile and sustainable environment to future generations. This is even more worrisome, in the light of the fact that degraded mining sites were left unclaimed[45] and un-mitigated.[46]

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[42]Section 5(1), Minerals Act, Cap. 121, Laws of the Federation of Nigeria and Lagos , 1958. This provision is impari material with the provision of Section 97, Nigerian Minerals and Mining Act, **No…** , Laws of the Federation of Nigeria, 2004 except that this latter Act removes iron ore from the list of minerals that could be mined by citizens in the light of its commercial and national importance.

[43]*Ibid.* The minerals that could be mined by local communities as specified in section 5 of the Minerals Act, Cap. 121, Laws of the Federation and Lagos, 1958 excluded the more commercial minerals.

[44]*Ibid*

[45]Ehighelua, I. , *op cit*, p.122

[46]Akper, P.T., *op cit*, p.185, foot note 3

The mining of solid minerals in Nigeria, particularly from the time of colonial incursion by the British up to the early 1960s and even thereafter, continued to be carried on with resulting environmental degradation. The foregoing found corroboration in the submission of Akper, who asserted thus:

> In the early 1960s when the level of environmental awareness was relatively low, very little was done to mitigate the adverse impacts of mining activity. But, with increased environmental awareness, a lot has been achieved in varying degrees across different jurisdictions to address the negative impacts associated with the exploitation of minerals.[47]

Ladan, presented the forays of this sanguine matter in the following apt words:

> During the colonial era, protection of the Environment was not a priority and there was no realistic and pragmatic policy aimed at preserving and protecting the environment. Matters relating to the environment were dealt with as a tort of nuisance because disputes in environmental law were not viewed as public matters warranting state intervention. The few environment-related laws that existed criminalized activities that could degrade the environment. This is revealed in the Criminal Code Act of 1916, sections 245 and 241which prohibit water pollution and air pollution. The Act also creates the offence of nuisance.[48]

From the foregoing accounts, it is clear that the exploitation of mineral resources in Nigeria had been carried out without due regard to the environment. This legacy commenced from the period of colonial incursion into the geographical expression now known as Nigeria and continued even after Nigeria gained her independence in 1960 and thereafter. This was principally because the orientation and the structures set up by the colonial regime in respect of the policy direction and focus for the exploitation of solid mineral resources had not changed. There was no positive paradigm shift; the laws remained the same; for example the Mining Ordinance of 1946 was the extant law on mining of solid minerals and remained extant (except for some cosmetic changes) until it was repealed in 1999.

[47] *Ibid*, p.183

[48] Ladan, M.T. (2012). *Trend in Environmental Law And Access To Justice In Nigeria*, LAP LambertAcademic Publishing Company, Germany, p.91

The above development, amongst other factors stagnated, the development of the industry even during the successive post-independence regimes in Nigeria. The activities and development of the solid mineral sub-sector deteriorated and stagnated with the discovery of oil in Nigeria;[49] which practically led to the abandoning of main sectors of development to the detriment of the Nigerian economy and the citizens. As recounted by Osunbor[50], the development of the industry stagnated and the robust earnings hitherto experienced shrank to the barest minimum.

An illustration of the state of our mines in Nigeria which arose largely from the unsustainable practices in the sector during the colonial era and the post-independence era was vividly captured by Osunbor, when he noted that "by the late 1980s the coal mines of Enugu had become flooded and fallen into neglect while the tin mines in Jos had all but ceased operations leaving behind a vastly devastated environment typified by a ravaged landscapedotted with man-made ponds and artificial lakes."[51]

Given the above perspectives and background, the laws that have regulated the mining of solid minerals in Nigeria (and by implication, the impact of environmental degradation by the mining of solid minerals in Nigeria) taking into consideration the nature, character and structure of institutions developed can also be categorized into two, namely, the pre-1988 laws and the post-1988 laws. The year 1988 is critical in the light of the dumping of toxic waste in the coastal town of Koko, old Bendel State by an Italian company.[52] This propelled series of reactive legislations and began to engrain in Nigerians the precept of environmental consciousness and awareness.

[49]Osunbor, O.A., *op cit*, p.396
[50]*Ibid*
[51]*Ibid*
[52]Usman, A.K. (2012). *Environmental Protection Law and Practice*, Ababa Press Ltd , Ibadan, p.4

The Mining Ordinance, 1946[53] contained measures aimed at environmental protection.[54] Categorically, the Ordinance made provisions, albeit scanty, for environmental protection, it has been noted that the measures adopted by the Ordinance were mainly curative measures rather than preventive measures, while compliance with the monitoring processes were not followed up and enforced.[55]

This Ordinance was however, also devoid of the basic consideration of ensuring that the localities and communities within Nigeria where these mining of solid mineral activities took place benefited in terms of giving back to them what is due by adopting remedies, including environmental remediation, restoration, resuscitation and rehabilitation and also ensuring that the people continued to live in harmony with the environment. The patched environment and mining sites of Enugu, Jos and several other places in Nigeria leave behind the sordid memory of the deleterious effects of mining of solid minerals in those areas.

The result was that environmental degradation was rife and the degraded environment by the mining of solid minerals in parts of Nigeria remained un-remedied with obvious negative implications for the lives, earnings, health, procreative rights and sustainable development of members of such societies and indeed the Nigerian nation.

This same period was further characterized by the fact that laws could not protect the environment as it related most especially to the negative effects that trailed the mining of these solid mineral resources. It will be difficult to find in the law books during this period, any decided case where the issues canvassed were determination of rights and obligations of the

[53]See sections 31, 34(1)(c), 34(2), 46,47, 48 & 51 of the Ordinance codified in the Laws of the Federation of Nigeria and Lagos, 1958

[54]Ehighelua I., *op cit*, p.115

[55]*Ibid*, p.121

indigenous societies or people pertaining to the crucial issue of making habitable or sustainable again, the degraded mining sites arising from the mining of solid minerals. It is opined, that the lack of cases in the aforesaid area was not as a result of absence of issues warranting the pursuit of the rights of members of such mining communities, but the lack of such cases may be traceable apathy of the citizenry, the domineering attitude of the colonial regime, its officers, servants and privies over members of local host mining communities and the rudimentary state of legislations.

The significance of the developments relating to post-1988 era and the gains made in environmental law evolution in Nigeria is traceable to the dumping of toxic waste on Koko town in the old Bendel State of Nigeria by an Italian firm in 1988.[56] This triggered a chain of events including some level of awareness on the part of Government, the citizens and other stakeholders.

Consequent upon the above development and the increasing awareness on the part of stakeholders, Governments have consciously made efforts at ensuring the sustainable development of all sectors including the mining sector such that the propensity of the activities of miners to cause humungous environmental degradation by the mining of solid minerals in Nigeria is reduced and mitigated; and where environmental damage and degradation occur, steps should be taken to remediate, restore, reclaim or rehabilitate the environment particularly mining sites as appear most practicable. As noted by Akper,

> Government's response to the problems of the mining industry in the last decade has generally followed global trends. The National Policy on Solid Minerals Development of 1971 was reviewed and a new Policy of Solid Minerals Development of 1999 was launched. The 1999 Policy had in line with global trends emphasized environment friendly mining operations and generally prioritized environmental concerns to a level that was not done before.[57]

[56]Usman, A.K., *op cit*
[57]Akper, P.T., *op cit*, p. 186

In 1995, the Military administration created for the first time in the nation's history, a Ministry known as the "Ministry of Solid Minerals Development" dedicated to superintending over the development of solid minerals in Nigeria. Although, the entire mineral resources in the Federation are vested in the Government of the Federation,[58]some States have created Ministries of Solid Minerals to promote the exploitation of the mineral endowments in their States.[59]

Prior to the enactment of the Nigerian Minerals and Mining Act (N.M.M.A) and the National Environmental Standards Regulatory Establishment Authority Act (NESREA Act) it could be safely asserted that the 1990s witnessed the era of significant amendment, revision and formulation of instruments of intervention to halt environmental degradation in Nigeria in the form of regulations, guidelines, standards and policy.[60] This period witnessed tremendous awareness in the solidminerals sector**.**

1.2 Statement of the Problem

The environment provides mankind with the means of development and survival. Mankind being gregarious is wont to explore the environment for the purpose of sustenance and in the quest for economic, socio-political and technological advancement. The environment is endowed with various types of resources and mankind has, and will continue to take steps and measures to exploit these resources. No matter the method and technology in use, mineral mining generally has some damaging effects on the environment.[61] The exploitation of solid minerals impacts negatively on the environment thereby constituting challenges of environmental degradation and

[58] See section 44(3), Constitution of the Federal Republic of Nigeria, 1999 (as amended), Cap.C23, Laws of the Federation of Nigeria, 2004 and section 1, Nigerian Minerals and Mining Act, No.20, 2007
[59]*Ibid*, p.184; examples of such states include Nassarawa, Kogi and Plateau States of Nigeria.
[60]Ladan, M.T. (2012), *op cit*, p.92
[61]James, I., *op cit*, p.204

pollution with its resultant negative effects on human activities, livelihood and development. The problems identified in this research are:

(i) Inadequacy in the underlying provisions of some of the legal, regulatory and institutional framework in protecting the environment against the negative impacts of mining activities in Nigeria. Examples of this include the provisions of section 90(2) of the Nigerian Minerals and Mining Act (hereinafter referred to as "the N.M.M.A") which used the nebulous phrase "proportionate to their profits" in mandating that all leaseholders should carry out effective rehabilitation of mined out areas to the satisfaction of the Mines Environmental Compliance Department of the Federal Ministry of Mines and Steel Development (hereinafter referred to as "MEC Department"). Another one is the provisions of sections 46 and 131 of the N.M.M.A which created the offence of illegal mining without making provisions for punishment in section 131 of the N.M.M.A.

(ii) Poor enforcement and non-compliance or poor monitoring of compliance with environmental regulations and standards/guidelines. This is aided by contradictions within and between laws and the more important fact that compliance with the provisions of laws is not carried out by institutions charged with such functions. An example is the fact that mining activities are still carried on by some operators without carrying out the requisite environmental impact assessment.

(iii) Unregulated or illegal mining activities by unlicensed and artisanal miners that exacerbate environmental degradation and health hazards to vulnerable communities and resulting in loss of revenue to government. The activities of unregulated or illegal mining still persist with many of such sites abandoned and constituting threat to lives.

Examples are many mining sites in the Jos-plateau axis[62] and as would be found further narrated in this thesis.

(iv) Mining sites are left degraded with the aesthetic beauty and stability of the land destroyed,[63] resulting in loss of opportunities (loss of vegetations, agricultural farming lands[64] and endangered animal species)[65] and revenue to Nigerians and the government.[66]Furthermore, a lot of mining sites have been left un-mitigated,[67] unclaimed,[68] un-restored, un-remediated and un-rehabilitated with propensity for accidents and loss of lives and animals.[69]

Against the foregoing statements of problems, the following research questions have therefore been postulated:

(i) Are the legal and institutional/regulatory mechanisms for monitoring compliance with environmental standards and guidelines by mining operators, licensees or leases adequate?

(ii) Are the existing legal and institutional frameworks robust to cater or support mining of minerals in such away as to prevent or mitigate the negative impacts of mining of solid minerals on the environment in Nigeria?

(iii) Do mining of solid minerals have impacts on the environment in Nigeria?

(iv) Do illegal miners contribute to environmental degradation by their mining activities?

[62] Particularly at Bukuru and Barkin-Ladi
[63]Ndace, J.S &Danladi, M.H. (2012). "Impacts of Derived Tin Mining Activities on Landscape/Land Use in Bukuru, Plateau State, Nigeria."*Journal of Sustainable Development*, Vol.5, No.5, pp.91 & 93
[64]Ladan, M.T. (2014), op cit., p.440. See also Akper, P.T., *op cit.,* p.185
[65]Akper, P.T., *op cit.,* p.185
[66]Note that loss of revenue could be through illegal mining activities. See Ladan, M.T. (2014), *op cit*., p.355
[67]*Ibid*, foot note 3
[68]Ehighelua, I., *op cit*, pp.121-122
[69]Akper, P.T., o*p cit*, p.186

(v) Are there problems and challenges in the effective enforcement of mining and environmental laws and regulations in the mining sector in Nigeria?

(vi) Are measures of remediation, restoration, resuscitation, rehabilitation, reclamation and compensation being adopted as panacea to ameliorate or mitigate the challenges of the impacts of mining on the environment in Nigeria?

(vii) Is there an integrated mechanism to promote a balanced framework for achieving the economic, social and environmental dimension of sustainable development (through regulated and responsible mining) in Nigeria?

(viii) What measures should be adopted to prevent, mitigate or reduce the negative impacts of mining of solid minerals on the environment in Nigeria with a view to contributing to a more harmonious, ecologically balanced and sustainable environment in Nigeria?

1.3 Aim and Objectives

The aim of this research is to appraise the role of legal and institutional framework in minimizing or mitigating the negative impacts/effects of mining of minerals on the environment through responsible and sustainable mining operations/activities in Nigeria.

The objectives of this research are the following:

(i) Appraising the performance of the legal, institutional/regulatory mechanisms in monitoring compliance with environmental standards and guidelines by mining operators, licensees or leases.

(ii) Identify and analyse the problems and challenges in the effective enforcement of mining and environmental laws and regulations in the mining industry in Nigeria.

(iii) To promotea balanced framework in achieving the economic, social and environmental dimension of sustainable development through regulated and responsible mining.

(iv) To analyze the challenges of degradation of the environment imminent in mining activities and the adoption of environmental measures including remediation, restoration, resuscitation, rehabilitation and reclamation as panacea.

(v) To make appropriate suggestions for the prevention, mitigation or reduction of environmental degradation by mining of solid minerals in Nigeria by the adoption of measures including but not limited to, the review and/or amendment of extant legislation, regulations and policies underpinning the mining of solid minerals in Nigeria with a view to contributing to sustainable environment in Nigeria.

1.4 Scope of the Research

This research centers on the impacts of mining activities on the environment in Nigeria; hence relevant laws, regulations, policies and guidelines underpinning the subject matter of this thesis including relevant institutions established on the subject matter, would be considered. It must however be noted that this thesis relates to mining of solid mineral resources and therefore mining of petroleum and gas resources are excluded from its scope.

The legislation for consideration and review is the Nigerian Minerals and Mining Act[70]which said legislation together with other relevant legislations, regulations and policies will be espoused in this research work. To that extent, the study is further circumscribed by the applicable laws or legislations, regulations and policies in context. The provisions of the

[70] No. 20, 2007

Constitution of the Federal Republic of Nigeria, 1999 (as amended)[71]as it relates to mining and mineral resources has also been appraised to further put the research subject in proper perspectives. Some other legislations, regulations and policies taken into account in this research work, include National Environmental Standards and Regulations Enforcement Agency (Establishment) Act[72], Environmental Impact Assessment Act[73], Nuclear Safety and Radiation Protection Act[74], Explosives Act[75], Harmful Waste (Special Criminal Provisions) Act[76], Land Use Act[77], Labour Act[78], Nigerian Minerals and Mining Regulations 2011, National Environmental (Mining and Processing of Coal, Ores and Industrial Minerals) Regulation 2009, National Environmental (Quarrying and Blasting Operations) Regulations 2013, National Environmental (Sanitation and Wastes Control) Regulations 2009, National Minerals and Mining Policy, 2008 and all other relevant legislations, regulations and policies appertaining to this area of study.

1.5 Justification of the Study

In Nigeria today, the place of solid minerals exploitation or mining in the development of the country is becoming more apparent. This research will assist the federal government in articulating improved legal and institutional framework on mining of minerals for the country; with focus on how to better mitigate the impacts of mining on the environment. The work will also benefit state governments as it will enable them have enhanced cooperation with other relevant stakeholders towards contributing to the mitigation of the impacts of mining on the environments of local mining communities within their territories.

[71] Cap. C23, Laws of the Federation of Nigeria, 2004
[72] No. 25, 2007
[73] Cap. E12, Laws of the Federation of Nigeria, 2004
[74] Cap. 142, Laws of the Federation of Nigeria, 2004
[75] Cap. E18, Laws of the Federation of Nigeria, 2004
[76] Cap. H1, Laws of the Federation of Nigeria, 2004
[77]Cap. L5, Laws of the Federation of Nigeria, 2004
[78] Cap. L1, Laws of the Federation of Nigeria, 2004

It will assist economists in itemizing strategies that could ensure improved contribution of the sector to the GDP, national growth and development; while at the same time making stakeholders to better appreciate the gaps in the legal and regulatory framework underpinning the study thus making it easier to articulate proposals for review towards attaining mining sustainability.

Environmentalists are another catchment of society to benefit from this research as it will assist them in appreciating the environmental dynamics and challenges of the impact of mining on the environment as it relates to Nigeria; and to strategize on how best to ensure that the environment is restored after mining activities. Law makers (legislators) particularly in the National Assembly are another very important category of stakeholders to benefit from this study because the study would afford them a robust perspectives towards canvassing for and amending the existing legal and institutional framework for attaining sustainable development in sector.

Furthermore, academicians and researchers could use it as reference material for contributing to knowledge; and for the Federal Ministry of Mines and Steel Development, the Federal Ministry of Environment, Housing and Urban Development, National Environmental Standards Regulatory Establishment Agency, Mining Cadastre Office it will assist them in discovering gaps in their enabling laws and afford them the opportunity to improve their regulatory and enforcement roles.

1.6 Methodology of the Study

The methodology of this research work is a combination of doctrinal and empirical methods. Under the doctrinal method, the main primary source of documents analysed, include the Constitution of the Federal Republic of Nigeria, Nigerian Minerals and Mining Act,

Environmental Impact Assessment Act, and the National Environmental Standards Regulatory Agency Act, as would be subsequently highlighted and discussed in this thesis. The secondary source of documents used for the research under the doctrinal method, include published and unpublished works of scholars in this relevant area. These are for example books, journals, articles, seminar papers, dissertation/thesis, newspapers and magazines.

Under the empirical method, the source of data were thequestionnaires administered and interview of relevant stakeholders conducted to find out more about the subject of the research or clarify certain aspects of this work.In terms of the research design, descriptive research design was adopted for this study. The researcher used survey questionnaire to solicit information where the respondentsof some host mining communities in Plateau, Zamfara, Kogi and Niger States; the Federal Ministry of Mines and Steel Development and National Environmental Standards Regulations Enforcement Agency were asked to answer to questions based on their level of the agreement or disagreement to each of the questions in relevant questionnaire

For sampling technique, non-probability convenience sampling was used by the researcher to collect needed information from respondents. The study used the formula given by Rose, Spinks and Canhoto (2015) for an infinite population to determine the sample size. The minimum sample size for this study is 400 basedon the questionnaire administered on host mining communities. However, 20% was added to the minimum sample size of 400 for attrition to make it 480. 480 copies of the questionnaires were distributed to the respondents. A total number of 480 copies of the questionnaire were distributed to respondents of host mining communities and 426 copies were returned, constituting 88.75% response rate. These were found to be valid and

useful for the analysis. Therefore, the researcher did not fall below the minimum sample size of this study which is 400.

Similarly, the same approach was adopted in respect of the questionnaire administered on staff of the Federal Ministry of Mines and Steel Development and National Environmental Standards Regulations and Enforcement Agency at their head offices.The population of this part of the study consists of 130 staff of two government institutions (70 staff of Federal Ministry of Mines and Steel Development and 60 staff of National Environmental Standards Regulations Enforcement Agency).

The minimum sample size for this study is 98. However, 20% was added to the minimum sample size for attrition, thus making it 118. 118 copies of the questionnaires were distributed to the respondents. A total number of 118 copies of the questionnaire were distributed to respondents and 102 copies were returned, constituting 86.44% response rate. These were found to be valid and useful for the analysis. Therefore, the researcher did not fall below the minimum sample size of this study which is 98.

1.7 Literature Review

There are numerous relevant previous works by various scholars on the subject matter which in one way or the other contributed to knowledge in this area of study. This work proceeds to examine and evaluate the adequacy or otherwise of some of the previous works on this subject area of interest.

Mobtaker&Osanloo[79]in introducing the work stated that mining operations provide essential materials for industry and it is one of the critical aspects of economic growth in the world as it *inter alia* provides jobs in the mining regions; stressing that if mining goes right on the way of sustainable development, positive impacts of mining are more considerable.[80]The authors expressed the view that the main question in mining is what sustainability really means and whether it can ever be realistically achieved in the context of mining.

The further considered "modern mining" and its contribution to sustainable development pointing out that the overall sequence of activities in modern mining are divided into sixstages of prospecting, exploration, development, exploitation, mine closure and mine reclamation.[81]The positive impacts of mining could be on the environment- land, water and air; andalso, thesociety and economy of the mining region. As it relates to land, the work asserted that mineral deposits commonly happen where there is no trace of life or civilization. Mining brings life to the area and provides better life situation by making available road, power, groundwater, health centres and schools. In addition, after mine reclamation, the goal of landscape improvement, access and land stability will be completely achieved.[82]

On the impacts of mining on air and water, the work took into account the issues of global warming and climate change and the raising levels of CO_2 concentration.In order to have positive impacts of mining on air resource, the work encouraged the use of renewable energy and application of agriculture approach for mine reclamation plan.[83] Water is fundamental to life. Mining is one of fewindustries that is able to use water of lower quality than that desirable for

[79]Mobtaker, M.M. &Osanloo, M. (2014), *op cit*
[80] *Ibid*, p.2
[81]*Ibid*, p.3
[82]*Ibid*
[83]*Ibid*, p.4

human consumption, water management in the mining industry is the key way to achieve positive sustainable development.[84]

As it relates to the social and economic impacts of mining on the environment, the authors posited that the most important impact of mining in mine area is providing job opportunity, livelihood and longer life expectancy. Also, landuse such as park, lake and golf course provide entertainment for people.[85]The mining industry is a major force in the world economy. However, its role in contributing to the national economies of different countries varies greatly and is neither well documented norwell understood.According to the World Bank report in 2012, mining contribution in GDP in countries are: Iran 1.3%, Australia 7.8% and China 1.2%.[86]

As much as the foregoing work hasbeen insightful, the background of the work and the examples cited are mostly within the domain of foreign countries without experiences from Nigeria. This research would consider the legal and institutional focus for regulating the impacts of mining on the environment in Nigeria.

Musa &Jiya[87] in their work stated that in mining of tin, the vegetal cover in the area of mining has to be removed which consequently results into adverse environmental effects. The impact of tin mining greatly affected the natural ecology of Bukuru because micro and macro organisms and plants have been stripped off their natural habitat due to tin mining activities. Normalized Differential Vegetation Index techniques were adoptedto map effect of tin mining on the

[84] *Ibid*
[85]*Ibid*, p.5
[86]*Ibid*
[87]Musa, H. D. &Jiya, S. N. (2011)."An Assessment of Mining Activities Impact on Vegetation in Bukuru, Jos Plateau State, Nigeria Using Normalized Differential Vegetation Index (NDVI)" www.ccsenet.org/journal/index.php/isd/article/viewfile/13/88/9095. Accessed on 29th September, 2017.

vegetation for the period between 1975 and 2017. The result of the differential vegetation index reveals a decline in vegetated surface due to intensive mining and cultivation.[88]

According to the authors, mining and processing has led to socio-economic andinfrastructural development of the Jos area, with major negative impacts on physical, biological andhydrological environments. Similar negative impacts are widespread in most other small-scale, largely illegal mining areas in Nigeria.[89]Furthermore, the work underscored the importance of environment to sustainable development while emphasizing that environmental degradation is a very serious issue and to ignore the environment, is to ignore our humanity and surrender its race that is entirely dependent on it.[90]

The work further stated that the study area is characterized by abandoned mining ditches, from mining the tin ore**,** pathetic and deplorable condition of landscape/landcover.[91]It recommended sustainable mining practices such as monitoring of mining sites/activities, determining their environmental damages andthe adoption of mitigating measures anduse of modern technology as panaceas of the negative impacts of mining on the environment.

The abovework is no doubt relevant but its scope appear to be limited as it did not consider the legal and institutional framework regulating or underpinning the impacts of mining on the environment in Nigeria. This researcher would make forays into such issues in order to broaden the perspective on the subject of impacts of mining on the environment in Nigeria.

[88]*Ibid*, p.150
[89]*Ibid*
[90]*Ibid*
[91]*Ibid*, p.151

In another contribution[92]an over view of Nigerian mining sector was provided. It was stated that in 2015, the contribution of the sector to the economy was at between 0.5%-0.6% of the Country's GDP.[93]Government's efforts at diversifying the economy by enacting laws such as the Nigerian Minerals and Mining Act, 2007, the creation of the Federal Ministry of Mines and Steel Development and the establishment of Solid Minerals Development Fund were also harped upon. Also, landmark events in the sector were highlighted to include mining of Tin ore by Royal Niger Co. in 1905, commencement of coal mining in Enugu in 1914, mining of gold in 1914 in areas that are now known as Niger and Kogi States, establishment of Nigerian Coal Corporation in 1950, the establishment of Makeri Smelter in Jos in 1961. Direct participation by government started in 1972 following the promulgation of the indigenisation Decree of that year, the Nigerian Mining Company was also established in that year while in 1979, Ajaokuta Steel Company and Delta Steel Company were established.[94]

Some of the challenges of the sector were stated to include under-reporting production by existing firms and the fact that most of Nigeria's mineral production is conducted by artisanal and small scale miners whose production figures are under estimated. It was asserted that Government has put in place a favourable climate for business and ventures by *inter alia* stream lining administrative and bureaucratic procedures, policies and programmes to guarantee a free market economy.

The work further considered mineral title administration by Mining Cadastre Office (hereinafter referred to as "MCO"), licence types, purpose and duration. Licence conditions were also highlighted. Taxes, loyalties and fees applicable in the sector, were also identified. Some other

[92]"Nigeria's Mining and Metal Sector"(August 2016). *Investment Promotion Brochure* By Deloitte and Federal Ministry of Mines and Steel Development.
[93]*Ibid,* p.6
[94] *Ibid,* p.8

challenges of the sector were stated to include inadequate sources of finance for mining projects, infrastructure development, security, illegal mining and community challenges, resolving regulatory conflicts, improving policy consistency and enforcement of regulations and the need for industry participants to attract majors into the industry, promoting juniors through expanding access. Strategies for development of the sector were also canvassed to include the necessity to integrate artisanal and small scale miners into the sector, improving their productivity/social wellbeing through formalisation of associations into cooperatives etc.

The gap observed from the work is that it did not consider in appreciable details, the legal and institutional framework underpinning the subject of the impact of mining on the environment. Therefore, the gaps inherent in the legal and institutional framework could not be provided; so also is the role of the various laws and institutions in regulating the impacts of mining on the environment was another lacuna noticed from the work.

Ladan,[95]in his recent contributions under a sub-topic "Overview of Mining and Mineral Resources Law" analysed the provisions of the principal legislation on the subject matter being the Nigerian Minerals and Mining Act, 2007 bringing in focus particularly the following issues viz: The definition of relevant terms such as Mineral Resources or Minerals, Security Minerals, Mineral Exploitation, Mineral title, Mine, Mining Operations, Holder of mineral title, Petroleum, Pollution, Processing, Reconnaisance and Quarry. The work also considered the structural lay out of the provisions of the N.M.M.A and outlined the provisions under each chapter and parts of the N.M.M.A; and in analysing the provisions of section 1 of the N.M.M.A *inter alia* stated that "All lands in which minerals have been found in commercial quantities shall, from the commencement of this Act be acquired by government of the federation in accordance with the

[95]Ladan, M.T (2014), *op cit*

provisions of the Land Use Act."[96] The author also referred to the provision of section 3 of the N.M.M.A and stated lands excluded from reconnaisance, exploration and exploitation of mineral resources to be viz; land set aside for, or used for or appropriated or dedicated to any military purpose except with the prior approval of the President, land within fifty metres of an oil pipeline licence area granted under the Oil Pipeline Act, land over which a mineral title has previously been granted by the Mining Cadastre Office and where such mineral title is subsisting.

Furthermore, the author discussed the overview of Mining and Minerals Regulations, 2011 issued by the Minister of Mines and Steel Development in exercise of the powers conferred on him by section 21 of the Nigerian Minerals and Mining Act, 2007. The structure of the regulations and its provisions were highlighted. The contribution also considered and discussed the provisions of National Environmental (Mining and Processing of Coal, Ores and Industrial Minerals) Regulations 2009, National Environmental (Base Metals, Iron and Steel Manufacturing/Recycling Industries Sector) Regulations, 2011 and National Environmental (Quarrying and Blasting Operations) Regulations, 2013.

The work also examined the National Policy on Mineral Resources. The main purpose of the policy was stated to include achieving substantial increase in GDP contribution by the minerals sector and formalising artisanal and small scale mining operations. The basis for action were enumerated and few of this include; the need to develop a business environment where the private sector will flourish, the need for re-emphasising on the separation of roles of government as the Regulator and administrator from that of the private sector as the operator of mineral

[96] *Ibid*, p.369

activities and the imbibing of sound environmental management and intergenerational equity for wasting assets.[97]

The work further examined the Departments and Agencies of the Federal Ministry of Mines and Steel Development; the particular departments considered are the Mines Inspectorate Department, Mines Environmental Compliance Department, Artisanal and Small-Scale Mining Department and Mining Cadastre Office stating their specific objectives towards attaining their mandates. A myriad of issues including fiscal policy and its characteristics, capacity building, research and development were also covered. A detailed overview of the National Metals Policy was undertaken in the work.

The scholar and author posited that" industries are essential for economic development but are also known to cause adverse environmental challenges due to the production and release of harmful wastes, effluents and toxic by-products into the environment".[98] This statement also applies to virtually all stages or segments of the mineral extraction chain. Furthermore, as asserted in the work under review, the processing of minerals and metals are largely known to produce among others the following categories of contaminants: a) Air pollutants: corrosive and hazardous gaseous, fumes and particulates; b) Volatiles such as tar fumes, aromatic hydrocarbons, etc; dust; d) Non bio-degradable solid wastes (slag and dross); e) Radio-active wastes; f) Noise and heat beyond endurance limit.[99]The work proffered some interventionist strategies for mitigating the impact of mining activities on the environment.

Furthermore, a composite analysis of some solid mineral resources in Nigeria and the parts of the country they are found and mined was undertaken. Issues and concerns relating to the activities

[97]*Ibid*, p.380
[98]*Ibid*, p.405
[99]*Ibid*

of the sector and their impact on the environment were adumbrated to include viz; health, environmental degradation, water pollution, impact on agriculture, loss of means of livelihood and income and lack of accountability.

The few issues noticed with the work is that because of a myriad of very important subjects considered in the work, attention was not devoted to the discussion of issues of Community Development Agreements and dispute resolution mechanisms and their likely effects in mitigating the impacts of mining of minerals on the environment in Nigeria.

Gyang&Ashano[100]posited that tin mining flourished in the study area from the beginning of the century to the early 1980's andleft behinda post-mining envir*onment* scarred by numerous mineponds anddams surrounded by heaps of mine spoils (dumps/overburden) and devastated landscape. The tin mining industry on the Jos Plateau hascaused extensive man mad**e** environmental damage, with vast tracksof pastoral land systematically destroyed in the quest forcassiterite and columbite, with increased radioactive waste as a result of dumping of mine tailings and several heaps of mine dumps (overburden) and also mine ponds scattered all over the area. These mine ponds have resulted in several deaths.[101]Mines, both active and inactive are potential water contamination sources. The mining excavations create direct connection between ground water and the land surface. Oxidation of exposed minerals can lead to acid drainage, while leaching of heavy metals is a threat. Drainage of materials from abandoned mines can act as ground contamination source for years after mining operations have stopped.[102]

[100]Gyang, J.D &Ashano, E.C (2010). "Effects of Mining on Water Quality and the Environment: A Case Study of Parts of the Jos Plateau, North Central Nigeria".www.akamaiuniversity.us/pjst11_1_631.pdf. Accessed on 2nd October,2017
[101]*Ibid,* p.631
[102]*Ibid,* p.632

The work concluded inter alia that the majorproblem observed fr**o**m the studies, is the several abandoned mine ponds and heaps of mine spoils that abound in the projectarea which defaces the scenic beauty as well as serving as death traps for both humans [103]andanimals. It was recommended that environmental hazards can be reduced by adapting best mining practice such as mine reclamation, proper disposal of mine wastes, proper planning of mines to minimize amount of hazardous wastes, remediation and sustainable land use, enforcement of mining laws to ensure compliance and prevent future unwholesome practices.[104]

The work under review provided some of the impacts of mining of minerals on the environment. It however, did not consider relevant laws and institutions put in place to regulate the impacts of mining on the environment in Nigeria. Also, methods available within our laws for regulating the impacts on the environment were not discussed.Consequently, this researcher would fill the observe gaps through the myriad of issues discussed.

Merem,[105] the research examined the ecological impacts of mining in West Africa with focus on Nigeria. The work was buttressed with relevant examples of mining and its incidents in several parts of the country. It was posited that the heavy toll of mining on the environment came with the decline in forest land area in Bukuru, Plateau State, where forest area of 420.52km^2 in 1975 fell to 399.56km^2 by 1986.[106] The downward slide continued almost 20years after in 2005 with only 155.63km^2 area left with green cover.[107]

The authors asserted that many have noted that a sustained solid mineralsindustry provides a pathway for the rapid development of Nigeria throughthe generation of employment and

[103]*Ibid*, p.638
[104]*Ibid*
[105]Merem, E.C., *et al., op cit*, pp.1-9
[106]*Ibid*, p.9
[107]*Ibid*, p.1

improved national income earnings at levels higher than the petroleum industry. In all these, the opportunities in the solid minerals sector of Nigeria remains enormous all these, the opportunities in the solid minerals sector of Nigeria remains enormous bearing in mind the expansive areas of unexplored minerals potential.[108] These prospects are new for Nigeria, because for over four decades ago, the revenues from solid minerals financed many government programmes in the form of infrastructural development, education, healthcare and the emergence of the petroleum industry under the nation's development plans.[109]

For example, between 1965 and 1975, the exploitation of some of the minerals occurring in Nigeria contributed over 12% of the nation's GDP.[110]In the context of economic contribution, the minerals sector has made some strides and the sector has been projected to account for 10% of the GDP by 2020.[111] With these potentials come thousands of abandoned mines and tailings ponds scattered in many areas of the country, threatening the fragile ecosystems along side endless degradation of air, land and water and human facilities in areas adjacent to mining sites.[112]

The work further considered the ecological impacts of illegal mining whilestating that by 1992-1998 through 2000 areas under illegal mining in km^2in Pandongari increased geometrically at rates of 642.86 to 1,042.86%. [113] The negative impacts of mining were summarise to include numerous abandoned mine sites, concentration of toxic residues from zinc, destruction of flora and fauna, pollution of air, degradation of arable land, habitat loss and contamination of water

[108]*Ibid*
[109]*Ibid*, p.2
[110]*Ibid*, p.3
[111]*Ibid*
[112]*Ibid*, p.4
[113]*Ibid*, p.8

resources.[114] The authors also posited that the other burden of pollution risks involve the 1,000 abandoned mine ponds, alongside 1,100 - 4,000 tin and columbite mines left behind from the mining booms of past eras in the 1960s and spread over Jos, Plateau. These threats are compounded further by the 400 fatalities from lead poisoning triggered by illegal quarrying in Zamfara in 2010.[115]

Some of the problems of the sector were identified by the authors to include the activities of informal/illegal miners, ineffective policy and lack of records on mining activities. The work recommended education and social programmes, policy enhancement, solid minerals mapping and information system and regular assessment of ecological liabilities as panaceas.[116]

The above work no doubt dwelt on relevant issues relating importance of mining to economic development and also, the impact of mining activities on the environment. The work however did not consider in details the legal and institutional mechanisms or framework for regulating the impacts of mining on the environment in Nigeria. Furthermore the place of community development agreements and analysis of legal responses to environmental degradation by mining were not discussed in the work. The observed areas not considered would be filled in this thesis.

Lar,[117]the author stated that the concentration levels of trace elements in drinking water and food pose potential health risk to man and therefore require great attention. Miningand mineral processing predisposes trace elements to weathering whereby they are released into the environment in the soil and water bodies. In addition, high levels of these elements from anthropogenic sources have also been reported in soils and water in most mining/mineral

[114]*Ibid*, p.2
[115]*Ibid*, p.8
[116]*Ibid*, pp.17-18
[117] Lar, U.A. (2013). "Trace Elements and Health: An Environmental Risk in Nigeria." Earth Science,Vol.2, No.3, pp. 66-72. www.sciencepublishinggroup.com. Accessed on 29th September, 2017.

processing sites and urban centers.[118] Most elements are taken into human body in air, food and water. The distribution of elements either by natural and/or anthropogenic sources poses potential health dangers to man and therefore require great attention.[119]The level of trace element concentrations in mining sites in Nigeria andtheir effects particularly gold mining in Zamfara State, with emphasis on Bagega and Anka; galena mining at Zurak; tin mining in Jos Plateau; Enugu coal mine; abandoned Enyigba lead and zinc mines; Itakpe iron ore mine and Sagamu limestone mining were examined and analysed.[120]

The above work is relevant in appraising the impacts ofmining of minerals in Nigeria. The scope of the issues discussed in the work when viewed against this thesis were discovered to be limited in the light of the fact that the work did not examine the legal and institutional framework for regulating the impacts of mining on the environment in Nigeria. This observation would be brought into focus and considered in this thesis.

Adefulu,[121] in discussing an overview of the Nigerian Minerals and Mining Act, 2007 *inter alia* considered the issues of ownership and control of mineral resources, revocation of titles by Governors in respect of areas where minerals are discovered, the status of holders of mineral titles granted under the repealed Minerals and Mining Act, No. 34 of 1999; the powers of the minister in the administration of the Act, the departments of the Federal Ministry of Mines and Steel Development, the creation of the Mining Cadastre Office and its functions.

The work also detailed some of the requirements for commencement of development on mining lease area to include the submission of environmental impact assessment study and mitigation

[118]*Ibid*, p.66
[119]*Ibid*
[120]*Ibid*, pp.68-70
[121]Adefulu, A. "Nigeria: An Overview of the Nigerian Minerals and Mining Act, 2007." http://www.mondaq.com . Accessed on 13th November, 2016

plans to the MEC department, submission of details of work to be carried out to the Mines Inspectorate Department of the Federal Ministry of Mines and Steel Development (hereinafter referred to as "MID") and conclusion of Community Development Agreement approved by MEC department. Also discussed are issues of rights of leasee to remove fixtures after mining operations, mining incentives, possession and purchase of minerals, environmental considerations and rights of host communities, offences and penalties. On this last item, the author asserted that "this chapter provides for penalties to offences including (illegal mining, false and misleading statements in applications for mineral title, false or non-declaration of important information, smuggling of minerals, use of false or fraudulent scales, misrepresentation and unlawful interference or obstruction".

Some of the challenges of the work is that it stated that the N.M.M.A provided punishment for illegal mining without stating which section of the Act penalised the act of illegal mining. Though, sections 46 and 131 created the offence of illegal mining but section 133 which provided penal regime for several offences recounted by the author above, did not seem to have specified the penalty for illegal mining. The work did not also examine or "x-ray" the vicissitudes of the impact of mining on the environment.

In another recent work,[122]it was underscored that Nigeria is richly endowed with vast mineral resources that are widely distributed across the Country.[123]Mining is done virtually in all states of the federation. Mining industry was viewed as key driver of economic growth and development, with coal and tin ranked high as Nigeria's foreign exchange earner during the colonial era and after Nigeria's independence but the growth of the industry was hampered by

[122]Olalekan, D. O. et al (2016). "An Empirical Analysis of the Contribution of Mining Sector to Economic Development in Nigeria."*Khazar Journal of Humanities and Social Sciences,* Vol.1, No.1, 2016; http://jhss-khazar.org. Accessed on 26th November, 2016
[123]*Ibid,* p.88

discoveryof oil in 1956 and the oil gut of the 1970s and the 1980s; thus resulting in the decline of overall contribution of mining to national GDP to about 0.5% in 2009.

The collapse of the oil sector, unemployment, global economic recession were mentioned as factors that reawakened government's diversification efforts and therefore, agencies were set up and laws enacted to enhance the contribution of the sector to GDP. The writers further asserted that the domestic mining industry is underdeveloped leading to the country importing minerals that could be produced domestically because of over-dependence on oil. Inadequate legislation and poor enforcement of law were related to have made the sector to be largely informal and inefficient. The problems of environmental degradation and jurisdictional conflicts between federal and state governments were further highlighted.[124]

The crucial and continued relevance of the sector to economic development, wealth creation and poverty alleviation was underscored while economic theories, concepts, principles and analysis of data were undertaken to engrain the contribution of mining to the sector. The work concluded that government should come out with stable ground laws that will create the enabling environment for the private sector to invest more in the mining sector while the government ensures transparency, accountability and monitoring of compliance with mining laws and regulations so that the mining sector could be used to create jobs and wealth for the country and as well contribute to the diversification of the economy.

The gap noticed from the work is that though its principal theme is the contribution of the sector to the diversification of the economy through mining, a consideration or discussion of the legal and institutional framework for attaining this lofty objective may have also being of utility.

[124] *Ibid,* p.90

Furthermore, diversifying the economy through mining would require an insight into dispute resolution mechanisms, compensation regimes and the integration of the concept of community development agreements in the mining industry.

Ogu[125], in his contribution, reviewed the provisions of sections 4 and 44(3) of the Constitution of the Federal Republic of Nigeria, 1999 (as amended) and section 1(1) of the Nigerian Minerals and Mining Act which vests ownership of mineral resources in the Federal Government of Nigeria. The work articulated issues of reforms in the sector from 2005 to include transformation of the role of government from owner-operator to administrator-regulator, the creation of unique role for private sector as operator/owner of mining resources upon conferment of title, the revitalization of mining institutions necessary to regulate the sector, establishment of the Mining Cadastre Office, stemming of informal mining activities and encouraging small scale mining to promote sustainable exploitation within artisanal mining communities.

Some key concepts of the N.M.M.A were highlighted and they include access to mineral titles being open to all that meet relevant requirements, guaranteed security of minerals, use it or lose it, creation of Mineral Resources Management Committee (Miremco) and its roles;, and the recognition of artisanal and small scale miners. The work also articulated the administration/institutional framework of the sector and highlighted the powers and functions of the minister, compensation and its ramification; Community Development Agreement and its ingredients. Concluding the work, the Nigerian Minerals and Mining Policy, 2008 and Nigerian Minerals and Mining Regulations, 2011 were mentioned as part of the legal frame work underpinning the sector while tax/investment incentives/reliefs were succinctly articulated.

[125]Ogu, O.B., "Regulatory Policy Development: Reform Process and the Minerals and mining Act, 2007. Workshop on Investment Opportunities in the Nigerian Mining Sector held at Shehu Musa Yar'dua Conference Centre, Abuja on 30th January, 2012

In reviewing the work, it was observed that most of the reforms pointed out took footage following the enactment of the Nigerian Minerals and Mining Act in 2007; although some background efforts may have began in 2005. For example the transformation of the roles of government and the private sector, establishment of Mining Cadastre office etc received blessings and have their legal basis in the Act enacted in 2007. Also, like the previous works examined above, aside from considering the legal and institutional framework, this one did not evaluate the dynamics of the impact of mining of solid minerals on the environment. The other lacuna is that even references to the legal and institutional frameworks were not exhaustive nor were they considered in great and relevant details.

Ajayi, Salami and Babem[126] asserted that Nigeria is endowed with vast reserves of solid minerals including but not limited to precious metals, stones and industrial minerals. It also provided an overview of solid minerals and types found in Nigeria (stating there are 40 of them). It was asserted that mining of these minerals took a down turn *inter alia* because, of the discovery of oil in Nigeria. New efforts to revitalise the sector resulted in the enactment of the Nigerian Minerals and mining Act, 2007 (NMMA). Legal and regulatory framework, were enunciated as N.M.M.A, National (sic) Minerals and Metals Policy, and the Minerals and mining Regulation.

According to the author, the administration of the mining industry is vested in the Federal Ministry of Mines and Steel Development and its departments which were listed to be Mines Inspectorate Department (MID), Mines Environmental Compliance Department (MEC), Mining Cadastre Office (MCO) and Artisanal and Small Scale Mining Department (ASMD); their functions were also stated.

[126]Ajayi, A. et al. "Nigerian Mining Sector", February, 2012. https://www.kpmg.com .Accessed on 14th November, 2016

The work discussed the types of mineral titles and licences available in Nigeria, positing that all mineral titles with the exception of Reconnaisance Permit (RP) are transferrable under the Act subject to the approval of the Minister and the registration of the transfer with the MCO. The regime of taxes, royalties and fees as applicable to the mining sector were articulated to include Company income Tax, Personal Income Tax, Education Tax, Capital Gains Tax, Stamp duties, Withholding Tax, Royalty, Annual Service Fee, Annual Surface Rent.

Applicable incentives under the Mining Act were stated to include viz: Tax holiday, retention of part of foreign exchange earnings in a domiciliary account as applicable to exporters of mineral products, exemption from customs and import duties in respect of importation of equipment, free transferability of foreign exchange through the Central Bank of Nigeria, grant of personal remittance for expatriate personnel free from any tax, actual amount incurred out of reserves made for environmental protection, mine rehabilitation, reclamation and mine closure cost.

The scholars adumbrated the challenges in the mining industry to include project funding and the reluctance of multinational corporations to fund or invest in the sector owing to slow implementation by the federal government of its reform agenda, infrastructure development challenges such as electricity, lack of access roads to mineral sites, security challenges (though not of magnitude to discourage investors in the sector) and illegal mining and community challenges.

Some of the gaps found in the work include the non-mention or reference to relevant sections of extant laws particularly, the Nigerian Minerals and Mining Act to give fillip to the work; The work did not also consider the impacts of mining on the environment.

In the contribution of Oladunjoye and Okonkwo'[127]mineral resources create potential opportunities for national development and the neglect of solid minerals sector had negative effects on the economy. It was posited that mining and quarry sector accounted for 9.12% growth of Real GDP of the Country in the fourth quarter of 2014 with coal mining, quarrying and other minerals leading the growth. It was underscored that efforts were made to refocus on the nation's solid minerals sector, considering the potentials of the industry in becoming a viable alternative foreign exchange earner in Nigeria but infrastructural deficits and insufficient capitalization remained bane to the rejuvenation of the solid minerals industry in Nigeria.

An overview of the mining legal framework was considered and core legislations were stated to be N.M.M.A, Nigerian Minerals and Mining Regulations 2011, Guidelines on Mineral Titles Application 2014, Nuclear Safety and Radiation Protection Act, National Environmental (Mining and Processing of Coal, Ores and Industrial Minerals) Regulations 2009, Environmental Impact Assessment Act, Explosives Act, NEITI Act and Land Use Act.

The sector is superintended by the Federal Ministry of Mines and Steel Development which functions primarily through MID, MEC, MCO, ASMD and MIREMCO. Types of solid minerals titles were highlighted. On the issue of royalty, reference was made to Schedule 4 of the Nigerian Minerals and Mining Regulations, 2011 which states the royalty payable in respect of 52 mineral types to be between 3%-5% advalorem.

The matter of priority of interest of land use and compensation was harped upon while referring to the provision of section 22 of the Nigerian Minerals and Mining Act which states that the use of land for mining operations amounts to overriding public interest which may result in the

[127]Oladunjoye, O. et al. "The Mining Sector in Nigeria." http://wwwkwm.com posted 1st December, 2015; Accessed 10th November, 2016

Governor of the State revoking any prior right of occupancy in accordance with the provision of section 28 of the Land Use Act i.e subject to the payment of compensation to the occupier by the Government or mineral title holder, where so directed by the Government. Other incidences were stated to be payment of compensation to the community where land was leased and not revoked; and compensation for surface rights to holder/occupier.

On community relations, development and rehabilitation of mined out areas, it was reiterated that holders of titles are mandated to submit Community Development Agreement, environmental impact assessment statement and environmental project and rehabilitation programme before mining, to guarantee the rehabilitation of mineral title areas and make prescribed contribution to the Environmental Programme and Rehabilitation Fund. Holders are further obligated to embark on post mining rehabilitation. Incentives available to investors under the N.M.M.A were also mentioned.

The challenges of the sector were posited to include apathy of banks to finance the sector, security (according to World Investment Report (WIR) of the United Nation Conference on Trade and Development, the domestic economy lost about N1.33 trillion foreign direct investment owing to terrorists activities and illegal mining activities). Other challenges were indented to be infrastructure and power supply. The authors further canvassed the need to vest State Governments with the rights to deal with the resource which will require constitutional amendment with its attendant intricacies.

Some draw backs of the work include the fact that the contribution did not go beyond highlighting the legal and institutional underpinning the issue of mining of solid minerals in Nigeria. An exhaustive listing of relevant laws, regulations including relevant institutions and

their powers, functions and roles were not articulated. This defect does not aid a comprehensive understanding of such issues.

In another work,[128]a background to the study and the place of legal and regulatory framework in the economic development of any Country was underpinned. The study articulated that the major regulatory framework for economic development in Nigeria has been the use of Medium-Term National Plans; and that the 1999 Constitution vests ownership of mineral resources in the Federal Government. However, the bane of development of the sector was stated to include lack of enforcement of laws. It was mentioned that large deposits of 54 different solid minerals exist in Nigeria. This statement or its source was not substantiated.

According to the author, the scope of the study is a focus on legal and regulatory frameworks in agriculture, oil, solid minerals, energy and power, research and development and human capacity development sectors of the economy from1960 to when the work was authored. Definition of terms and conceptual clarification was undertaken and terms like resource diversification, legal framework and regulatory framework were analysed.

Further relevance of the study to solid mineral resources include the example of Turkey where the right to explore and exploit mineral resources belong to the State. However, the State may delegate this right to individuals or public for specific periods; this is in spite of Turkey being a unitary State, it empowers the Governor of a Province by law to approve on behalf of the State licences for the exploitation of mineral resources.

According to the contribution, in Canada which operates a federal constitution, Provinces are responsible for granting mining permits and access to land while companies pay taxes in the

[128] "Legal and Regulatory Frameworks for Resource Diversification in Nigeria." http://www.slideshare.net; accessed on 7th November, 2016

form of federal corporate income tax of 15% and Provincial mining taxes/royalties of between 10%-18%.

The author expressed concerns that in Nigeria, the Constitution placed mining of solid minerals under the Exclusive Legislative List and therefore, States with large deposits of various resources awaiting exploitation by investors are encumbered by laws. It was further posited that lack of proper coordination gave rise to illegal exploitation resulting in loss of revenue. It was recommended that Public Private Partnership (PPP) should be employed in exploitation of rich mineral potentials for socio-economic transformation of States. It was emphasised that Nigeria has many laws on exploitation and management of resources but the problem has been the lack of implementation and enforcement of such laws. It was further reiterated that Nigeria's effort at economic diversification has been hampered by constitutional provisions inhibiting State Governments, Local Governments and the private sector to exercise their initiatives.

The contribution stated that in Canada, mining contributed S36 billion to the country's GDP in 2010; 29% of the value of exports and earned S84 billion in taxes and royalties to government. In addition, Canada has over 5,000 companies that have created jobs and economic growth for over 115 communities and employed 308,000 Canadians in 2010.[129]

It was also posited that in Nigeria, huge illegal mining activities still go on because of the non-active participation of the Federal Government that has exclusive right to mining exploration and exploitation; and that the mining sector contributed a meagre 0.4% to the GDP in 2011. This is in spite of the huge and highly demanded mineral deposits spread over Nigeria. The contribution, recommended that the National Assembly should enact law to legalise artisanal mining.

[129] *Ibid*

As lucid as this contribution has been, the gaps observed in the work include the fact that no relevant provisions of laws (either extant or repealed) were cited to buttress some of the submissions. It may also not be correct to posit that the Federal Government has exclusive right to mining exploitation and exploration. The extant law being the Nigerian Minerals and Mining Act has as its philosophy created and legislate roles for the Federal Government as the regulator of the sector and the private sector as the owner/operator of won mineral resources. Inactivity in the sector could be attributed to numerous factors which *inter alia* include the slow implementation of reform agenda of the government, and the large number of abandoned or non-utilization of licences; which necessitated the policy of "use it or lose it". Finally, the recommendation that the National Assembly should enact law to legalise artisanal mining may have been made without reference to the provisions of the N.M.M.A.

Another perspective or contribution to the subject matter [130]reflected that Nigeria is said to have as many as 44 different types of minerals in more than 500 locations across the Country. Thus an exposition of mining potentials in Nigeria and the Country being a mining destination was mentioned. Some relevant laws underpinning the subject matter particularly, the provisions of sections 1, 1(2),1(3) of the Nigerian Minerals and Mining Act, 2007 and section 44(3) of the Constitution of the Federal Republic of Nigeria, 1999 (as amended) were discussed while the types, quantities, and locations of some mineral resources in Nigeria were mentioned. The use of land for the purpose of mining was considered being "overriding public interest within the meaning of Land Use Act." Tax incentives and regime in the sector were highlighted. Resultantly, grave concern was expressed in the work about the Constitutional restriction placed

[130]"The Case for Solid Minerals Development "; http://www.ipad-nigeria.com. Accessed on 17th November, 2016

on State governments in developing the mining industry and therefore critical amendment of the Constitution was proposed.

The reluctance of Multinational Corporations to fund major mining projects in the Country was attributed *inter alia* to the slow reform agenda. The other challenges of the sector were indented to include poor infrastructure (roads, power etc), security challenges and insurgency in the North-East. It was also recommended that environmental pollution should be seriously considered as it effects on communities can be devastating.

The above work may have inadvertently misinterpreted or misapprehended the role of the federal government under the Nigerian Minerals and Mining Act, 2007 because reference to the restriction of state governments as reflected may not have presented the correct position of the Constitution and other relevant extant laws; since the provision of the Constitution and such laws vested all mineral resources in Nigeria in the federal Government. As for developing the industry, state governments, if they so desire to develop mineral resources in order to enhance economic growth and development of environment of communities within their territories may, choose to set up companies and obtain relevant licences. It is however known from most parts of the world that governments and their agencies are not the best managers of businesses and economic resources, particularly in Africa.

The work did not also consider the impacts of mining of mineral resources and their effects on the environment and thus provide panaceas for mitigating or preventing such; more particularly, that there are many abandoned mining sites in Nigeria that are degraded and in urgent need for rehabilitation, resuscitation, restoration, remediation and reclamation.

Erhun,[131]expoused that despite the huge deposit of mineral resources in Nigeria, success of mineral and mining industry to poverty alleviation is relatively low, recognizing the fact that activities in the industry can cause damage to the environment and reduce economic growth if not carried out in environmentally sound manner. Also the challenge of locus standi to the activities of civil societies in ensuring the ventilation of rights was stressed.

The writer echoed that Nigeria is richly endowed with minerals and she has a very high significant share in the world's mineral market. It was expressed that the hope to use minerals as engine of growth made the Nigerian state to take full control of the industry. According to the writer, resuscitation of the sector begun and state enterprises were privatised and the investment climate enhanced through laws and administrative regimes. Tri-sector partnership involving government, private sector and local communities was introduced and encouraged.

Despite the foregoing, the Nigerian minerals sector, according to the writer, has failed to realise improved wellbeing for all through the exploitation of mineral resources for sustainable development. Nigeria's degraded environment as a result of activities in the mining sector culminates in challenges of health, deforestation and erosion etc. The challenges of mining were articulated to include environmental, investment, distributional/allocation challenge, governance and macro-economic, how to meet sustainable development imperatives, how to optimize the trade-off between environmental damage and the potential benefits of national and local economies. In most cases, it was asserted, mines decommissioning were not planned for in continuous manner.

[131]Erhun, M. O., *op cit*.

The legal framework on the subject was highlighted to include Constitution of the Federal Republic of Nigeria, 1999 (as amended), Minerals and Mining Act, Land Use Act, Environmental Impact Assessment Act etc. For institutional framework, the National (sic) Environmental (Mining and Processing of Coal, Ores and Industrial Minerals) Regulations, 2009 were mentioned.

The effort also considered the framework for a sustainable mineral sector in Nigeria to include principles of sustainable development, integration of mining into the Nigerian economy, sustainable use of mineral resources, equity and eradication of poverty, precautionary approach, good governance, access to information, public participation, the principle of common but differentiated responsibility, capacity building, and financial assistance.

The work reached the conclusion that the Nigerian mining sector should be positioned to act as an engine or catalyst to the attainment of sustainable development in Nigeria. Recommendations made include the negotiation of matters for protection of stakeholders including mining communities, measures towards attaining sustainable development in the sector, broadening of *standi*, embarking on pollution prevention and control measures, while small scale mining should be allowed.

The *lacunae* found in the work include the fact that rather than refer or cite the extant law on mining of solid minerals, being the Nigerian Minerals and Mining Act, 2007 reference was made to the repealed Minerals and Mining Act, No. 34 of 1999. The other important omission is that in spite of the myriad of issues considered in the work no provision of extant legislations were cited to buttress issues raised and analysed. Also, no single case law was considered. The work erroneously termed the National (sic) Environmental (Mining and Processing of Coal, Ores and

Industrial Minerals) Regulations, 2009 as part of the institutional framework on the subject rather than as legal framework.

Okorodudu-Fubara in her book[132], particularly in one of the chapters titled "Land Resources Protection" while commenting on the Minerals Ordinance, 1946 recounted that some of the ensuing prescriptions on a licensee are very important from the perspective of control measure against some of the adverse environmental effects of mining operations. The learned author further asserted that section 34 of the Minerals Act, 1946 (Laws of the Federation of Nigeria & Lagos) is very significant, in as much as it represents an initial legislative effort to repair the damage to land through mining operations by imposing a statutory duty on mining companies to restore or reclaim mine-out lands.

The author further submitted that, pursuant to that provision of the law, the Minister may grant a mining lease and he may in any case make such grant subject to such covenants and conditions as he may think fit and in particular may require the reasonable restoration of any land used for mining operations by the replacement of the surface soil, the filing in of worked areas, the removal of any tailing or other dumps or heaps caused by mining operations and such other methods as may be reasonably required or in respect of any particular mining operations or methods of mining. The respected author's subsequent analysis and criticism of the provisions of the above section relating to the discretion granted the Minister to order the holder or grantee of a mining right or mining lease to restore any area in respect of mining operations is no doubt plausible and the suggestion that the section ought to have been amended to make it mandatory for the Minister to order reasonable restoration of mine-out areas, was well focused to the point

[132]Okorodudu-Fubara, M.T. , *op cit*, pp.371 &372

of achieving environmental restoration following the mining of solid minerals. These suggestions however have been overtaken by events.

This is because, the Minerals Ordinance, 1946 had been repealed and more importantly, the provisions of section 115of the Nigerian Minerals and Mining Act, 2007 which is the extant legislation, has filled the *lacunae* observed by the learned author in her above exposition, on the Minister's discretionary power to require the reasonable restoration of mine-out land. The Nigerian Minerals and Mining Act, 2007[133] provides that "where land which is subject of a mining lease has been exploited, the Reclamation (sic) mined out areas shall be restored by the applicant under the condition of the grant otherwise the relevant provision of section 10 of this Act shall apply." It is imperative to state that theMinerals and Mining Act was enacted after the learned author published her work under review.

Some scholars however review, analyze and place reliance on the provisions of Section 34 of the Minerals Act (as was then relevant) and Section 115 of the N.M.M.A (being the extant provision) as they relate to restoration, rehabilitation and remediation in appropriate circumstances, without more. The concern should however include certain expectations of the rural host communities of mining areas as to what additional measures ought to be taken by miners in alleviating the impact of mining activities on the livelihoods of the people of the rural host communities- be they biological, economic, social, psychological and traumatic geared towards sustainable development. Some of these concerns have however been addressed by the provision of section 116 of the Nigerian Minerals and Mining Act which engrains the matter of Community Development Agreements between mining companies and host mining communities

[133]Section 115, Nigerian Minerals and Mining Act, No. 20, 2007

and the Nigerian Minerals and Mining Regulations[134]which makes further provisions for compensation and social obligations of mining companies to members of host mining communities. Despite the foregoing, the concerns expressed herein may not have been totally resolved.

For example the impact of intolerable noise from the use of explosives and the operations of machines and equipment coupled with the experience of deleterious dust particles and noxious substances and chemicals constantly being experienced or inhaled by inhabitants of the various mining communities, are not issues that could be restored, rehabilitated, remediated and resuscitated within the context of the said section 34 of the repealed Minerals Act nor section 115 and other similar sections of the Nigerian Minerals and Mining Act.

The above assertion is made in the light of the fact that the restoration of mined-out areas though very enviable and desirable, does not by itself cushion the psychological, emotional and other personal and individualized trauma and experiences members of the communities of mining sites or areas go through. Idowu graphically represented the foregoing analysis/observation in the following apt words:

> within the past three [now four] decades, environmental degradation and pollution of different dimensions have caused a lot of havocs to human lives and properties in Nigeria. The complexity of the problems at present has made the people, not only to suffer from nursing the various wounds inflicted on them: but to mount pressure on perpetrators of environmental pollution to give such things tangible enough to make up for the losses incurred or suffered through their acts.[135]

The foregoing remarks by the author though generalized to issues of environmental degradation and pollution in Nigeria is to some extent relevant to environmental degradation by the mining of

[134]Regulations 11 & 13, Nigerian Minerals and Mining Regulations, 2011
[135]Idowu, A.A. (2003-2004). "Examining the Issue of Compensation for Environmental Degradation and Pollution in Nigeria."*Ahmadu Bello University, Law Journal,* Vols. 21-22, p.140

solid minerals in Nigeria today. However, reference to people mounting pressure on perpetrators of environmental pollution to give things tangible enough to make up for the losses incurred or suffered through the acts of the perpetrators have not really gained prominence in the realm of enforcement of rights relating to environmental degradation by the mining of solid minerals in Nigeria. The statement may be more correct in respect of issues of environmental degradation by the mining of petroleum (liquid) and gas mineral resources in Nigeria where the consciousness of members of host communities are more articulated and aggregated as a result of awareness, being aftermath of the long period and intense degree of ravage and harm to the environment of those areas and their inhabitants. It is expected that with increased mining of solid mineral resources and better appreciation of the deleterious effects of such activities, the awareness of the various host mining communities will become better articulated and result-oriented.

Furthermore, Idowu was apt, to a very large extent, in his conclusion when he submitted thus:

> Above all, the issue of payment of compensation to victims must not always be over emphasized as a final solution to the problem. It has been recognized over the years, that in cases of environmental degradation and other illicit acts that inflict injuries on persons, no amount of compensation in monetary and material terms can completely remove the effects of the actions. This proposition is now subsumed in the principle established by the celebrated United States' Supreme Court decision in Aloeboetoc Reparation case[136] known as *causa causaeest causa causati* meaning "to compel the perpetrator of an illicit act to erase all the consequences produced by his action" is completely impossible since that act causes effects that multiplied to a degree that cannot be measured.[137]

The scholar continued the above analysis in the following words: “In the light of the above, governments, individuals and all stakeholders must refrain at all times, from acts capable of causing environmental degradation and pollution in Nigeria. No amount of compensation can completely repair whatever has been damaged once! Prevention is always better than cure.”[138]This advice by the scholar is more particularly relevant to issues or matters of

[136](1993) USSC, Sept. 10, p.9
[137]Idowu, A.A., *op cit*, p.150
[138]*Ibid*, p.150

environmental degradation by the mining of solid minerals in Nigeria. This is because solid minerals are non-renewable resources and once their stock, are depleted in unsustainable manner, the Nation and the environment is worse off for it. It is clear from the experiences of numerous mining host communities who are directly affected by the deleterious effects of mining activities, that no amount of compensation can totally assuage the damage done to the environment and humanity. The panacea is to continue to mitigate and where possible prevent such negative effects in the interest of ensuring sustainable development in the mining of solid minerals in Nigeria.

It must however be admitted that the scholar in some parts of the work,[139] discussed other categories of environmental pollution which people and the government have not been handling seriously and which are identified in both mineral and non-mineral producing areas of Nigeria to include noise pollution, wildlife mismanagement, unregulated destruction of forests in Nigeria through illegal felling and burning of trees, pollution of water bodies and the resultant constant loss of lives of many aquatic creatures and refuse disposal problems.

In spite of the foregoing contributions made by the scholar in the above work just examined, the scope and delimitation or delineation of the topic of the work titled "Examining the issue of Compensation for Environmental Degradation and Pollution in Nigeria", is no doubt but curiously wider than the actual examination and discussion of the subject matter by the author. This is because *inter alia*, the work focused extensively on the issue of compensation for environmental degradation and pollution in Nigeria in the oil industry, that is by the mining of liquid (petroleum) resources to the detriment of other equally important and expected areas like

[139] *Ibid*, pp 144-146

for example, solid minerals sector. In the light of this, it is opined that the topic should have been delineated by adding the phrase-"An Appraisal of Mining of Petroleum Resources".

Okorodudu, in her work earlier reviewed, in a sub-title "Law, Policy and Conservation of Nigeria's Natural Resources" considered sustainable development in the light of land, water and air resources. In consideration of land resources, the scholar gave due consideration to land resources dwelling more on agriculture, farming practices including the adverse effect of bush burning, hunting, forest products and wild life. The author detailed the fact that misuse of land can have harmful impact on the environment and the existence of man. Also considered was the fact that the misuse of land results in deforestation and desertification. However, this aspect of the scholar's work,[140]did not mention that, solid minerals constitute a vital part of land resources in Nigeria; and that their exploitation and exploration result in harmful impact and have deleterious effects on the environment and hence its negative effects on the activities and survival of mankind.

Grantley and Ray[141] in their work stated the scope and objectives of the study, the basis for country selection, an over view of the mineral sector in the respective countries, financial regime, analysis of impacts of the regime, mineral development, summary comments and conclusions. Particular issues of mineral rights, administration and management, licensing system, termination of rights and dispute settlement were also discussed.

According to the authors, the Mining Acts of all the countries examined (Sierra-Leone, Tanzania, Zambia, Botswana, Papua New Guinea, Quebec and Malaysia) placed wide discretionary powers

[140]Okorodudu-Fubara, M.T., *op cit,* pp.39-45
[141]Grantley, W. W & Ray, K. (1986). "Options for Developing Countries in Mining Development", Macmillan Press Limited, London

on the Ministers in the grant or rejection of licences, and in the settlement of disputes between contending parties with respect to the preservation of their perceived rights under various licences and in the termination of rights awarded by licences. Some of these powers have been delegated to the public functionaries such as the Commissioner for Mines in Tanzania, the Deputy in Quebec or Warden in Papua New Guinea while decisions taken by the Ministers are subject to appeals in court.[142] The authors also examined and assessed the contributions of mining to the GDP and economic growth of the countries examined, financial regime constituting *inter alia* of royalty, income-related taxes and resource rent while putting in perspective the impact of various fiscal provisions as enshrined in the respective statutes of the countries.[143]

Elaborating on the issue of Mineral Development Agreement, the authors espoused that despite the presence of elaborate financial and mining codes, contemporary mineral developments in Less Developed Countries (LDCs) are effected by means of another instrument- the Mineral Development Agreement. According to the authors, all the LDCs in the study sample have concluded agreements with various mining companies to search for, exploit and market minerals found in their national borders.[144] They asserted that a mining agreement between the government and a multi-national is a complex document which sets forth in detail the rights and obligations of the parties in the course of the various stages of the project. The legal basis for negotiation is the mining code and other legislation relating to taxation, foreign exchange controls and imports.

[142]*Ibid*, p.30
[143]*Ibid*, p.56
[144]*Ibid*, p.87

The foregoing work considered some essentials in the business of mining of mineral resources as it relates to the economies of the various countries considered. The issues discussed are no doubt relevant to Nigeria and therefore there are lessons to be drawn from the work as it relates to the Nigerian mining industry. However, the work did not discuss issues of the impacts of mining on environment and institutional framework of the countries of study. Though, such issues may not be directly relevant to Nigeria but relevant lessons could have been drawn. This researcher would bring on board the consideration of such issues within the context of the Nigerian mining industry.

Amponsah-Tawaih and Dartey-Baah[145]in their exposition, mentioned that mining is the world's second oldest industry after agriculture. They recalled that Ghana has a long tradition of gold mining with an estimated 2,488 metric tons (80 million ounces) of gold produced between the first documentation of gold mining in 1493 and 1997.[146]To stimulate investment into the minerals economy in Ghana, from1985 onwards, the government implemented series of review of laws and policies to create and effective regulatory framework for the mining industry which led to the liberalization of the mining sector; with the government selling out the majority of shares of state owned mines to private companies which were of foreign decent.[147]

The authors underscored the importance of mining; stating that minerals are a blessing and a gift available to be developed, sold and used to better the lot of a nation's citizens. A number of industrialised countries like Australia, Canada, Sweden andStates have depended on the exploration and extraction of minerals for their economic development. Mineral production generates income and foreign exchange through exports, and can stimulate local economies the

[145]Amponsah-Tawaih, K. &Dartey-Baah, K. , *op cit*
[146]*Ibid,* p.62
[147]*Ibid,* p.63

local purchase of inputs. Mining companies employ workers who earn income, some of which they spend on domestically produced goods and services. Governments receive taxrevenues from mineral production which are available to fund education, health care, roads, electricity supply and other forms of infrastructure development to the local communities within which they operate without recourse to their tax obligations.[148]The informed consensusof most researchers therefore is that minerals have the potential to contribute significantly to economic development.[149]

Themineral sector in spite of the horrendous picture painted of it, the associated health and safety hazards, and the call by some international NGOs for its abolishment in developing countries, is heavily relied on by many developing countries as driving force for economic development.[150] The contribution of mining to the GDP of Ghana was put at 5.2% in 2006.[151]The authors mentioned someof the negative impacts of mining and stated that by quantification, annual losses to the Ghanian economy through environmental degradation as found by the Environmental Protection Council in1988 put conservative estimates at 41.7billion Cedis theequivalent of 4% of total GDP.[152]

According to the authors, in spiteof the positive economic implications of mining in the development of an economy, some researchers and Non-Governmental Organizations (NGOs) continue to be on the heels of mining companies trying to discourage their operations in developing countries.[153]Friends of the Earth, an international NGO, in a position paper released

[148]*Ibid*
[149]*Ibid*, p.63
[150]*Ibid*
[151]*Ibid*, p.65
[152]*Ibid*
[153]*Ibid*, p.66

in 2000 calling for the phasing out of public financing for mining and fossil fuel projects argued that "extractive industries do not foster sustainable development or alleviate poverty.[154]

The above work provided an interesting vista into the contributions of mining to the economic development of Ghana, while it also stated some of the negative impacts of mining on the environment. It is submitted that though the figures of contributions and the nature of environmental degradation by the mining of minerals may not be the same in Ghana and Nigeria, mining holds potentials for development of both countries. This researcher would therefore appraise the legal and institutional framework for regulating the impacts of mining on the environment in Nigeria and steps being taken by the Nigerian Government to create level playing field forensuring sustainable mining activities in Nigeria.

Kaniaru, in his book[155] outlined some priority environmental problems of the region (Southern Africa Development Community) to include land degradation (it is this scholar's opinion, that same applies to Nigeria) and asserted that in view of the environmental problems facing the region, the issue of the sustainability of its development strategies to meet the needs of the present generation without prejudicing those of the future generations to do the same is of utmost importance. It is imperative to state that the problem of environmental degradation whether by mining activities or not, is not peculiar to Southern African region alone, but also pronounced in Nigeria.

It is imperative to query that in the present Nigerian and African societies or nations where poverty, lack, deprivation and squalor have reached an unprecedented level can the present generation really be expected to bequeath unto the future generations mining resources which are

[154] Ibid, p.67
[155] Kaniaru, D., *op cit*, pp. 4 &5

in fixed quantities and are not replenish-able, when it, the present generation has not met its needs? The concept of needs has to be analyzed against the background of the fact that since human beings, are insatiable, can their needs be totally, completely and permanently met or satisfied? A justifiable concern has also been raised by some scholars who asserted that since previous generations and indeed this generation of Africans have not exploited and utilized mineral resources in a sustainable manner this generation obviously cannot bequeath what it does not have based on the latin maxim *nemo dat quod non habet*.

On the germane issue of sustainable development and its ramifications, Oke[156]while paraphrasing the work of Gundling[157]stated thus:

> Gundling's argument takes a practical approach to intergenerational sustainability. The scholar views responsibility not as a moral but legal obligation to the future generation and urges that attaining intergenerational equity is contingent on "intra generational equity", that is equity amongst generations. Citing developing countries in Africa and Asia as examples of intra-generational equity (inequity) to be addressed, the writer argues strongly that equity among generations would be impossible without equity among the present generation since a generation not able to achieve equity among itself would probably not be able to hand equity unto the coming generations. The latin maxim, *nemo dat quod non habet*- no one gives what he does not possess, captures this view.

Salu[158]posited that until the promulgation of the Federal Environmental Protection Agency Act most of the legislations on the environment were not specifically meant as legislations on the environment, citing the example of the Minerals (Safe Mining) Regulations. The scholar reproduced Regulation 132[159] which provides that "water containing poisonous or injurious chemical solutions used in the treatment of gold or other ores or for other purposes shall be effectively fenced off to prevent inadvertent access to it and notice boards shall be put in suitable

[156]Oke, Y., *op cit*, pp.171 &172
[157]Grundling, L. *Our Responsibility to Future Generations(citation not provided by Oke)*
[158]Salu, A.O. (1998). "Can Laws Protect the Environment in Nigeria?" *Modern Practice Journal of Finance and Investment Law*, Vol. 2. No. 2, p.140

[159]Minerals (Safe Mining) Regulations, made pursuant to Minerals Act, Laws of the Federation of Nigeria, 2004

places to warn persons from making use of such water." The writer did not appraise the implications of this provision.

It should be appreciated that the mere fencing of such poisonous or injurious solutions and putting warning notices do not prevent such poisonous or injurious solutions from causing degradation to the environment- land, soil, water and air inclusive. Such substances could also spill into adjoining lands, carried by air or other means and inhaled with its negative consequences and implications for human health and well-being; and the overall degradation of the environment.

The Federal Environmental Protection Agency (FEPA) in one of its publications[160] stated that the environmental impact of mining activities, are also of concern in Nigeria. The document went on to state that priorities include new measures for the restoration of land and vegetation following mining operations, stringent regulations for the disposal of mine tailings and waste; and more prudent use of non-renewable mineral resources. It is opined that the publication should have enumerated previous measures taken to tackle the problems of the impact of mining on the environment, before proposing new measures so as to ascertain whether the new measures could better assist in solving the challenges of degradation of the environment by the mining of solid minerals in Nigeria. The enumeration of previous measures would act as yardstick for analyzing whether the new measures will be effective. This perspective draws input from the historical development of a subject through history to aid in achieving better results. According

[160]Transition to Sustainable Development in Nigeria (Abuja, 1992). Being *Report for the United Nations Conference on Environment and Development* held at Rio de Janeiro, Brazil, 3-14 June 1992.

to Aboki, "History points to the past and creates a demarcation between the present and the future. It shows progress between the present and the past."[161]

It is observed that additional measures that will assist in tackling the problem of environmental degradation resulting from mining activities, particularly solid minerals, may include information and education of the populace on the causes, consequences or effects of various environmental practices that can prevent, exacerbate or mitigate environmental degradation in Nigeria by the mining of solid minerals. It has also been observed that the impacts of mining of minerals on the environment in Nigeria, is exacerbated by the lack of enforcement[162] of the various relevant laws, regulations and policies.

Lawal,[163]in a sub-title 'The African and His Environment before European Incursion.[164] In the contribution, the scholar utilized his wealth of experience and orientation to discuss the historical perspective and underpinning of the topic; and recounted how well the African protected his environment before the advent of the European. The research work adumbrated major environmental practices of the Africans prior to the advent of colonialism in sectors such as agriculture, viz-shifting cultivation, bush burning, conscious treecutting for fuel, gaming and wild life conservation; traditional African architecture; refuse disposal system etc. As valid as the analysis surrounding the environmental measures taken by African societies in the pre-colonial were, practices of African societies in the area of exploitation of solid minerals, particularly

[161]Aboki, Y. (2013). *Introduction to Legal Research Methodology: A Guide for Writing Long Essays, Theses, Dissertations and Articles.* (Third Edition) Ajiba Printing Production, Kaduna, p.90.
[162]Ladan, M.T. (2014), *op cit*, p.439
[163]Lawal K. (Reprint 2000). "Ecology and Culture: Reflections on Environmental Law and Policy in Sub-Saharan Africa." In: Osunbor, O.A and Simpson S. *et al.* (eds.) *Environmental Law and Policy*, Law Centre, Faculty of Law, Lagos State University, Lagos.
[164]*Ibid*, pp.30-32

measures adopted for avoiding or mitigating the impacts of mining of minerals on the environment, were not stated.

It must be underscored that at all times prior to the colonial annexation of African territories by the Europeans, mining of solid minerals in addition to agriculture occupied a major fulcrum in the socio-economic and political structures of African empires/kingdoms. It must be reiterated that mineral extraction is an integral part of human civilization.[165] Solid mineral resources were available and exploited for varied uses ranging from mining of iron ore for tools of war and economic activities as in the provision of farming implements; furnace and treatment of gold for adoration and trade, etc. It is necessary to recount that the African avoided degrading the environment by mining of solid minerals through creation of traditional taboos, customs[166], beliefs and cultural system of mining only those mineral resources in quantities that were necessary for their sustenance with a focus of bequeathing sustainable environment to succeeding generations.

In addition, not only in African societies or countries but the world over, land and land use is a major component of the environment; without land and all types of activities that take place on land giving mankind source of livelihood, generation and recreation, the environment will obviously be incomplete. This is in view of the fact that land and the other vital components of the environment provide mankind with the requisite habitat. These solid minerals are endowed and buried within the earth.

[165]James I., *op cit*, p.204
[166]Kaniaru, D., *op cit*, p.5

Akper,[167] enumerated and discussed some of the effects of the mining of solid minerals on the environment. The scholar analyzed the provisions of the extant legislation on the subject matter of mining of solid minerals and examined some of the forward looking innovations brought by the Nigerian Minerals and Mining Act, 2007 e.g the creation of vibrant departments to monitor mining of solid minerals in the most sustainable manner by *inter alia* checking issues of environmental degradation that arise from mining activities of solid minerals. The scholar submitted thus:

> The Minerals and Mining Act of 2007 (hereinafter called 'the 2007 Act') is Nigeria's extant legislation that regulates the mining industry. The 2007[Act] has expectedly legislated many of the environmental objectives of government into law. The aim is to givelegal backing to the environmental objectives encapsulated in the Mining Policy and compel the observance and enforcement of the various environmental obligations imposed on holders of mining titles.[168]

The Mining Policy referred by the author may have been the Mineral and Metals Policy, 2008. Should that be the case, the author's analysis or rationalization may not be correct because the Minerals and Metals Policy, 2008 followed the Nigerian Minerals and Mining Act, 2007 and not vice versa as appear to have been posited by the scholar.

At this juncture, in order to appreciate policy making process, it is important to make the following clarifications. In the realm of Public Policy Analysis which is a field of study, according to Olaniyi,[169] there are three stages involved in policy making process viz; the formulation stage; the implementation stage; and the feedback or the evaluation stage.[170] Policy culminates in legislation when the problem or issue reaches a crescendo. However, in law, it is a mixed grill. Policy at times precedes legislation or law making while in other instances, law making precedes Policy making as in the case considered above where, the Minerals and Metal

[167]Akper, P.T., *op cit*, pp. 182-199
[168]*Ibid*, p.190
[169]Olaniyi, J.O. (Reprinted 2001). *Foundations of Public Policy Analysis*, SUNAD Publishers Limited, Ibadan
[170]*Ibid*, p.29

Policy, 2008 followed the Nigerian Minerals and Mining Act, 2007. The justification for the mixed-grilled position in law is therefore understandable. At times government policies are made as catalyst to legislation or law making while at other times policies are made to give effect to law or legislation.

The earlier position of policy preceding legislation agrees with the subtle view expressed by Fagbohun, when he stated that "Governments have responded with public consultation, statements of policy, and with legislative intervention. This in turn has resulted in the emergence of and interpretation of new pieces of legislation, and the development of complex administrative regimes."[171] Policy influences the strict letter of pieces of legislation while the latter gives effect to policy.[172]

Fagbohun remarked, "for Nigeria, as with other developing nations, with growth and development came many environmental problems."[173] He went ahead to catalogue some of those problems by utilizing the often used word "include" to indicate that the problems mentioned were not exhaustive. However, it is essential to observe that in spite of the clear problems of environmental degradation imminent from the mining of solid minerals in Nigeria transcending particularly the colonial period till the time of authoring his work, no mention was made of this problem.

The problems of environmental degradation by the mining of solid minerals in Nigeria are not far-fetched; for example, the Jos mines and Enugu coal mines tell the sordid impact of this

[171]Fagbohun, O. (2010). "The Emergence and Development of Environmental Law in Nigeria (1960-2010)." In: Azinge, E. and Aduba, N. (eds.) *Law and Development in Nigeria: 50 Years of Nationhood.* Nigerian Institute of Advanced Legal Studies), Lagos , p. 319

[172]Fagbohun, O. (2011). "Environmental Law, Legislation and Policy Making in Sub-Saharan Africa." In: Kola-Olusanya A., Omotayo A. and Fagbohun O. (eds.) *Environment and Sustainability: Issues, Policies & Contentions.*University Press Plc, Ibadan, p.167

[173]Fagbohun, O. (2010). *Op cit*, p. 323

activity on the landscape and quality of living of the people of that area up till date. The Enugu coal mines and the Okaba coal mines are also resplendent with challenges of environmental degradation and pollution. There are also gunge, pits and collapsing tunnels resplendent of the Okaba mines and the Jos mines with the issues of acid rains and blurring of visibility and serious dust haze around Ewekoro in Ogun State. The other reason why the impact of mining of minerals on the environment deserved mention in the said work, is because at a time in our history before the discovery of oil in Oloibiri in 1956, aside from agriculture, the mining of solid minerals provided the country with employment for its citizens and foreign exchange through the export for sale of these resources.

James, in his contribution gave a lucid and simplified scientific insight into mining of mineral resources including petroleum. The scholar highlighted some of the environmental problems associated with mining of minerals in Nigeria and made recommendations for ameliorating the negative impact of mining. The scholar recommended that "impact assessment of mineral mining be carried out to know the likely impact on the environment before mineral exploitation will commence." According to this scholar, "it is hoped this will go a long way to equip the companies [individuals, mining co-operatives, relevant Ministries, Departments and Agencies of Government] and host communities on ways to effectively mitigate unwanted consequences."[174]

In making the above submission, it is observed with respect, that the author should have made reference to the provisions of the Environmental Impact Assessment Act, 1992 which is a law that was already in existence at the time the work was published in 2005.

[174]James, I., *op cit*, p.210

Since the publication of the work referred to immediately above, in appreciation of the vicissitudes and dynamics of the impact of the mining of solid minerals in particular on the environment, more proactive and result-oriented legislations tailored towards *inter alia* mitigating the impact of mining on the environment have been churned out by the Federal Government of Nigeria and these include the Nigerian Minerals and Mining Act, the National Environmental Standards Regulatory Establishment Agency Act and the Nigerian Minerals and Mining Regulations.

Osunbor, in his contribution to a compendium analyzed the impacts of solid minerals exploration and exploitation in Nigeria particularly on land, water and air. The scholar made reference to sections 46-47 of the Minerals Act, 1990 which dwelt on the problems of pollution associated with mining activities. The author pointed out that the sections made provisions for the safe disposal of overburden and excessive tailing from mining operations, the primary focus being the protection of water and water sources.[175] The legislation referred to by the author i.e the Minerals Act, 1990 though relevant at the time of making his contribution, is now obsolete and the extant and subsisting legislation on mining activities in Nigeria is the Nigerian Minerals and Mining Act which also makes several provisions towards ensuring an environmentally friendly and sustainable mining regime in Nigeria.

The scholar in his approach compared the adequacy of the legal regime encapsulated in the Mining Act, 1990 with the Federal Environmental Protection Agency Decree (repealed) by stating that, "consequently, persons engaged in solid minerals exploration and exploitation, are now compelled to conform to a higher standard of environmental protection than that prescribed

[175]Osunbor, O.A., *op cit*, p.399

by the Minerals Act [L.F.N. 1990]."[176]It should be clarified that the Minerals (Ordinance) Act, 1946 was collected as part of the Laws of the Federation of Nigeria and Lagos, 1958 and updated in the Laws of the Federation of Nigeria, 1990. So in text and content the relevant sections of provisions of the Minerals Act, L.F.N. 1990 under reference are impari material with the provisions of the Minerals Ordinance, 1946. The Federal Environmental Protection Act therefore came into force in 1988 to *inter alia* fill some of the gaps in the Minerals Act, 1990 as it relates to the issue of environmental degradation by the mining of solid minerals in Nigeria. This could be extrapolated from the following comments of the scholar:

> The modern concept of the environment has now been expanded by the Federal Environmental Protection Agency Decree beyond water quality and landscape as envisaged under the Minerals Act to include air quality and atmospheric protection, noise control or abatement and the discharge of hazardous substances into the environment.

Ononiwu, in his exposition reviewed environmental challenges in Nigeria and strategies for tackling them. He noted that in its virgin state there is hardly any pollution in an environment but the activities of mankind in order to integrate the environment with development results sometimes in unwanted effects. He therefore concluded that the degradation of our environment is largely because of human activities.[177]

In identifying or specifying the impacting elements on environmental components of land, water, vegetation and atmosphere, the scholar asserted that the elements of land include land cover, land use, farm lands, buildings, infrastructure, industries, solid minerals and soil while the results of the impacts are desertification, erosion, flooding, solid pollution, domestic waste and oil pollution. The scholar similarly proffered strategies and solutions for tackling the challenges ofdesertification, erosion, flooding and waste pollution. In parts of the work, the scholar

[176]*Ibid*

[177]Ononiwu, N. (2007). "Environmental Challenges in Nigeria: Strategies for Tackling Them." Being Paper Presented at Judicial Training Workshop on Environmental Law in Nigeria held at Merit House, Abuja on 5-9, February, 2007, p.2

recommended the adoption of the polluter pays principle in tackling environmental problems generally. The work also in particular terms underscored the need for remediation, reclamation and rehabilitation of mining sites and the refilling of laterite sites; and the adoption of modern methods of Geoinformatics for data collection and Geographic Information System for forecasting where such degradations are likely to occur.[178]

The strategies contained in the work focused on issues of general prevention or mitigation of environmental pollution and degradation within the Nigeria environment horizon. It must however be mentioned that the work did not discuss strategies for preventing or ameliorating the impacts of mining of minerals on the environment in Nigeria. It is observed that such search light would have been localized, more revealing and relevant.

Amokaye,[179] examined the issue of proof of environmental claims from three different perspectives, namely- pleadings, evidential issues and expert witness. The paper discussed in details representative action, burden and standard of proof, criminal prosecutions, the rule in *Rylands v. Fletcher*,[180] expert evidence and environmental litigation etc. In spite of the detailed nature of the work, the cases and illustrations made by the scholar were mostly within the purview of the oil and gas industry; no particular mention of issues relating to proof of environmental claims in the solid minerals sector of the country was made. It is appreciated that the reason for this may not be unrelated to the fact that there has not been much of litigation of prominence in this area of our development. Examples and illustrations from foreign jurisdictions would no doubt have extended or developed the frontiers of knowledge in this area.

[178] *Ibid*, pp.13 &14
[179] Amokaye, G.O. (2007). "Proof of Environmental Claim." Being Paper Presented at the *Judicial Training Workshop on Environmental Law in Nigeria* held at Merit house, Abuja, (5-9 February, 2007)
[180] (1868) L.R. 3 H.L. 330

Another matter noteworthy is the fact that the scholar did not situate the issue of proof of environmental claims within the forays or area of Alternative Dispute Resolution mechanism and therefore to disputes that may rear their heads from the solid minerals sector of the economy. The need for such might not be currently pressing, but in the near future blue prints on such area will become most beneficial. This is because of the increasing Foreign Direct Investments being received into the country for the sector, and the need for such investors to be assured that disputes in the sector could also be resolved through Alternative Dispute Resolution method.

Busari, in his introductory remarks to the subject of Disputes Resolution-the ADR Approach, aptly posited thus:

> Environmental Dispute (sic) has (sic) risen in importance to become one of the foremost concerns of the world communities today. In the last few decades, environmental issues have become an inevitable subject globally and has (sic) gained dramatic consciousness. This is because environmental degradation and deterioration through human activities is proceeding at an alarming rate such that if the society and national governments of the world does (sic) not take positive steps, the consequences will be grave and irreversible, hurting not only ourselves but future generations.[181]

The scholar in the work under review recounted Alternative Disputes Resolution methods to include Negotiation, Mediation, Conciliation, Mini-trial, Med-Arb and Arbitration. The author also gave an insight to environmental disputes withexample of the Niger-Delta Region of Nigeria. The causes of environmental disputes were also adumbrated from the scholar's perspective to include maritime boundary disputes between states, oil and gas trading contract, offshore construction and pipeline disputes; and quality disputes. The scholar indented the areas of environmental disputes to include those relating to water, air, soil, noise and tourism. Available remedies according to the scholar are within the precinct of order of injunction,

[181]Busari, T. (2007). "Environmental Disputes: The ADR and Arbitration Options." Being Paper Presented at the *Judicial Training Workshop on Environmental Law in Nigeria* Held at Merit House, Abuja, (5-9 February, 2007)

damages, mandamus, restitution and remediation, sanctions and penalties and imprisonment. The paper covered some of the advantages and disadvantages of Arbitration and ADR in environmental disputes.

At times, the use of the ADR machinery in dispute resolutions in the solid minerals sector may deliver better results than recourse to the slow grinding wheel of the court system. It may be in realization of this that the Nigerian Minerals and Mining Act and particularly the Nigerian Mining Regulations contained elaborate machinery and profuse provisions for dispute resolution in the mining sector.

The gap created in the scholarly work and which reared after the delivery of the work could be found in the fact that no recourse or discussion of issues relating to disputes resolution arising from the mining of solid minerals sector either by way of degradation of the environment or otherwise was considered in the paper. By implication and putting it in better perspective, no matters of ADR were considered in the discourse in respect to this crucial aspect of economy and national livelihood. Furthermore, since the scholarly work was presented in February, 2007 all post February 2007 legislations and regulations could not have been considered in the work. For example the Nigerian Minerals and Mining Act enacted in 2007 with a commencement date of 29th March, 2007 contained further forays or insight on the subject examined by the work under review. Also, more recently, the Nigerian Minerals and Mining Regulations, 2011 provided additional fulcrum on the subject.

According to the Nigeria National State of the Environment Report (NSOER) 2008, specific land degradation types in the different ecological zones of Nigeria particularly as it concerns the

Savannah (guinea, sudan and sahel) includes mine pits and dumps.[182] This submission appears not only simplistic or over summarized but has not really captured the enormity of environmental problems and issues relating to the mining of solid minerals in particularly the said Savannah ecological zone. For the purpose of clarity and for setting the records straight, environmental land degradation issues in Nigeria associated with the mining of solid minerals in Nigeria in the Savannah region (the middle-belt region being part of it) are humungous as has been mentioned or would be found stated in various parts of this thesis.

Also in the same Report referred herein above,[183] environmental problems in Nigeria were listed as deforestation, desertification, soil erosion, biodiversity, water pollution, flooding, solid waste disposal, fire hazard, air pollution and drought. The causes, consequences and solutions of all this problems were also stated in the Report.[184] Some land degradation issues in the Savannah were highlighted to include mine pits and dumps.[185] The same pattern of analysis was carried out in some other parts of the Report[186] without reference to mining of solid minerals activities in holistic terms. It is a matter of concern that in spite of the disturbing nature of the degradation of the environment by the mining of solid minerals in Nigeria, the causes, consequences and solutions could not have been proffered by the authors of the Report.

The place of mining of solid minerals in Nigeria is core and its contribution to the Nigerian economy has been on the increase over the years. It is therefore opined that, the inadequate attention devoted to the consideration of issues of degradation of the environment by the mining

[182] *NigeriaNational State of the Environment Report*, Abuja (2008), p. Ix
[183] *Ibid*, pp.446 &447
[184] *Ibid* pp. Ixi-lxii; 110 &112
[185] *Ibid*, p. 58
[186] *Ibid*, p.92

of solid minerals in Nigeria is a major oversight and constitutes a draw back on the reliability of the Report.

The intriguing aspect of this observation is that issues relating to environmental degradation by the mining of petroleum and gas resources were discussed in details in the Report. With this submission, a possible argument or reason may be that, there is in existence the Federal Ministry of Mines and Steel Development and other agencies of government such as NESREA to cater for issues relating to degradation of the environment by the mining of solid minerals in Nigeria. The flip side of this possible argument is that there is also in existence the Federal Ministry of Petroleum Resources and other agencies of the Federal Government handling issues of mining of petroleum resources and matters of environmental degradation by the mining of liquid mineral resources in Nigeria. In spite of this, issues of environmental degradation by the mining of liquid mineral resources were given far greater attention in the Report.

The foregoing, calls for a greater consideration of issues relating to the degradation of the environment by the mining of solid minerals in subsequent editions of the Nigeria National State of the Environment Report which is a Report put together by some experts for the Federal Ministry of Environment, Housing & Urban Development and the United Nations Development Programme. It is opined that to confer on the Report the desired reliability and use by all, its compilation should be a collaborative effort between the Federal Ministry of Environment, Housing & Urban Development and the Federal Ministry of Mines and Steel Development in order to ensure that all issues relating to the mining of solid minerals are properly and adequately integrated.

In order to implement the above suggestion, the scope of the already existing Memorandum of Understanding between the two Ministries[187] which now mainly covers the issue of the procedure and process for environmental impact assessment in the solid minerals sector could be expanded to include issues of collaboration on all matters that concern the environment and the mining of solid mineral resources in Nigeria.

In the light of the foregoing review of literature on the subject area and the gaps pointed out or observed, efforts would be made to fill in the said gaps in this thesis in order to provide a more comprehensive coverage and analysis of issues underpinning the impacts of mining on the environment in Nigeria. It is observed that though, some of the literature reviewed above provided various perspectives of backgrounds to the impact of mining on the environment as much as it relates to the topics of their consideration, but such backgrounds were not as elaborate. In this thesis, a more elaborate and comprehensive background to the study would be articulated.

The impacts of mining on the environment, human health, biodiversity, climate change, sustainable development goals and analysis of legal responses to environmental degradation in Nigeria, appear to have been considered as various sub-topics in some of the works. In order for some of these contributions to become more beneficial, the aforementioned issues would be articulated under a common banner for enhanced contribution to knowledge.

Some of the works reviewed provided understanding of the legal and institutional framework underpinning this area of study but a comprehensive detailing, discussion and analysis of all pertinent laws and regulations including the lacuna inherent in them as they relate to the subject

[187] Regulation 157(2), Nigerian Minerals and Mining Regulations, 2011

matter of this thesis were not expounded in details. This thesis will attempt to fill these gaps by discussing in details all relevant laws and regulations underpinning the subject matter of this thesis, pointing out the lacuna therein and making proposals for amendments, where deemed necessary.

Similar observation goes in respect of the discussion of institutions or institutional framework regarding this interest of study. Though some previous works highlighted and discussed them, in most of the works, the said institutions were not comprehensively listed and discussed. In this thesis, efforts have been made comprehensively discuss these institutions stating their enabling laws, functions, roles, structures and challenges.

The works reviewed also did not consider in details matters relating to compensation, community development agreements, alternative dispute resolution mechanisms as applicable in the mining sector and how these could contribute to mitigating or preventing the impacts of mining activities on the environment in Nigeria. This thesis has therefore embarked on detailed discussions of these important matters.

In virtually all the literature considered except very few, case laws were not discussed in order to buttress certain positions in relation to the subject matter of this thesis. Therefore, in this thesis relevant cases were cited to buttress legal positions or explain certain legal provisions.

1.8 Organizational Layout

This research work contains a general introductory chapter titled chapter one which captures the background to the study, statement of the problem, aim and objectives, scope of the research, justification of the study, methodology of the study, literature review and organizational layout.

Chapter two is assigned to conceptual clarification of key terms. The chapter contains detailed definitions and exposition of terms and concepts. It begins with an introduction and continued with the clarification of the following key terms viz: Environment; Mine and Mining; Mineral Resources; Solid Minerals; Artisanal and Small Scale Mining/Miners; Illegal Mining/Miners; Degradation and Pollution; Precautionary Principle; Polluter Pays Principle and Sustainable Development.

Chapter three considered the impacts of mining activities on the environment, human health, livelihoods, climate change, biodiversity and sustainable development goals; and analysis of legal responses to environmental degradation. It opened with an introduction and subsequently considered causes and effects of environmental degradation by mining of solid minerals in Nigeria; the impacts of mining activities on the environment, human health, livelihoods, biodiversity, climate change and sustainable development goals; and analysis of legal responses to environmental degradation which discussed some basic related common law cause of action for protection of the environment; community development agreements; alternative disputes resolution mechanism and compensation as platforms for protecting the environment; and finally, funding and sources for protection of the environment from the impacts of mining in Nigeria.

Chapter four dwelt on the legal framework underpinning this thesis and similarly commenced with an introduction. The next issue considered is the legal framework which contains a discussion of laws, regulations and policies underpinning the subject matter of this research viz: Constitution of the Federal Republic of Nigeria, 1999 (as amended), Nigerian Minerals and Mining Act, Nigerian Minerals and Mining Regulations, National Environmental Standards and

Regulations Enforcement Agency (Establishment)Act, Environmental Impact Assessment Act, Harmful Waste (Special Criminal Provisions) Act, Land Use Act, Labour Act, Nigeria Extractive Industries Transparency Initiative Act, Nuclear Safety and Radiation Protection Act, Explosives Act, National Policy on the Environment, National Minerals and Metals Policy, National Environmental (Mining and Processing of Coal, Ores and Industrial Minerals) Regulations, National Environmental (Noise Standards and Control) Regulations, National Environmental (Quarrying and Blasting Operations) Regulations, National Environmental (Permitting and Licensing System) Regulations, National Environmental (Sanitation and Wastes Control) Regulations and National Environmental (Surface and Ground Water Quality Control) Regulations. The chapter also considered international instruments on the subject matter of the thesis and mechanisms for enforcement of environmental protection in Nigeria.

Chapter five elucidated the institutional framework of the subject matter of the thesis. The chapter starts with an introduction followed by the item "institutional framework" which considered the institutions relevant to the thesis viz: Federal Ministry of Mines & Steel Development, Mineral Resources and Environmental Management Committee, Mining Cadastre Office, Federal Ministry of Environment, National Environmental Standards Regulatory Enforcement Agency (NESREA) and State Ministries of Solid Minerals Resources.

The penultimate Chapter (Chapter six) has an introduction and the chapter considered the matter of data and analysis. Finally, Chapter Seven is the summary and conclusion Chapter which enunciates or adumbrates issues of summary, findings and recommendations.

CHAPTER TWO

CONCEPTUALCLARIFICATION OFKEY TERMS

2.1 Introduction

Environmental law is generally considered to be a collection of laws which attempts or aims at the protection of everything, land, air, water, human beings, flora and fauna and the inter-relationships which exists among all sectors of the Nigerian environment.[188] Environmental law is a relatively new area[189] of law in Nigeria, deriving some of its sources from international treaties, conventions, legislations, regulations and policies. Being an emerging area of law, there are certain concepts, terms and precepts that hold sway and are therefore relevant to the proper understanding and appreciation of the discourse of how for example, the mining of solid minerals contribute to the degradation of the environment in Nigeria. While some of these concepts and precepts such as environment, degradation, pollution, precautionary principle, polluter pays principle, sustainable development are general to environmental law, some others are very peculiar and more relevant to the mining of solid minerals and these include "illegal mining/miners, artisanal/small scale miners, mining lease, exploration licence,water permit, use-it or lose it, beneficiation and tailings. Some of these concepts, terms and principles as applicable are discussed and considered herein so as to provide the requisite clarification of terms, concepts, principles and terminologies relevant to the area of this thesis

2.2 Environment

[188]Ilegbune, T.O. (1998 Reprint 2000). "Environmental Law and Enforcement." In: Osunbor, O.A and Simpson S. et al. (eds.) *Environmental Law and Policy*,Law Centre, Faculty of Law, Lagos State University, Lagos, p.207

[189]Ikoni, U.D. (2010). *An Introduction to Nigeria Environmental Law*, Malthouse Press Limited, Lagos, p.13

According to Birnie and Boyle,[190]the word 'environment' is such an ambiguous term which is difficult both to identify and restrict its scope, because it could be used to encompass anything from thewhole biosphere to the habitat of the smallest creature or organism.

Rau and Wooten defined the word 'environment' to mean "the whole complex of physical, social, cultural, economic and aesthetic factors which affects individuals and communities and ultimately determine their form, character, relationship and survival."[191]It is opined that, this definition has not specifically mentioned that the environment includes the vital and indispensable element of air.

According to Chambers English Dictionary, "Environment is everything around us: land, water, atmosphere, places of special importance, plants and animal lives. Environment may be defined also as a surrounding: external conditions influencing development or growth of people, animals or plants: living or working conditions."[192]This definition views the environment more as the physical conditions around us; rather than also being inclusive of the social, economic, spiritual, cultural and scientific factors that influence our livelihood.

In Nigeria, some legislation (extant and repealed) defined the term "environment" and these include the Federal Environmental Protection Agency Act (now repealed) and the Environmental Impact Assessment Act. The repealed FEPA Act defined the term "environment"[193] to include

[190]Birnie and Boyle (2002).*International Law and the Environment, 2nd Ed*., Oxford University Press, Oxford, p.3 referred to by Ladan, M.T. (2014). *Natural Resources and Environmental Law and Policies for Sustainable Development in Nigeria*, Ahmadu BelloPress Limited, Zaria, p.247

[191]Olomola , O.A. (1998 Reprint 2000). "Nigeria's Environmental Laws- A Critical Review of Main Principles, Policyand Practice." In: Osunbor, O.A and Simpson S. et al. (eds.) *Environmental Law and Policy*,Law Centre, Faculty of Law, Lagos State University, Lagos, p.11

[192]*Chambers English Dictionary*, W & R Chamber Limited, New York (1990) p. 477

[193]Section 38, Federal Environmental Protection Agency Act, Cap. F10, Laws of the Federation of Nigeria, 2004 (repealed)

water, air, land and all plants and human beings or animals living therein and the inter-relationship which exists among these or any of them.

The Environmental Impact Assessment Actprovides that the "environment" refers to the componentsof the Earth and includes-

(a) Land, water, air, including all layers of the atmosphere,

(b) the organic and inorganic matters and living organisms, and

(c) the interacting natural systems that include components referred to in paragraphs (a) and (b).[194] It is posited that this definition of the term is more robust and encompassing and to that extent is preferred to the other definitions herein.

An indication of what the environment encompasses at an international level is given by the broad range of issues now addressed by international law; including conservation and sustainable use of natural resources and biodiversity conservation, protection of the atmosphere, climate, ozone layer from the effects of pollution, safeguarding human health and the quality of life. Many international conventions avoid the problem of definition of the environment.[195]This may not be unrelated to the fact that the term is elastic and is understood from different perspectives by different interest groups and stakeholders.

Generally speaking, the term "environment" connotes different things to different people and this can be better appreciated by the varied definitions of the term, as there are scholars and depending on what school of thought they belong or the perception they hold about the environment. Sociologists, anthropologists, environmentalists, surveyors, architects, lawyers etc

[194]Section61, Environmental Impact Assessment Act, Cap. E12, Laws of the Federation of Nigeria, 2004

[195]Ladan, M.T. (2014). *Natural Resources and Environmental Law and Policies for Sustainable Development in Nigeria*, Ahmadu BelloPress Limited, Zaria, p.248

are bound to hold different perspectives or understanding of the term. However, the basic elements that are very common and central to the varied definitions or perceptions, is that the environment includes land, water, air, animate and inanimate objects and the inter relationship that exists between and amongst them.

The environment provides mankind with source of livelihood and sustenance. It is a complete threshold of resource-base to mankind and the entire world; and has within its meaning all conceivable things that surround mankind viz physical, spiritual, economic, political, scientific, cultural, social etc.

The understanding of the basic precepts and meaning of the environment is necessary in the light of the fact that it is the source wherein all solid minerals are derived. It must be appreciated that though, all solid mineral resources are thrust in the earth, the effect of mining activities in terms of its degrading effects and consequences transcend soil, air and water sources and bodies; and therefore its impact is sometimes far reaching and devastating.

2.3 Solid Mineral Resources

The focus of this thesis is on the third category of resources that is the exhaustible and non-renewable resources under which category solid mineral resources fall. Solid minerals are endowed in the earth in fixed quantities. This assertion is corroborated by a Policy document which states that "Mineral resources are non-renewable assets and mining activities impact negatively on the environment".[196]

"Mineral" has been variously defined. Strahler, defined “mineral” as "a naturally occurring inorganic substance usually having a definite chemical composition and characteristic atomic

[196]*National Minerals & Metals Policy*, 2008 p.8

structure". The Penguin Dictionary of Science defined the term as "a substance, which occurs naturally in the earth. The term although applying mainly to inorganiccompounds also includes mineral oil which consists chiefly of organic hydrocarbons".[197]

It must be reiterated that Nigeria is endowed with a vast wealth of solid minerals. Most of these are embedded in the ground and under waters. It is not unusual to find some just lying on the surface ground. This natural endowment is constitutionally appropriated to the State.[198] The Constitution of the Federal Republic of Nigeria, 1999 (as amended) vests the entire property in and control of all minerals, mineral oils and natural gas in, under or upon any land in Nigeria or in under or upon the territorial waters and the Exclusive Economic Zone of Nigeria in the Federation of Nigeria.[199]

Reviewing this subject *vis-a-vis* the powers and functions of local governments, it is necessary to mention that the functions to be conferred by Law upon local government councils shall includethose set out in the Fourth Schedule to the Constitution.[200]The functions of a local government council include the development of agriculture and natural resources, other than exploitation of minerals.[201]The clear implication of this is that a localgovernment council shall not be involved in the exploitation of minerals, be they solid minerals or oil and gas. This further complies with the conferment of powers over such resources in the Federal Government of Nigeria.

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[197]James I. (2005). "Mineral Mining and the Nigerian Environment Today", *The African Journal of Environmental Law & Development Studies,* Vol. 1 Part 1, p.200

[198]Okorodudu-Fubara, M.T. (1998). *Law of Environmental Protection: Materials and Text,* Caltop Publications(Nigeria) Limited, Ibadan-Nigeria, p.369

[199]Section 44(3) Constitution of the Federal Republic of Nigeria, 1999 (as amended), Cap. C23, Laws of the Federation of Nigeria, 2004; Also see Section 1(1) Nigerian Minerals and Mining Act, Cap. N162, Laws of the Federation of Nigeria, 2004

[200]Section 7(5), Constitution of the Federal Republic of Nigeria, 1999 (as amended), Cap. C23, Laws of the Federation of Nigeria, 2004

[201]*Ibid,* Fourth schedule, item 2(b)

At this juncture, it is crucial to ask the important question whether since there is no expressprovision of the Constitution of the Federal Republic of Nigeria, 1999 (as amended) similar tothat of the Fourth Schedule item 2(b) made pursuant to the provisions of section 7(5) of the Constitution, prohibiting States to exploit mineral resources, could the States develop solid mineral resources within their territorial boundaries?. It is clear that by the provisions of section 4(1) of the constitution, the legislative powers of the Federal Republic of Nigeria shall be vested in a National Assembly for the Federation. The National Assembly has powers *inter alia* to make laws for the Federation or any part thereof with respect to any matter included in the Exclusive Legislative List set out in Part 1 of Second Schedule to the Constitution;[202] and also in respect of matters mentioned under the Concurrent List of the Constitution.[203]

Returning to the Exclusive Legislative List, the Federal Government has powers to make laws in respect of mines, minerals, including oil fields, oil mining, geological surveys and natural gas.[204]By virtue of the provisions of the constitution, it is the Federal High Court that hasjurisdiction to adjudicate over these matters.[205]

In the light of the foregoing, it is certain that though the provision of the Fourth Schedule, item 2(b) made pursuant to section 7(5) of the constitution explicitly excluded only local government areas from mining activities, likewise States of the Federation do not have powers to legislate over issues relatingto the mining of solid minerals because the matter of exploitation of mineral resources is under the Exclusive legislative list. That being the case, why was section 7(5)

[202]*Ibid*, Section 4(2)
[203]*Ibid*, Section 4(4)(a)
[204]Item 39, Exclusive Legislative List, Second Schedule, Part 1, *ibid*
[205]*Ibid*, Section 251(n); Also see *Conso Oil Ltd v. Mobil Producing Nigeria (infra)*

included in the constitution to exempt Local Governments as aforesaid, since it is trite, that it is only the Federal Government that has domain over such matters?

It is our considered opinion that the exemption or legislative clarification became necessary so as not to lead any one to the possible conclusion that Local Governments have authority and dominion over the matter of mining of mineral resources either by themselves or in collaboration with the Federal Government to the exclusion of State Governments; more so that reference to the phrase "the development of agriculture and natural resources" in the provision of item 2(b), fourth schedule of the constitution made pursuant to section 7(5) of the Constitution without the proviso "other than the exploitation of minerals" concluding the said item 2(b), could lead to numerous unwanted interpretations. After all, it is clear that Local Governments though recognized as third tier of Government in Nigeria are component parts of various States(except the six Local Councils created under the Constitution for the Federal Capital Territory); therefore the clarification or proviso in item 2(b) fourth schedule of the Constitution is most imperative in the circumstances.

The need to ensure the sustainable exploitation and use of solid minerals for wealth creation and generation is imperative and germane to the advancement of sustainable development which has engrained in it the concept of inter-generational equity or inter-generational gap. The early andtimely adoption of relevant precaution in the exploitation of solid minerals through the use of Best Technology Platform would continue to ensure the most sustainable exploitation and use of these solid mineral resources.

In Nigeria particularly during the colonial era up till when the mines were closed in the 1970s/1980s owing to the predominance of petroleum as the mainstay of the Nigerian economy,

it could be safely asserted that the mining of solid mineral resources particularly tin in Jos Plateau and coal in Enugu and mining in virtually other parts of Nigeria was bereft of the application of precautionary principle and therefore did not put in focus the need to bequeath a sustainable environment to subsequent generations and generations yet unborn. The focus of extant laws on this subject is principally to correct the past ills, prevent and/or mitigate environmental degradation by the mining of solid minerals and enthrone sustainable development in Nigeria.

2.4 Mine and Mining

The Nigerian Minerals and Mining Act[206]defines the above terms; particularly the word "mine" which has been defined from the perspectives of the term as a noun and as a verb. The Act provides the following definitions:

> "Mine" when used as a noun, means any place, excavation or work in or on which any operation connected with mining is carried on together with buildings, premises, erections, infrastructure water reservoirs, tailings, ponds, waste, overburden and other dumps, and appliances belonging or appertaining thereto, above or below the ground for the purpose of mining, treating or preparing Minerals, obtaining or extracting any Mineral or metal by any mode or method or for the purpose of dressing mineral ores but does not include a smelter or a refinery.[207]

"Mine" when used as a verb, means to intentionally mine minerals, and includes any operations directly or indirectly necessary therefore or incidental thereto, including such processing of minerals as may be required to produce a first saleable product, and "mining" shall be construed accordingly.[208]

[206]Section 164, Nigerian Minerals and Mining Act, No. 20, 2007
[207]*Ibid*
[208]*Ibid*

The word “mine” has also been given judicial interpretation in a number of cases; including the case of *Consolidated Oil Limited v. Mobil Producing NigUnltd.*[209] The facts of the case are that the Plaintiff/Respondent agreed to procure and supply to the Appellant 1,067 joints of expoxy coated 10 by 40 line pipes used for the transportation of crude oil and natural gas. The Appellant was informed by the Plaintiff/Respondent that the supply would be sourced locally and from the United States of America. Upon supply, the Appellant refused to fully pay for the items. The Plaintiff/Respondent instituted an action at the Lagos State High Court for breach of contract and recovery of the outstanding debt.

The Appellant brought a motion of preliminary objection challenging the jurisdiction of the court on the ground *inter alia* that the subject matter fell within the ambit of section 251(1)(n) of the Constitution of the Federal Republic of Nigeria, 1999 relating to mines and minerals. The trial court dismissed the objection so the Appellant appealed to the Court of Appealwhich upheld the appeal.The Court of Appeal in stating the meaning of mine, mineral oil field, oil mining and geological survey, defined "Mine" as a place where coal or other minerals are extracted below the surface of the ground.[210]

Mine is has also been defined as a place where coal or other minerals are extracted from below the surface of the ground, while mineral is defined as a substance that occurs naturally in the earth and is not formed from animal or vegetable matter.[211]Mine includes any place, excavation or working whereon, wherein or whereby any operation in connection with mining is carried on.[212] Mining is the complex process of extracting minerals from the earth. It requires expert

[209](2008) 2 F.W.L.R. (PT. 419) Page 2403 @ 2416 paras. C-E
[210]*Supra*, p. 2416 para c
[211]*Oxford Advanced Learners Dictionary*, 5th Edition
[212]Section 91, Labour Act, Cap. L1, Laws of the Federation of Nigeria, 2004

technical knowledge to be able to know the nature, occurrence and method of extraction. The mining procedures are basically two types; surface and underground mining.[213] These methods of mining have their peculiar negative effects by way of degrading the environment.Mining is a multifaceted activity comprising exploitation and prospecting, extracting, processing and beneficiations as well as mine closure and reclamation.[214]

The mining of solid minerals generally has huge negative impacts on the environment; this is notwithstanding the fact of the economic potentials and gains a nation like Nigeria blessed with such resources derives from mining activities. The need therefore to balance development with sustainable mining practices and regime becomes very imperative. This objective is clearly enunciated in the Rio Declaration on the Environment and Development.[215]

The Policy Statement of the National Policy on the Environment, 1989 on the issue of Mining and Mineral Resources is apt in this regard and is reproduced thus:"Despite the tremendous importance of the mining sector to the national economy, activities in this sector usually cause extensive degradation of the ecosystems. Utmost care must, therefore, be exercised to ensure that mining and associated activities proceed in an environmentally sound manner."[216]

2.5 Artisanal and Small Scale Mining/Miners

This represents an important segment in the mining of solid minerals in Nigeria. The legislature made provisions in the Nigerian Minerals and Mining Act[217] for eligibility criteria, area to be

[213]James 1., *op cit*, pp.202 &203
[214]Ali, M.K., former Minister for Solid minerals Development, 1995/1996 Maiden Annual Reports of the Federal Ministry of Solid Minerals Development. This apt description by the former Minister appears to have covered the field and is unique by itself to the extent that it recognized issues of beneficiation, mine closure and reclamation within the meaning of mining.
[215]Principle 8, Rio Declaration, 1992
[216]National Policy on the Environment, 1989 p.14, paragraph 3.8
[217] Sections 49, 90 & 91, Nigerian Minerals and Mining Act, No. 20, 2007

covered by a small scale mining lease, their activities and operations and the supervisory and interventional roles of the Mines Environmental Compliance (MEC) Department of the Federal Ministry of Mines and Steel Development.

Small Scale Mining "means Artisanal, Alluvial and other forms of Mining operations involving the use of low level technology or application of methods not requiring substantial expenditure for the conduct of Mining Operations within a Small Scale."[218]Artisanal Mining is defined as "informal mining activities undertaken by individuals or groups, which rely heavily on manual labour, using simple implements and methods without prior exploration activities".[219]

Mining activities in Nigeria have for a very long time been undertaken by individuals or small groups of people for the purpose of earning a livelihood and sustaining their families. It has been asserted that artisanal and small scale miners constitute 95 percent of miners in Nigeria. Of the 95 percent small scale and artisanal miners in the country, 90 percent are resident in the North.[220]Over 90% of the nation's mineral production is currently carried out by Artisanal and Small Scale Miners (ASM). It is estimated that the ASM sub-sector provides livelihood to over 500,000 informal miners in the country.[221]

It is opined that some of the causes of environmental degradation arising from the mining activities of these small scale miners include the fact that very crude mining methods are applied, most of the miners are not educated and experienced in the art of mining and are not exposed to modern mining methods. The other factors are that these miners lack the finance and the technical wherewithal to acquire or benefit from modern technologies that could reduce or

[218]*Ibid*, section 164
[219]Mines & Steel Review (Dec. 2009) Vol 1 No. 1, Published by Ministry of Mines & Steel Development, p. 12.
[220]Daily Trust, Wednesday, May 1, 2013, Page 18.
[221]Mines & Steel Review (Dec. 2009) Vol 1 No. 1, Published by Ministry of Mines & Steel Development, p. 12

mitigate the degradation of the environment, that usually arise from their activities of mining of solid minerals. In this wise, the MEC Department of the Federal Ministry of Mines and Steel Development will have to embark on constant monitoring activities, massive environmental education and enlightenment campaign in the interest of enthroning sustainable mining practices and culture by these participants and by all stakeholders.

The contributory activities and effects of small scale or artisanal miners to the degradation of the environment did not elude Akper when he aptly echoed thus:

> Small-Scale Miners who have been responsible for disorderly mining activities leading to the degradation of the environment have also been effectively regulated by the 2007 Act. It provides that holders of small scale mining lease shall carry out effective rehabilitation of the mined out areas to the satisfaction of the Mines Environmental Compliance Department and also pay prescribed rehabilitation fee, proportionate to their profits as a way to defray further cost of rehabilitation and reclamation.[222]

The second sentence of the above exposition recapitulates the provision of section 90(2) of the Nigerian Minerals and Mining Act.In as much as the provision of section 90(2) of the Act appears to be interesting and a mileage covered in the right direction as it relates to improving a degraded or battered environment, it is respectfully the view of this scholar that the phrase used in the section viz: "proportionate to their profits" when considered against the backdrop of the attitudinal issues of corruption pervasive in the Nigerian domain, the relevance of the provision will become well diminished when compared to the expected returns the Nigerian environment should make through rehabilitation and reclamation.

In Nigeria today, corruption has become rife and constitutes a canker-worn in the societal fabric such that some of our business men and companies engage in the practice of concocting or cooking-up accounting details to protect particular interests at particular times. For example with

[222]Akper, P.T., *op cit*, p.192

the provision of section 90(2) as relevant to this issue, it is most unlikely for the Federal Ministry of Mines and Steel Development to come by 50% of Nigerian miners who will truly and realistically divulge or declare their true profits or accounting positions. As it is often said in corporate parlance, most companies usually have three (3) types of accounts viz: one for the internal use of the company which often reflects the actual position or the state of affairs of the company or institution, the second for customers/the public and the third for tax authorities or regulatory bodies as deemed fit.

Commenting on the effect of the vagueness of some of the provisions of the Nigerian Minerals and Mining ActAkper, had this to say:

> Beyond the issue of enforcement is the uncertainty of some of the provisions which contain nebulous terms such "as far as reasonably practicable" ['proportionate to their profits'] in setting standards that holders of mining titles are expected to comply with in their operations. It is believed that if the goal is to set standards for industry practitioners, greater attention should be given to the need to ensure clarity in legislation that will aid law enforcement officers in the enforcement of the Act.[223]

It is therefore opined that the phrase “proportionate to their profits” used in section 90(2) of the Act should be replaced with “2.5% of their net profits.”This is to ensure regulatory certainty and specificity. As a provision or law that lacks the criterion of specificity is an open invitation to its non-compliance by citizens and therefore poses difficulty or challenge of enforcement by the regulatory authorities.

2.6Illegal Mining/Miners

The term "mining" or its corollary noun "miners" have been defined in this thesis. However, not all mining activities or miners are recognized and carry on their activities in accordance with the provisions of the law. To better appreciate what is illegal mining activity or who an illegal miner is, it is necessary to examine the definition of the word "illegal"."Illegal" means an act that is not

[223] *Ibid*, p.193

authorized by law; the state of not being legally authorized; the state or condition of being unlawful;[224] a similar definition of the word is "not allowed by law".[225]

The terms "illegal mining" or "illegal miners" in the lexicon of mining of solid minerals in Nigeria, is as old as mining activities in Nigeria. The activities of this category of miners is characterized by illegality, that is not sanctioned by law, use of very manual and rudimentary equipment if any at all is used, low level of awareness of modern mining practices and techniques, high poverty level of the miners and the huge resultant environmental degradation of environmental resources- land, water and air; high rate of casualties resulting from accidents and in more severe cases leading to death.

An analyst, captured the effects of the degradation of the environment arising from some form of mining activities by illegal miners when he asserted that "almost every month, a miner dies at a particularpitch due to illegal mining and officials of the Federal Ministry of Mines Office are not doing enough to enforce strict compliance with the mining rules."[226]

The Nigerian Minerals and Mining Act specifically provides as follows:

> (1) Subject to the provisions of this Act, the right to search for or exploit mineral Resources is obtained through one of the following mineral titles in the form of-
> (a) a Reconnaissance Permit;
> (b) an Exploration Licence;
> (c) a Small Scale Mining Lease;
> (d) a Mining Lease;
> (e) a Quarry Lease; and
> (f) a Water Use Permit
> (2) Subject to the exceptions provided in this Act, any person thatundertakes or isinvolved in the search for or exploitation of Mineral resources without therequisite mineral title or authority shall be guilty of an offence.[227]

[224] Garner, B.A (2004). *Black's Law Dictionary* (Deluxe Eight Edition), West, USA, p.763
[225] Hornby, A.S (2000). Wehmeier, S. (ed.) *Oxford Advanced Learner's Dictionary (*Sixth Edition), Oxford University Press, UK, p.595
[226]Daily TrustNewspaper, Saturday, April 13, 2013, Page 50.
[227] Section 46, Nigerian Minerals and Mining Act, No. 20, 2007

Any person who carries out mining activities when not holding a valid permit, lease or licence is an illegal miner. The full ramification of this is considered in depth in Chapter three of this thesis.

2.7 Remediation, Resuscitation, Reclamation, Rehabilitation and Restoration

The popular and well accepted adage worldwide that says prevention is better than cure, is quite relevant in the environmental sector in general and particularly in matters relating to the mining of solid minerals in Nigeria. This adage or aphorism is captured under the pre-cautionary principle in environmental law and is often referred to as *ante* or preventive laws that seek to prevent or mitigate environmental degradation from source or post damage laws that provide remedies to victims of environmental damage.[228]The second leg of the above elaboration by the learned scholar, which is hereby clarified deals with the issues of remediation, rehabilitation, resuscitation, reclamation and restoration of the environment particularly mined-out areas/sites.These five terms are often used interchangeably but have varied meanings and dimensional implications. It will be necessary to provide some definitions of these terms at this juncture.

Remediation means the restoration of polluted land, water or air to its former state, or as nearly so as is practicable.[229]**Reclamation** has been defined as the act or an instance of improving thevalue of economically useless land by physically changing the land, such as irrigating a desert...; the act or an instance of obtaining valuable materials from waste materials.[230]**Resuscitation** means to bring someone or something back to life or consciousness;

[228]Usman, A.K. (2012). *Environmental Protection Law and Practice*, Ababa Press Ltd , Ibadan, p.60
[229] Garner, B.A. (2004), *op cit*, p.1320
[230]*Ibid*, p.1299

to revive them or it; to revive or gain consciousness.[231]**Rehabilitation** is imputed to mean to build orrestore to good condition; to bring back into good condition.[232]**Restoration** is the act of returning something to its correct place, condition or owner.[233]The Nigerian Minerals and Mining Act make provision particularly for restoration of mines land[234] and river banks[235] respectively. The same Act also specifically makes provision relating to reclamation of mined out areas.[236]

Going backwards into the legislation annals concerning the mining of solid minerals in Nigeria, the Minerals Act[237], which specifically did not apply to mineral oils, in its "section 34(2) of the Act imposes a duty on the lessees of mining leases to reasonably restore the site of mining operation at the end of the operation by replacement of the surface soil, filling in worked outareas, removal of tailing or other heaps or dumps caused by mining operations."[238] Though section 34(2) cited by the scholar is relevant, but its provision can only be enforced if the Minister in his discretion so makes the order for restoration. Also related to the issues highlighted is the particular provision of section 34(1)(c) of the said Act[239]which relates to the issue of the discretion of the Minister to grant mining lease to the holder of a mining right, and the further discretion of the Minister to require the reasonable restoration of any area used for mining operations.The unfettered and arbitrary discretion conferred on the Minister by the said

[231]Robinson, M. and Davidson, G. (2004).*Chambers21st Century Dictionary*, Revised Edition, Allied Chambers (India) Ltd, New Delhi, p.1192
[232]*Ibid*, p.1175
[233] Hornby, A. S. (2010), *op cit*, p.1260
[234] Section 114, Nigerian Minerals and Mining Act, No. 20, 2007
[235]*Ibid*, Section 128
[236]*Ibid*, Section 115
[237]Minerals Act, Cap. 226, Laws of the Federation of Nigeria, 1990. Also see similar sections of Minerals Act, Cap. 121, Laws of the Federation of Nigeria and Lagos, 1958
[238]Ehighelua I., *op cit*,p.118
[239]Minerals Act, Cap. 226, Laws of the Federation of Nigeria, 1990. Also see similar sections of Minerals Act, Cap. 121, Laws of the Federation of Nigeria and Lagos, 1958

section 34(2) have been roundly criticized and was a major cause of dissatisfaction by stakeholders of mining of solid minerals, prior to the repeal of the said Act.[240] The other short coming of the Act is the lack of enforcement of its provisions relating to the restoration of mined out sites or the affected environment.

The cost of remediating, reclaiming or restoring the environment especially resulting from degradation emanating from the mining of solid mineral resources is no doubt often very huge and colossal. For example, it cost the Federal Government of Nigeria the sum of about N850m to embark on remediation exercise and clean-up of the environmental pollution and degradation that arose from the lead poison of some communities in Zamfara State of Nigeria.[241] Three (300) compounds representing 75 per cent of Lead Contaminated Compounds in Bagega village of Zamfara State were remediated and rendered safe for habitation.[242]With this, the need for environmental education and the teaching of safe mining practices to rural-communities particularly artisanal and small scale miners is imperative.

The National Policy on the Environment while appreciating the negative impact of mining activities on the environment elucidated some mechanisms to be put in place when it provided procedures for the reclamation and restoration of land, top soil and vegetation of mined out areas and the monitoring of such areas.[243]

The Nigerian Minerals and Mining Act accordingly provides that every holder of a mining title under the Act shall as far as reasonably practicable,

[240]Okorodudu-Fubara, M.T. (1998),*op. cit*, Pp.371 &373
[241]Daily Trust Newspaper, Saturday, April 13, 2013, Page50.
[242]Daily Trust Newspaper, Thursday, May 2, 2013, Page 37.
[243]National Policy on the Environment 1989, paragraph 3.8 item (f)

(a)Minimize, manage and mitigate any environmental impacts resulting from activities carried out under this Act; and

(b)Rehabilitate and reclaim, where applicable, the land disturbed, excavated,explored, mined, covered with tailings arising from mining operations to its natural or predetermined state or to such state as may be specified in this Act, its regulations and other pertinent laws in force, and in accordance with established best practices.[244]

The Federal Government of Nigeria, further conscious of the vicissitudes of environmental degradation arising from the mining of solid minerals, and in order to engrain mining practices and culture that will guarantee sustainable development of the solid minerals sector, made particular provisions in the Act for environmental rehabilitation.[245]

The Act[246] makes a special and radical provision for the establishment of the Environmental Protection and Rehabilitation Fundfor the purpose of guaranteeing the environmental obligations of holders of mineral titles as provided under the Act. The creation of this Fund is one of the very significant and novel provisions in the extant legislation on mining of solid minerals in Nigeria.

Finally, land which has suffered damage from mining activities must be restored for use. It has been argued that a sticky point in the negotiations for a United Nations Code of Conduct for Transnational Corporations (TNC) have been whether a TNC with respect to damaged land is to reclaim it as demanded by TNCs and their home states or to "restore it to the extent appropriate and feasible" as demanded by developing countries who are often the host countries avoids the lackof preciseness and certainty in the expression "reclaim it" and makes it abundantly clear thatwhat is intended is that the land must be restored in order to make it suitable for use again.[247]

[244]Section 118, Nigerian Minerals and Mining Act, No. 20, 2007
[245]*Ibid* , Sections 118 & 120
[246]*Ibid*, Section 121
[247]Osunbor, O.A. (1998 Reprint 2000). "Environmental Consideration in the Development of the Solid Minerals Industry in Nigeria."In: Osunbor, O.A and Simpson S. et al. (eds.) *Environmental Law and Policy*, Law Centre, Faculty of Law, Lagos State University, Lagos, p.402

From the foregoing, it seems clear that the use of the practice of restoration have far-reaching and better positive impact on the degraded environment than reclamation. Relating to the practices or requirements of "restoration" and "reclamation" in particular cases, the Nigerian Minerals and Mining Act(N.M.M.A.) made provision for the practice or remedy of "restoration"[248] when it provided that the Minister shall by order require the grantee of a mining lease to restore any area in respect of which mining operation has been, is being, or is to be carried out, on or after the date on which the Act comes into operation.[249]This provision, *inter alia* takes care of the *lacuna* observed in respect of the discretionary powers of the Minister on the issue of restoration of mine-out areas in the repealed Acts.

The provision of section 114 (1) of NMMA amongst others provides the legal basis in the extant legislation for the practice of restoration of mined out areas resulting from mining of solidminerals in Nigeria. As gratifying as this provision may be, the practice of restoration following the degradation of the environment as a result of the mining of solid minerals may, not easily come to fruition and be imbibed in all instances that restoration is desirable. This is because even in very deserving situations, not until the Minister orders, a medium that is degraded as a result of mining activities may never be restored in a sustainable manner as environmentally required. In addition, under the Nigerian system such cases or situations may never get to the attention of the Minister because those charged with such responsibilities or duties may have been compromised as corruption is virile or they may be overwhelmed by the volume of work.

[248]Section 114, Nigerian Minerals and Mining Act, No. 20, 2007
[249]*Ibid,* section 114(1)

In the above regard, it is opined that the provision of section 114(1) may not encourage pro-activeness on the part of those placed with the responsibility of restoring mined out sites. Resultantly, it is proposed that when the opportunity presents itself for the amendment of the Act, section 114 (1) should be amended to state that the practice or remedy of restoration should be embarked upon in all situations and the powers of the Minister in making an order before restoration could be embarked upon by grantees, should be expunged. Restoration should be the standing duty of all grantees and should be made a term and condition of licences, leases and permits granted licensees, lessees or grantees. If the above proposal receives the desired attention and is implemented, what will be left will be for the relevant institutions or agencies to enforce compliance of those terms and conditions forthwith since it is almost agreed that the problem with the Nigerian legal system is not that of adequacy of laws but the efficient, effective and "faithful implementation"[250]of laws.

The relevant provision of N.M.M.A. that provides for reclamation is section 115 even though the side note is titled "reclamation", the content of the section is a mixed grill of reclamation and restoration. Whether, it is intended that the word "reclamation" could be used interchangeably with the word "restoration" leaves a gap to be determined. The conceptual and practical differences between "restoration" and "reclamation" have earlier on been considered and espoused.

Section 115 of the Act should also pass for consideration for amendment when the opportunity avails itself to ensure clarity of purpose. This is because "reclamation" when compared to "restoration" in certain instances, falls short of the expectation that will guarantee for Nigerians the level and quality of clean-up of the environment that should be embarked upon by miners of

[250]Akper, P.T. *Op cit*, p.190

solid minerals whose activities result in the degradation of the environment. It is thus important that when the opportunity presents itself for the amendment of the Act, the concept of reclamation should be replaced with restoration in feasible circumstances. It must however be appreciated that it is not at all times that an environmental medium or resource could be restored to its original state prior to the degradation or pollution.[251]

In recent times, the reclamation of land degraded by the mining of lead in some villages of Zamfara State of Nigeria, appear to be the major efforts at reclaiming the soil and immediate environment of that area which became degraded following the mining of lead. Perhaps, these villages in Zamfara State appear to have been given attention in the light of the devastating and far-reaching effect of lead poisoning and the un-quenching interest developed by the international community on safe and sustainable mining practices in under-developed countries and the need to protect practitioners and all stakeholders. Other areas in Nigeria where the mining of solid minerals have ravaged the environment and the source of livelihood of the people such as in the Jos-Plateaus, Okaba mines and the Enugu Coal mines should also be given the desired attention by the Federal Ministry of Mines and Steel Development. The Ministry should up its efforts in the area of reclamation, rehabilitation, restoration, resuscitation and remediation.

There are numerous mine sites in Nigeria requiring these interventionist approaches but it is sad to note that between May 2011 and May, 2012 -a span of one year, only a single highrisk, critically abandoned mine site was reclaimed in the Barkin-Ladi area of Plateau State of

[251]Idowu, A.A. (2003-2004). "Examining the Issue of Compensation for Environmental Degradation and Pollution in Nigeria."*Ahmadu Bello University Law Journal (2003-2004),* Vols. 21-22, p.140

Nigeria.[252]As at 2014, 1260 High Risk Mines were assessed and categorized, and 18 out of 100 evaluated High Risk Mines so far reclaimed based on funds availability.[253]This state of affair has been implicitly confirmed not to be unrelated to the fact that the cost of reclamation, remediation, restoration, resuscitation and rehabilitation are usually very high as shown by the Zamfara lead reclamation efforts. To tackle this problem, there is the need to increase the budgetary allocation for this purpose to ensure a more sustainable environment in Nigeria, as part of the problem of the Federal Ministry of Mines and Steel Development includes inadequate funding.[254]

At this juncture, it is insightful to bring to fore the devastation caused to land in the Jos Plateau area, where about three hundred and six (306) square kilometers were destroyed and still remain unclaimed.[255]The foregoing submission by the author is subtly collaborated by the NSOER, where it was aptly stated thus:

> In most of the States, environmental protection receives much attention in word (sic) but only meager attention in action. Mining areas with pits and excavations are not restored..... Governments at all levels need to do more to tackle land and environmental degradation in Nigeria. The Ecological Fund was created as a pool to fund environmental protection, and degradation prevention, reduction and restoration projects and strategies in Nigeria. However, proceeds from the fund have not been properly channeled into the task for which it was meant.[256]

Resonating, the very lackadaisical attitude of relevant government departments and authorities to the reclamation of mining sites in Plateau State of Nigeria, which comment and observation applies in toto with respect to other parts of Nigeria facing similar challenges, an official,[257]

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[252]Ministerial Presentation by the former Minister of Mines and Steel Development, Arc. Musa Mohammed Sada at the Ministerial Platform on the Achievements and Accomplishment of the Ministry of Mines and Steel Development, May 29th 2011 to May, 2012; p.19

[253]Ministerial Presentation by the former Minister of Mines and Steel Development, Arc. Musa Mohammed Sada at the 2014 Ministerial Platform, Monday 22nd December, 2014; p.19

[254]Akper, P.T. *Op cit*, p.195

[255]Ehighelua I., *op cit*, p.121

[256]Nigeria National State of the Environment Report (2009), p.119

[257]Plateau State former Commissioner for Mineral Development, Mr. Sani Adubok

recently posited thus:"We cannot allow people to keep threatening the environment under the guise of mining especially since the state has many yet to be reclaimed mining ponds littered around. All prospective miners in the state must obtain licence before going into the mining business."[258]

However, it is hoped that this comment does not imply a parallel licensing regime by the State Governments in competition with the already established legal licensing regime provided by the N.M.M.A. which has its authority in the provisions of the Constitution and the Nigerian Minerals and Mining Act, 2007.

The word "Rehabilitation" is a new concept that crept into the lexicon of mining of solid minerals in Nigeria; the word having been introduced in the N.M.M.A. The exact meaning of this word was not explained in section 164 of the N.M.M.A. However, the word has been used in several sections of the Act. Its ramification tends towards some sort of making improvement on a degraded or polluted environment following mining of solid minerals. The dictionary meaning earlier provided will therefore come in aid."Rehabilitate" has been defined as returning something to its original condition; to make habitable or usable again; to recover; while "rehabilitation" has been defined as the process of rehabilitating something.[259]

To encourage environmental protection, mine rehabilitation, reclamation and mine closure, the N.M.M.A makes provision for a tax deductible reserve for environmental protection, mine rehabilitation, reclamation and mine closure costs to be established by companies engaged in the exploitation of mineral resources; provided however, that the appropriateness of the reserve is certified by an independent qualified person taking into account the determination made underthe

[258]WeeklyTrust Newspaper, Saturday, June 8, 2013, Page50
[259]Dictionary of Techno Phone, Model P5

provisions of the Act.[260] It however appears that no specific percentage is specified in the provision as the percentage of a determinable amount or process for arriving at a just charge of the said reserve by operators. This is a yawning lacuna left to be filled and the lack of specificity will undermine efforts at preventing or mitigating environmental degradation by the mining of solid minerals in Nigeria. It is suggested that the tax deductible reserve should be fixed at 1.5% of the net profits of operators.

In as much as this provision is novel and well-intended for the sustainable development of the solid minerals industry in Nigeria, it is opined that the said reserve even if established by the companies whether or not recorded in the audited Financial Statements of the companies might not give the desired result as this reserve could be wiped off or depleted by these same companies in the light of the fact that the reserve is under their control up to the moment they choose to invest same in dedicated account or trust fund managed by independent trustees appointed pursuant to the provisions of the Act. Therefore, in theory while the amounts of the reserve might be recorded in the financial statements of the companies, for practicable purposes, the amounts might not be truly or physically available when the need arises. The practical effect of the said provision may therefore continue to be cast in doubts until the relevant regulatory authorities up their ante of strategies of enforcing our laws.

In the same vein, the provision of section 30(c)[261]is observed to be perfunctory as the implementation is questionable; the section appears to be oblivious of the fact that these mining companies or practitioners are in business as investors and profiteers and are highly unlikely to continue to tie down funds in the said reserve. In both cases above, it appears no incentives are

[260]Section 30, Nigerian Minerals and Mining Act, No. 20, 2007
[261]*Ibid,* Section 30(c)

provided for compliance and that is likely to be the bane of the effective application of the provisions; more so that the companies are not compelled to set aside an established or specified amount or percentage of funds generated for the purpose. It is much left to their discretion. This is likely not to achieve the desired mileage of rehabilitation of the environment necessary upon the degradation of the environment by the mining of solid minerals in Nigeria. It is therefore advised that the provision of section 30 of the Act be amended to include a percentage of an amount, profit or process (including probably stating the size of the mine, the types of minerals mined and the propensity of environmental degradation associated with such mining) in all circumstances not to be more than 1.5% of the net profits of operators; for ensuring a just determination of the said reserve.

2.8 Degradation and Pollution

The twin terms- "degradation" or "pollution" are often times erroneously used interchangeably but are quite different and have varying meanings.Usman[262] in his work provided elucidation on these two terms as follows:

> The choice of expression 'environmental degradation' instead of 'environmental pollution,' the buzz phrase in environmental protection literature, is deliberate. It is informed by the wider implications of the phrase environmental degradation, which has the meaning of environmental pollution, environmental contamination and decline in environmental quality. Environmental pollution which has the narrow meaning of environmental pollution and no more cannot be an apt expression of the different types of environmental deterioration such as the ones covered by environmental degradation. The terminological preference of this work in this regard is to avoid the mistake made even by seasoned writers on environmental protection like Barry Commoner who erroneously assumed that environmental deterioration consists only of pollution. The expression 'environmental degradation' as

[262]Usman, A.K., *op cit*

> has been asserted is a broad expression encapsulating environmental pollution and decline in environmental quality. The comprehensive scope of environmental degradation then must of necessity appropriate and accommodate the elements of both environmental pollution and decline in environmental quality...[263]

In spite of the foregoing elucidation, the author did not define the terminology "degradation". Pollution means to corrupt or defile; especially to contaminate the soil, air, or water with noxious substances.[264] Degradation is the reduction in rank, degree, or dignity..; a lessening of a person's or thing's character or quality<degradation of resources>; a wearing down of something, as by erosion.[265] Environmental degradation is the deterioration of the environment through depletion of resources such as air, water and soil, the destruction of ecosystems and the extinction of wildlife.[266]

Pollution means any introduction by man, directly or indirectly, of the substances, or energy resulting in deleterious effects of such nature as to endanger human health, harm living resources, ecosystems and material properly (sic) and impair amenities or interfere with other legitimate uses of the environment.[267]The Nigerian Minerals and Mining Act provides thus:

> "Pollution" connotes any change in the environment caused by substances, radio- active or other waves noise, odours, dust or heat emitted from any activity, including the storage or treatment waste or substances, construction or the provision of services where that change has an adverse effect on human health or well being or the composition or resilience and productivity or natural or managed ecosystems or on materials useful to people, or will have such an effect in future and "Pollutes" shall be construed accordingly.[268]

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[263]*Ibid*, p.56
[264] Garner, B.A. (2004). Black's Law Dictionary Deluxe Eighth Edition, p.1197
[265]*Ibid*, p.456
[266]Etuonovbe, A.K. *The Devastating Effects of Environmental Degradation-A Case Study of the Niger Delta Region of Nigeria*.http://www.fignet Accessed on 20th July, 2015
[267]International Law Associations' Rules of International Law Applicable to TransfrontierPollution adopted in Montreal, 1982
[268]Section 164, Nigerian Minerals and Mining Act, No. 20, 2007

Most of the materials on the issue of environmental degradation and pollution, easily and quickly define pollution without making an attempt to define degradation. This might either be as a result of misconceptions or the often interchangeable use of both terms.

Fagbohun, in one of his contributions defined the phrase "environmental degradation" as "the deterioration in environmental quality from ambient concentrations of pollutants and other activities and processes (underlined mine) such as improper land use and natural disasters. It is the erosion of quality of the natural environment caused, directly or indirectly, by humanactivities."[269]From this definition, it is submitted that, it is the ambient concentration of pollutants resulting from pollution and other activities and processes that manifests or translates to environmental degradation.

The United Nations International Strategy for Disaster Reduction defines environmental degradation as "the reduction of the capacity of the environment to meet social and ecologicalobjectives and needs."[270]"Degradation" has also been defined to mean "the process of something being damaged or made worse: environmental degradation". It further defines "degrade" *inter alia* to mean "to make something become worse, especially in quality".[271]

The N.M.M.A in its section 164 is clearly lacking as it did not define the word in spite of numerous reference to the word degradation in several sections of the Act. However, the term "Pollution" was defined in section 164 of the Act as earlier seen herein. Perhaps, the lawmakers belong to the school of thought which use the words "Pollution" and "degradation"

[269]Fagbohun O. (2011). "Environmental Degradation and Nigeria's National Security: Making Connections." In: Azinge E. and Bello F. (eds.) *Law and Security in Nigeria*,Nigerian Institute of Advanced Legal Studies, Lagos, p.366
[270]*Ibid*, pp.366 &367
[271]Hornby, A. S. (2010). Turnbull, J. et al (eds.) Oxford Advance Learner'sDictionary, Eighth Edition, Oxford University Press, UK, p.385

interchangeably and ascribe same meanings to both words.Be that as it may, in the lexicon of English Language both words have different meanings; and therefore if it were the intention of the legislature to give or understand both words to have the same meaning, the Act by its section 164 would have so specified. It is trite law that words in astatute should be given their ordinary and plain meaning.[272]

The National Environmental Standards and Regulations Enforcement Agency (Establishment) Act[273] did not define the word "degradation" in its definition section[274] but however, defined the word "Pollution" as "man-made or man-aided alteration of chemical, physical or biological quality of the environment beyond acceptable limits and "pollutants shall be construed accordingly." This definition is similar to that provided by section 38 of the FEPA Act (now repealed).In articulating issues of land pollution, Ladan, asserted thus:

> By land pollution is meant, the degradation of land by man through activities like dumping of harmful materials such as chemical inputs that are dangerous to vegetation and agricultural production. But the term also includes anything laid in land which automatically impairs its arableness, yield or cultivability, such as land mines, atomic bombs, and other similar devices.[275]

The scholar further explained that “Apart from quarrying, mining of all sorts generally and inexorably causes damage to the environment on a large scale. It is a process which inevitably creates pits, ponds and mounds. It destroys the topsoil and renders land to become non-arable and agriculturally wasted and ruined.”[276]

The definition of the word "Pollution" in section 164 of the N.M.M.A. appears to be more detailed and more embracing than the definition of the term in section 37 of NESREA Act.

[272]Adewumi&ano. v. A.G of Ekiti State &Ors (2002) 9 NSCQR 66
[273] No. 25, 2007
[274]Section 37, National Environmental Standards and Regulations (Establishment) Agency, Act, No. 25, 2007
[275]Ladan, M.T. (2012). *Trend in EnvironmentalLaw And Access To Justice In Nigeria,* LAP Lambert AcademicPublishing Company, Germany, p.117
[276]*Ibid*

Indications however appear in the provisions of section 8(g) & 8(0) of the latter Act relating to the powers of the Agency, that the words "degradation" and "pollution" are not the same nor are they to be used interchangeably. For example, Section 8(g) provides thus: "conduct public investigations on pollution and the degradation of natural resources, except investigations on oil spillage".

From all the foregoing, it is clear that the term degradation encompasses the term pollution and even more as aptly represented by the comments of Usman[277] and the definition of Fagbohun.[278] Commenting on the impact of mining activities on the environment, the National Environmental Study/Action Team stated thus:

> General land degradation is quite pronounced in some mining regions, typified by large stretches of the Jos Plateau where open cast mining has been on for several decades....there are tremendous amount of scarification of the land, resulting in the existence of numerous mine pits of various sizes… Among these pits and ponds are hills formed by the material excavated during mining operations. These hills disturb the movement of people and livestock and more important, make the places where they occur unsuitable for agriculture, settlement, industrial development, and similar uses...smaller but nevertheless locally significant and very numerous, examples of land scarification occur in many parts of Nigeria as a result of quarrying of building materials.[279]

The National Policy on the Environment by its paragraph 3.8 which dealt on or considered strategies for the implementation of the National Policy as it relates particularly to "Mining and Mineral Resources" used the word "degradation" as opposed to "Pollution" in stating the environmental problems and challenges relating to mining and mineral resources. The commencing part of paragraph 3.8 provides thus: "Despite the tremendous importance of the mining sector to the national economy, activities in the sector usually cause extensive degradation of the ecosystems. Utmost care must, therefore, be exercised to ensure that mining and associated activities proceed in an environmentally sound manner".

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[277] *Supra*
[278] *Infra*
[279] Ehighelua I., *op cit*, pp.116 &117

The exploitation and mining of solid minerals in Nigeria, in spite of its economic potentials and job creation capacity, according to Fagbohun, have resulted in serious negative impacts on the environment and health of local communities, open conflicts and serious political instability. Extraction and production often take place with little regard for environmental protection.[280]

The same scholar reproduced part of the work of the United Nations Convention to Combat Desertification (UNCCD) which said "Land degradation on the other hand refers to the degradation in the quality of land, topsoil, vegetation and/or water resources, caused usually by excessive or inappropriate exploitation."[281]

The school of thought which applies the phrase environmental degradation rather than environmental pollution, appear to have been given approval by the rendition of the understanding of the term "pollution" contained in the NESREA Act which appreciates that pollution is a form of environmental degradation.[282]

Also, from some of the definitions of the terms "Pollution" and "Degradation", it will appear that both terms are different; while the term "Pollution" is inherent in the wider concept of "Degradation"; degradation therefore accepts wider meaning than pollution. It may be asserted that while pollution admits of a more immediate damage to the environment though of a lesser magnitude, degradation on the other hand is a continuous, gradual and more severe and permanent process of the reduction of environmental quality.

[280]Fagbohun O. (2011). "Environmental Law, Legislation and Policy Making in Sub-Saharan Africa." In: Kola-Olusanya A., Omotayo A. and Fagbohun O. (eds.) *Environmental Law and Sustainability: Issues, Policies & Contentions*, University Press Plc, Ibadan, p.159
[281]*Ibid*, p.156
[282]Section 8(0),National Environmental Standards and Regulations (Establishment) Agency, Act No. 25, 2007

The further submission of Usman on why it is more proper to adopt the terminological preference of "degradation" rather than '"pollution" in issues relating to environmental deterioration, is pungently stated hereunder thus:

> the environment, comprise meaning of land, water and air, animate and inanimate objects/materials and the interrelationship between and amongst these. That being the characteristics of the environment, it will be somewhat illogical to state, for example that 'land is polluted; rather the proper thing in the parlance of environmental studies to say is that 'land is degraded'. While properly speaking, air and water could be polluted, it is also not improper to state for example that the 'water quality is degraded' and 'the air quality level is degraded'.[283]

Furthermore, in understanding the effects of environmental degradation by mining of solid minerals, a foray must first and foremost be taken into the meaning of the word "effect" which has been defined as a change that somebody or something causes in somebody or something else; a result: the effect.[284]

2. 9 Noise, Nuisance and Negligence

'Noise' has been defined as any unwarranted and annoying sound that is intrinsically objectionable to human beings or which can have or is likely to have an adverse effect on human health or the environment.[285]

Nuisance- In its simple definition, nuisance means "a thing or person or situation that is annoying or causes trouble or problems."[286] Nuisance is that activity which arises from the unreasonable, unwarranted or unlawful use by a person of his own property, working an obstruction or injury to

[283]Usman, A.K., *op cit*, p..
[284]Hornby, A.S.,*op cit*, p.468
[285]Regulation 18, National Environmental (Noise Standards and Control) Regulations, 2009
[286]Hornby, A.S.,*op cit*, p.1008

the right of another or to the public, and producing such material annoyance, inconvenience and discomfort that the law will presume resulting damage.[287]

Negligence- At common law, the tort of negligence is the "breach of a legal duty to take care which results in damages undesired by the defendant to the plaintiff."[288] To maintain an action in the tort of negligence, the plaintiff must prove the following: (a) that there was a duty on the part of the defendant towards him; (b) that the defendant negligently performed or omitted to perform the duty; and (c) that such negligence was the effective cause of the injury or damage to the plaintiff.[289]Failure to prove all the three components could be fatal to a case.

Most times in disputes involving technical and scientific details or proof, the need to call expert witnesses might be indispensable. Plaintiffs in most instances do not have the financial wherewithal to provide or engage the services of expert witness. The difficulty of proving all the ingredients of negligence has caused victims of pollution to sometimes rely on the principle of *Res IpsaLoquitor*.[290]This principle simply means the fact speaks for itself. The maxim however has its limitations. It is not a valid Assurance policy for the success of the plaintiff's case. This is in view of the fact that the maxim merely raises a prima facie presumption of Negligence against the defendant, thus shifting the onus of establishing lack of Negligence to the defendant.[291]

2.10Community Development Agreements

[287]Aigbokhaevbo, V.O. and Achi, D.T. (2014)."An Assessment of the Efficacy of Private Remedies for Pollution Damage Under Nigerian Law."*Ahmadu Bello University, Journal of Private and Comparative Law, Vols. 6 & 7*, p.93
[288]Omotola, J.A.,*op cit*, p.115
[289]Tobi, N.,*op cit*, p.201
[290]Ilegbune, T.O.,*op cit*, p.219
[291]Omotola, J.A.,*op cit*, p.117

To ensure proper understanding of the meaning of Community Development Agreements, it is pertinent to appreciate the meaning of the various key components of this phenomenon. A community has been defined as all the people who live in a particular area, country, etc.[292]The term has also been defined as a group of people having a long standing social organization that binds them together whether in a defined area or howsoever otherwise and to include indigenous peoples, local populations and shall where appropriate also include any organization duly registered under the law of Nigeria to represent the interest of such group.[293] This latter definition is obviously wide and appropriate to the circumstances in the light of the fact that even registered organizations representing the interests of such communities come within the definition. Such registered organizations referred in the definition are most times Non-Governmental Organizations registered to propagate and actualize the ideals of the protection of the environment. The former definition is also apt and simple but the latter definition is preferred for the inclusion of registered organizations within its context.

"Development" is the gradual growth of something so that it becomes more advanced, stronger etc;[294]while Agreement is an arrangement, a promise or a contract made with somebody; the fact of somebody approving of something and allowing it to happen.[295]Development in this parlance could be referred as the attainment of betterment in the livelihood of communities in all sectors of human endeavours be it health, education, infrastructure, improvement in environmental rights and the environment, congenial for human development. It is the creed of sustainable

[292]Hornby, A.S.,*op cit*, p.290
[293]Regulation 25, National Environmental (Access to Genetic Resources and Benefit Sharing) Regulations, 2009
[294]Hornby, A.S.,*op cit*, p.400

[295]*Ibid*, p.30

development which ensures that the present meets its needs without jeopardizing the needs of generations unborn.

2.11 Dispute Resolution

Dispute has been defined "as an argument or a disagreement between two people, groups or countries; discussion about a subject where there is disagreement.[296]The term has also been defined as "a conflict or controversy, especially one that has given rise to a particular lawsuit.[297]Resolution on the other hand, is the "act of solving or settling a problem, disagreement, etc".[298]From the foregoing, the definition of dispute as rendered by the Oxford Dictionary appears to be more in tune with the understanding of the concept as discussed herein. This is because it considers dispute in a more holistic manner embracing all forms of disputes including those arising by mining of solid mineral resources in Nigeria. The said definition appreciates and brings within its fold alternative dispute resolution methods as understood in dispute resolution parlance other than the court system or litigation approach to resolving disputes.

In the light of the foregoing, the definition of the term as presented by the authors of Black's Law Dictionary is therefore restrictive to the extent that it defined the term with the proviso "especially one that has given rise to a particular lawsuit". It is therefore pertinent to mention that the phrase under reference in this discourse appreciates dispute resolution more within the context of the court system or litigation. Whereas, disputes could properly be settled by other means which is commonly referred to as "Alternative Dispute Resolution" and outside litigation.

[296]Hornby, A.S.,*op cit*, p.422
[297]Garner, B.A.,*op cit*, p.540
[298]Hornby, A.S., *op cit*,p.1257

2.12 Negotiation

Negotiation has been defined as "a consensual bargaining process in which the parties attempt to reach agreement on a disputed or potentially disputed matter. Negotiation usually involves complete autonomy for the parties involved, without the intervention of third parties."[299] There appears to be no clear provision of the Nigerian Minerals and Mining Act and it Regulations specifying negotiation as one of the methods of dispute resolution in the solid minerals sector; but a community reading of the provisions of the Act and its Regulations (and the fact that most dispute resolution efforts commence with negotiation) allude to the fact that the Act[300] and its Regulations entertain this method for resolution of disputes in the mining of solid minerals sector in general and in the area of degradation of the environment arising there-from, in particular.

2.13 Arbitration

This is a mechanism for resolution of disputes which takes place usually in private pursuant to an agreement between two or more parties under which the parties agree to be bound by the decision to be given by the arbitrator according to law or, if so agreed, other considerations, after a fair hearing, such decision being enforcement (sic) in law.[301]The Nigerian Minerals and Mining Act, admits of Arbitration as one of the several means of resolution of disputes through the Alternative Disputes Resolution methods. For example, where an agreement is not reached in respect of water licence application as discussed above, and particularly, where the Minister's

[299]Garner, B.A. (2009) , *op cit*, p.1136
[300] Section 141(1), Nigerian Minerals and Mining Act, No. 20, 2007
[301]Entry Courses Leading to Associate Membership of the Chartered Institute of Arbitrators, Nigeria Branch, held at Transcorp Hotel, Abuja between 8th -10th May, 2008, p.26

action or decision is not accepted, the Act provides that the matter should be referred to Arbitration.[302]

2.14 Compensation

"Compensation" is defined as payment of damages, or any other act that a court orders to be done by a person who has caused injury to another.[303]It is something, especially money, that somebody gives you because they have hurt you, or damaged something that you own.[304]From the above definitions, it will appear that the definition of Oxford Dictionary better suites the terrain of this thesis as it is simple and more comprehensive. Whereas the earlier definition is technical and legalistic as it situates compensation within the court system. Compensation may be effected or agreed through other means e.g by governments or individuals subject to agreement or the practice in an industry or trade.

2.15 Funding

Funding has been defined as money for a particular purpose; the act of providing money for such a purpose.[305] Implicit in this definition is the issue of the sources of funding; that is the means or methods from or by which these funds are obtained.

2.16 Land

By definition land includes any building and any other thing attached to the earth or permanently fastened to anything so attached, but does not include minerals.[306]The philosophical or

[302]Section 130(2), Nigerian Minerals and Mining Act, No. 20, 2007
[303]Garner, B.A. (2009),*op cit*, p.322
[304]Hornby, A.S., *op cit,* p.293
[305]Hornby, A.S., *op cit*, p.609

ideological bearing of the L.U.A. could be viewed generally as that of enthroning sustainable development in all land-related issues. The concern of this scholar for now is, with the exclusion of mineral resources from definition of land. We have earlier asserted that mineral resources are found and engrained in or under land. The mining and exploration of these resources occur on land while the impacts of mining are most noticeable on land. It is therefore curious, when the definition excludes mineral resources as not being part of land in spite of the above mentioned incidents.

The definition adopted by the Interpretation Act which excludes minerals as part of land is expropriating and this is corroborated by the N.M.M.A which vests all mineral resources in the Government of the Federation for and on behalf of the people of Nigeria.[307] It therefore follows by implication that the mining of mineral resources in Nigeria has to be under licence or approval by the relevant agency of the Federal Government of Nigeria before any person can lawfully exploit and expropriate the resource. Hence, the exclusion of solid minerals or minerals in general from the definition of land by these Acts is in tandem with the provision of the Constitution of Nigeria[308]and constitutes an exception to the general principle of common lawwhich recognizes land to include anything under it and above it.[309]

2.17 Extractive Industry

[306]Section 18 (1), Interpretation Act, 1964 Cap.123, Laws of the Federation of Nigeria, 2004
[307]Section 1, Nigerian Mineralsand Mining Act,No. 20, 2007
[308] Section 44(3), Constitution of the Federal Republic of Nigeria, 1999 (as amended), Cap. C23, Laws of the Federation of Nigeria, 2004
[309]*QuicquidPlantatur Solo SoloCedit*-This common law principle states that whosoever owns the land owns whatever is beneath and above it or that land consists of the surface of the earth, the subsoil and the air above it, as well as all things that are permanently attached to the soil, including streams and ponds.

The NEITI Act defines an extractive industry company to mean any company in Nigeria that is engaged in the business of prospecting, mining, extracting, processing and distributing minerals and gas including oil, gold, coal, tin, bitumen, diamonds, precious stones and such like; and includes any agency or body responsible for the payment of extractive industry proceeds to the Federal Government or its statutory recipient.[310]

2.18 Precautionary Principle

One of the most fundamental principles or concepts that have underpinned international and national development of environmental law and policy is the concept of Precautionary Principle. This principle is a major constituent of the concept of sustainable development. The principle which has its origin in the province of international environmental law at the global level and even in native laws and customs at our native community levels has found its way into the framework of national legislations of most countries including Nigeria.

At the international level, the Rio De Janeiro Conference Report 1992 (popularly known as Agenda 21) provided the framework to the principle of precautionary approach. This principle states thus:"In order to protect the environment, the precautionary approach shall widely be applied by states according to their capabilities. Where there are threats of serious or irreversible damage,lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation".[311]

The principle has variously been referred to as "Anticipatory Caution" premised on the notion that it is better, safer than sorry and often applied in the context of environmental and health

[310]*Ibid*, Section 21
[311]Principle 15, Rio Declaration, 1992

implications of human actions which are not immediately discernible;[312] or as "Prior Worry or Prior Care". Precaution is relevant to the environment because of the unpredictable effects of environmental disasters.[313] In the ordinary understanding of the principle within the Nigerian set up, the principle connotes the general understanding or saying that "Prevention is better than cure". The inculcation of the precepts of this principle is quite important in the mining of solid minerals in order to prevent environmental degradation as far as practicable.

The revised National Policy on the Environment is geared towards the precautionary principle which holds and reiterates that where there are threats of serious or irreversible damage, the lack of full scientific knowledge shall not be used as a reason for postponing cost effective means to prevent environmental degradation;[314]This replicated and domesticated or adopted Principle 15 of the Rio de Janeiro Conference Report referred to earlier on.

To allow for the operation of the principle of state responsibility in the wave of scientific uncertainty as to the causes or effects of certain environmental harm, states have been urged to take precautionary measures in anticipation rather than await certainty.[315] According to Smith:

> The importance of the precautionary principle lies in averting imminent global catastrophe which follows irreversible damage caused to the environment by the alternative policy of 'wait and see'. Basically designed as the basis of state responsibility, the precautionary principle has been applied in formulating the framework Convention on Climate Change signed by 154 countries at UNCED. While scientific evidence as to rapid increase in the anthropogenic greenhouse gas concentration from different economic sectors like transportation, industry, agriculture and forestry was overwhelming, scientific evidence on the adverse effects were diverse and the extent of damage to the environment uncertain. However, the fact that there were risks associated with rapid increase in greenhouse emissions requiring emission reduction measures was considered by UNCED as enough threat of

[312]Aigbokhaevbo V., "Environmental Abuses in Nigeria: Sectoral Implications for Reproductive Health Care", *NIALS Journal of Health Law & Policy*, p. 191

[313]Nlerum, F.E. "Environmental Rights and Principles"being a Paper Presented at theIntensive Practical *Course on Environmental Law, Regulation and Management*, Organized by the Nigerian Institute of Advanced Legal Studies, (12th-15thSeptember, 2011) p.8

[314]Ibrahim, B.Y. (2006). "TheFramework of Environmental Law of Nigeria- A Critical Analysis."*Ahmadu Bello University, Zaria Journal of Private and Comparative Law* (J.P.C.L) Vol. 1 No. 2, p.215

[315] Principle 15, Rio Declaration, 1992

> serious or irreversible damage to the environment to warrant a prompt response through international co-operation.[316]

The precautionary principle has been adopted in Nigeria and has been codified in national legislations and policies relating to environmental law including some specific laws, regulations and policies that have bearing on mining of solid minerals and this include Nigerian Minerals and Mining Act; National Environmental Standards Regulatory Enforcement Agency Act andEnvironmental Impact Assessment Act.

Therefore, in striking a balance between exploitation of these resources and thus wealth creationon the one hand; and the likely deleterious after effects of mining activities on the other hand, certain precautions which altogether are enveloped in the very dynamic and purpose – oriented "Pre-cautionary Principle" remain germane to the protection and sustainability of the environment.

For example, section 123 of the N.M.M.Awhose provision relates more to the prohibition of pollution of water courses provides as follows: “No person, shall in the course of mining or exploration for minerals, pollute or cause to be polluted any water or water course in the area within the mining lease or beyond that area.” Many mining practitioners are becoming more conscious of the need to protect water courses during exploration and mining activities.[317]

[316]Smith, 1.O. (1998 Reprint 2000). “Sustainable Development and Environmental Diplomacy: Reconciling Economic Growth with Environmental Protection By the Year 2000 and Beyond.” In: Osunbor, O.A and Simpson S. et al. (eds.) *Environmental Law and Policy*, Law Centre, Faculty of Law, Lagos State University, Lagos, p.263

[317] For example a mining company involved in exploratory activities in preparation for mining of iron ore at the Igbede Hills near Koton-Karfe Town of Kogi State of Nigeria is conscious of the need to further protect the water source at the Igbede Hills; which is a source of water supply to Koton-Karfe Town; there the outpour of iron ore is close to the water source which is a spring. Water pipes were borough and connected to the water source since the colonial era to avoid contamination of the source of water supply to the town.

In the realm of mining of solid mineral resources in Nigeria and elsewhere over the world, the exercise or adoption of the precautionary principle is cardinal to the issue of the prevention or mitigation of environmental degradation by the mining of solid minerals. It must be reiterated that solid mineral resources are complex and there stock are non-renewable which therefore dictates the exercise of precaution in their mining rather than waiting for disaster and degradation of the environment of humungous or monumental scale to occur.

2.19 Pollution Prevention Principleand Polluter Pays Principle

These twin-cardinal principles are some of the fundamental principles that under-pin the conceptof sustainable development which has become the core and heart of environmental law and policy not only in Nigeria but all over the world.

Simply put 'Pollution Prevention Principle' means the consciousness, strategies, plans or measures put in place by users of the resources of the environment (including solid minerals) towards preventing harm, pollution or degradation of the environment. Implicit in this principle is the basic and core understanding that mankind's activities in a bid to conquering the earth and integrating the environment and development are obviously most likely to have some negative impacts on the environment which is mankind's habitat and source of livelihood. Also, implicit in this principle is the understanding that best practices and use of best and appropriate technologies in mankind's activities particularly in the mining of solid minerals will well prevent or mitigate the deleterious effects of some of these activitieson the environment.

Previous legislations relating to the mining of solid minerals in Nigeria, particularly the Minerals and Mining Act (now repealed) made some provisions concerning this principle. However, not much premium was placed on this vital principle in the foregoing legislation now repealed by way of the implementation and enforcement of its elements, when compared with the extant legislation on mining activities in Nigeria viz: the Nigerian Minerals and Mining Act which is laced with numerous provisions relating to this principle. For example the Act codified this principle thus:"The holder of mineral title shall, in exercise of his rights under the Mineral title, have regard to the effect of the mining operations on the environment and take such steps as may be necessary to prevent pollution of the environment resulting from the mining operations".[318]

Also, under the repealed Mining Act[319] the holder of a mining lease or title is obligated to take steps to prevent pollution of the environment as a result of mining operations; he is also required to take due precautions in matters concerning pollution and environmental degradation.[320] The Pollution Prevention Principle (3P+) encourages industry to invest positively to prevent pollution.[321]Nlerum, gave a summary of this principle in the following words:

> The principle of prevention is based on taking preventive action in order to avoid environmental damage. For this Principle, prevention of environmental harm should be the ultimate goal when taking decisions, actions or omissions with potentially adverse environmental impacts. The preventive approach should be taken when there is uncertainty as to whether environmental harm will arise. The preventive principle is based on an obligation to avoid environmental harm just like the duty of care doctrine in negligence or obligation not to interfere with a person's enjoyment of property in law of nuisance....[322]

The other related principle i.e the Polluter Pays Principle is aimed at ensuring that in man kind's various activities, actions and inactions geared at conquering the earth by integrating

[318] Section 111, Nigerian Minerals and Mining Act, No. 20, 2007
[319]Section 99, Nigerian Minerals and Mining Decree, No.34, 1999 (Repealed)
[320]Ehighelua I., *op cit*, pp.124 & 125
[321]Ibrahim, B.Y., *op cit*, p.215
[322]Nlerum, F.E., *op cit*, p...

theenvironment and human development, mankind particularly actors or those whose deleterious activities result in or contribute in degrading the environment should be responsible for their actions or inactions. In this instance, the Polluter of environment is made to be responsible for bearing the costs attendant to the clean-up of elements/substances or materials constituting or contributing to the degradation of the environment through the remedies of remediation, resuscitation, rehabilitation, restoration and reclamation of the polluted or degraded areas of the environment or including compensation of victims.

According to Usman, the polluter pays principle is perhaps the most important legal and policy option for protecting the Nigerian environment.[323] The scholar further posited thus:

> The polluter pays principle seeks to place the financial burden of environmental protection and preservation on the shoulders of the polluter. Being the agent of environmental pollution and degradation, the principle requires the polluter to bear the cost of his activity and not shift it to innocent third parties under the common law burden principle or what is sometimes referred to as the victim pays principle.[324]

The earliest codification of this principle in modern time could also be found in Principle 16 of the United Nations Conference on Environment and Development popularly referred to as "the Rio Declaration". The provision of the said Principle is reproduced herewith: "National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to public interest and without distorting international trade and investment."[325]It is a strict liability principle, though there may (sic) a defence to it like force majeure.[326]

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[323]Usman, A.K.., *op cit*, p.240
[324]*Ibid*
[325]Principle 16, United Nations Conference on Environment and Development (Rio Declaration), 1992
[326]Ugbe, R.O. (2002-2003). "The Polluter Pays Principle: An Analysis." In: Woruji, I. N. E., Ibanga M. et al.

The principle of polluter should bear the cost of pollution i.e the Polluter Pays Principle is one of the principles providing the cornerstones or an integral part for the concept of sustainable development. Prior to the enactment of the NESREA Act in Nigeria, the FEPA Act[327] made provision for the polluter pays principle as an integral part of preventing, mitigating and ensuring environmental sustainability in the Country. It is however a matter of great concern that it will appear that the NESREA Act failed to make specific and clear provision integrating this principle within its forays.

The Nigerian Minerals and Mining Act (N.M.M.A) provides further vital incursion, intervention and advancement in the codification of this principle in the Nigerian framework legislation on mining of solid minerals to the extent that some sections of the Act recognize the need for some costs by way of compensation to be paid to the victims of pollution by the polluters.[328]

Section 125 of the N.M.M.A provides the legal basis for such polluters to pay costs or compensation to the owner or occupier (and in this case, users) of any source of water used for domestic and other purposes; and for any other form of injury caused during mining of solid minerals. It will be appropriate to reproduce the entire relevant provisions of theAct for proper assimilation:

> A licensee or lessee shall pay compensation to the owner or occupier-
> (a) Whose land or interest in the land is injuriously affected by the exercise of the rights conferred by the licence or lease, for any such injurious effect not otherwise made good; and
> (b) Who suffers damages as a result of pollution of any water, used for domestic and other purposes, as a consequence of the exploration or operations in any work connected with the property, for any such damage not otherwise made good.[329]

(eds.) *The Calabar Law Journal*, 2002-2003 Vols. VI-VII, p.129

[327]Section 35, Federal Environmental Protection Agency Act, Cap. F10 (repealed), Laws of the Federation of Nigeria, 2004

[328]Sections 123 & 125, Nigerian Minerals and Mining Act, No. 20, 2007

[329]*Ibid,* section 125

In evaluating the ingredients of polluter pays principle, Nlerum, espoused thus:

> The Polluter Pays Principle may be regarded as a response to pollution and environmental harm. It accepts that pollution will occur but that the polluter should pay for it. It is used as a financial incentive to operate more efficiently. It is also used as a sanction for carrying out pollution activities. It is expected to operate as a deterrent in helping to ensure that harm does not arise in similar situations in the future and that a polluter must realize that it is not his charter to rely on the fact that he can pay to pollute the environment.[330]

Another scholar[331] puts his appreciation of this principle in relation to the provisions of the revised National Policy on the Environment thus- "the Polluter Pays Principle (PPP) suggests thatthe polluter should bear the cost of preventing and controlling pollution."[332]

The foregoing though, representing the precept in itself, appears to be a subtle integration of the element of preventive and control measures. Operators or companies are expected to take steps to prevent or control pollution or degradation of the environment which emanates from all spheres of human activities including the mining of solid minerals that has the propensity to degrade the environment. If and when such operators or companies or individuals fail to take necessary steps to prevent or control the effects of their activities that could translate to the degradation of the environment, such polluters will have no choice other than to bear the consequences or responsibilities of their inaction or action by paying to remedy the deleterious effects of their activities and even compensating the victims of such degradation. The control factor ensures the prevention of environmental degradation or where degradation has occurred, the principle ensures the mitigation of the effect of the damage most likely to have been created. Smith, stated thus:

[330]Nlerum, F.E., *op cit*, p. 8
[331]Ibrahim, B.Y., *op cit*
[332]*Ibid*, p. 215

> The UNCED Declaration further strengthened the idea of state responsibility by adopting the application of 'polluter pays' principle at the international and national levels in their Declaration. The principle emphasized that pollution costs should be borne by the polluter "with due regard to the public interest and without distorting international trade and investment' and that national authorities should endeavour to internalize environmental costs. The polluter pays principle has been adopted by many developed countries and is evolving as a norm of national law. But while the application of the 'polluter pays' principle may help in discouraging the production of goods which cause pollution through high prices and consequent downward trend in the consumption, it does not afford respite to victims of environmental harm. To cater for such third party victims, principle 13 of UNCED Declaration mandates states to develop national laws regarding liability and compensation for victims of pollution and other environmental damage while stipulating that rules of international law regarding liability and compensation for adverse effects of environmental damage be further developed.[333]

Ugbe, also posited in the following words:

> the primary object of the "polluter pays principle" is economic, as it allocates costs of pollution to the polluter. However, the principle is justified on the ground that it relieves the victim from the burden of having to prove the cause of pollution, negligence and fault of the polluter as he has little or no knowledge of the incidence. Also, as the polluter is obliged to bear the cost of pollution and of reinstating the environment to acceptable state, he will endeavour to avoid pollution as much as possible and this will in turn reduce pollution and therefore the existence of a 'pollution free environment'.[334]

2.20 Sustainable Development

The concept of sustainable development occupies the mainstream in modern day environmentallaw and policy. The concept in its basic term and application has its focal point in integrating the "environment" and "development". Though, the environment is created by God for mankind's habitation, enjoyment and sustenance including the exploitation of solid mineral resources for his use, mankind has a corollary duty to ensure that the exploitation of these resources by the present generation is undertaken in a careful, purposeful and balanced manner; while ample opportunity is left for future generations and generations yet unborn to fulfill their needs and aspirations.

[333] Smith, 1.O., *op cit*, pp.264 & 265
[334]Ugbe, R.O., *op cit*, p.154

In achieving this cardinal, legitimate, moral and natural objective, mankind has the bounden duty to ensure that a balance is struck between innate desires, needs, activities and developmental strides and objectives on one hand and environmental protection and sustenance on the other. The concept that has been articulated to carter for this symbiotic fusion of the environment and development is the settled and popular concept of sustainable development.

In line with global trends, emphasis has shifted beyond mere development to sustainable development. Sustainable development entails national policies and development plans that look beyond the welfare of the present generation to that of the future generations, by ensuring the utilization of land [including solid mineral resources], water, forest, wildlife, and air resources for the interests of the present and succeeding generations. Law and policy have made significant input towards this holistic objective of nature conservation and Sustainable development.[335]

By definition, Sustainable development is that type of development that meets the needs of the present without compromising the ability of future generations to meet their own needs.[336] This very important and practical concept has been variedly described in different ways by myriad of scholars. These definitions, it must be pointed out seem to have basic underlying ingredients and aim at the same goal.

Forum for the Future quoted by Interface (2008) defined Sustainable development as "a dynamic process which enables all people to realize their potential and improve their quality of life in ways that simultaneously protect and enhance the earth's life supporting systems."[337]

[335]Okorodudu-Fubara, M.T., *op cit*, pp.39-40
[336]The United Nations Conference on Development (Report of the Brundtland Commission, "Our Common Future", 1987)
[337]Babatunde, M.L. (2011). “Learning for a Sustainable Future.” In: Kola-Olusanya A., Omotayo A. and

The idea of sustainable development grew from numerous environmental movements in earlier decades culminating in Summits such as the United Nations Conference for the Environment and Development known as Rio Conference held in Rio, Brazil. The concept was defined in 1987 by the World Commission on the Environment andDevelopment (Brundtland Commission, 1987) as "development that meets the needs of the present without compromising the ability of the future generations to meet their own needs.[338]It is estimated that there are over two hundred definitions of sustainable development.[339]

Comparing the definition provided by "Forum for the Future" with that of the Brundtland Commission, it will be safe to posit that the latter definition is preferred and has been the widely adopted and accepted definition of the concept. The said definition is simple and brings out the key elements implicit in the concept. For example, the definition sufficiently points out the fact that present generation owe the future generations the duty and responsibility of bequeathing a virile and sustainable environment; the definition therefore appreciates the precautionary principle, pollution prevention principle, polluter pays principle and the principle of inter-generational equity or inter-generational gap. All these are major blocks in the making and understanding of the concept of sustainable development. The other definition is not quite clear and categorical on the place of these established and acceptable component parts of the concept of sustainable development.

Fagbohun O. (eds.) *Environmental Sustainability: Issues, Policies &Contentions*, University Press Plc, Ibadan, p.116

[338]*Ibid*

[339]Nwazi, J. (2008). "An Appraisal of the Environmental Impact Assessment As A Device for Sustainable Development in Nigeria."*Igbinedion University Law Journal*, Vol. 6, January, p.210 citing Justice Thornton & Beckwith; *Environmental Law*, Sweet and Maxwell (1997) p.12 in foot note 48

Sustainable Development has also been defined in the contribution of Bagudu R. &ors[340]as:

> Notion, movement, and an approach which has developed into a global wave of concerns, study, political mobilization and organization around the twin issues of environmental protection. The approach embodies the notion and ideal of a development process that is equitable and socially responsible, recognizing the nature of power, deprivation and inequality between and within nations, classes and communities.[341]

In reviewing and analyzing the above definition, it is opined that the definition may not have reflected the basic understanding of the precept or concept of sustainable development. The definition obviously perceives the concept more as -a political and a social science concept alone. The concept of sustainable development has become so notorious and has occupied such a pedestal both in international and national confines for it to be restricted to any specific field of human endeavour. The concept transcends economics, sciences, law, political science, environmental science, sociology etc. It is a concept that has become a field of study of its own and in its own rights; as professionals, Governments, citizens, actors, observers, all mankind from all walks of life are interested in this concept and its workings.To corroborate the foregoing, according to Nlerum, "the principles of sustainabledevelopment are necessary in all spheres of human activity."[342]

Furthermore, the definition quoted in the work of Bagudu R. et al., alluded to the concept being underpinned "around the twin issues of environmental protection". This categorization is not only abstract but leaves a lot of people in quandary as to the meaning of the phrase "twin issues of environmental protection". The purpose of a definition or description is to *inter alia* make concepts and terms clear, easy to understand and appreciate. This definition appears not to have

[340]Bagudu R. et al. (1998 Reprint 2000). "Oil and Gas Exploration: Reconciling ContendingIssues." In: Osunbor, O.A and Simpson S. et al. (eds.)*Environmental Law and Policy (eds.)*Law Centre,Faculty of Law, Lagos State University, Lagos
[341]*Ibid*, p.318
[342]Nlerum, F.E., *op cit*, p.6

educated scholars reasonably in such a way that the concept will be better understood and students and scholars alike can then link the definition of the concept to practical areas and aspects of the environment with all the conflation of problems and issues relating thereto.

For example with this definition, how is one ordinarily supposed to link the concept of sustainable development to the agenda of mining of solid minerals and the deleterious effects of mining on the environment? Again, how could the well accepted worldwide principle of inter-generational gap or equity which is an inherent and basic plank of the concept of sustainable development, be deduced or rationalized? There are myriad of issues and questions this definition has left unanswered and therefore in this scholar's humble opinion, same does not qualify as a standard and acceptable definition of this all important and basic concept; for failing *inter alia* to recognize and balance the requirement of the present generation to satisfy their needs without compromising or jeopardizing the right of future generations for meeting their own needs. This definition can therefore not be compared to the other definitions considered earlier on in this thesis.

The Rio Conference also adopted Agenda 21, which outlines an ambitious and forward looking programme for environmental protection and economic development and also called for the creation of the Commission on Sustainable Development (CSD) to help implement and monitor Agenda 21 initiatives. The CSD is charged with promoting visibility of sustainable development in United Nations' activities and for improving the coordination of environment and development programmes among UN agencies and among and between states.[343]

[343]Makeri, J.H. (2010). "Environmental Protection and Sustainable Development:An International Perspective",*NJI Law Journal (2010) Vol. 3*, pp. 231 &232.

Some of the provisions embedded in some of the Principles which are the resonating pillars of Agenda 21 are quite novel and have in purview the integration of human developmental needs and requirements on the one hand and sustainable environment on the other hand. For example the Rio Declaration, provides that in order to achieve sustainable development, environmental provision shall constitute an integral part of the development process and cannot be considered inisolation from it.[344]

The provision of Principle 2 of the Rio Declaration is another Principle worth mentioning in the light of the appreciation of the need to have harmony between developmental strides and the impact of such on the environment. The Principle provides thus:

> States have, in accordance with the Charter of the United Nations and the Principles of International Law, the Sovereign Right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or areas beyond the control of national jurisdiction.

Some of the principles encapsulated within the Rio Declaration and other similar Declarations or Conventions, may not have been couched in the best of ways but provide better platforms for going forward. In respect of Principle 2 of the Rio Declaration considered above, Smith profusely criticized the elements, dimensions and the implications of this Principle in the following apt and succinct text:

> An appraisal of the aspect of sovereignty in the above principle may appear to suggest that the exploitation of natural resources is not only the absolute internal concern of every sovereign state, but also the right to develop in accordance with accepted norms of international law. The state not only has the right to embark on any form of economic development but has the discretion to determine the pace as well as the level of natural resources consumption in the process. The concept of sustainable development is in line with that reasoning only to the extent that it seeks to meet the needs of the present. But the development will be sustainable only where, the right of future generation to satisfy their own needs is not jeopardized. In ensuring the need of future generations are met, exploitation of such natural resources should essentially meet objective environmental standards and not "their own environmental policies" otherwise, we might have a situation where the environmental policies are

[344] Principle 4, Rio Declaration, 1992

> relaxed internally (for economic reasons) that depletion of irreplaceable natural resources such as oil and gas [including solid mineral resources] as well as deforestation of economically viable forests occur at faster rate than economic development with the result that meeting future economic needs becomes jeopardized. Thus....subjecting the extent of exploitation to the environmental policies of the state concerned is a contradiction of the concept.[345]

Clearly implicit in the definition provided by the Brundtland Commission are the principles/elements of inter-generational equity, precautionary principle, pollution prevention principle, polluter pays principle, the principle of partnership and that of common but differentiated responsibilities. Smith further posited thus:

> the whole idea behind sustainable development is rooted in the principle of intergenerational equity- taking cognizance of the interest of future generations in exploiting natural resources and engaging in general economic activities since certain natural resources may be irreplaceable and the adverse consequences of many economic activities irreversible. While the need for economic growth is recognized and in fact encouraged, states are obliged to take into account, the long term effects of their actions affecting the environment.[346]

The problem or challenge with the appreciation of the concept has also been elucidated by some scholars. Oke, while para-phrasing the strong arguments of an erudite scholar[347]stated thus:

> equity among generations would be impossible without equity among the present generation since a generation not able to achieve equity among itself would probably not be able to hand equity unto the coming generations. The latin maxim, *Nemo dat quod non habet*- no one gives what he does not possess, captures this view.[348]

Some of the clogs or impediments that have been found in the application of the concept of inter-generational equity are the colonial rule in Africa where resources including solid minerals were carted to Europe which by itself constituted past inequity, the fact that where the stock of a particular mineral resource is exhausted in an area or generally to extinction in a country, then it will be impracticable for the concept to be articulated and perpetuated.[349]

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[345]Smith, I.O., *op cit*, pp.262 &263
[346]*Ibid*, p.260
[347]LotharGundling, *Our Responsibility to Future Generations.*
[348]Oke, Y. (2009). "Philosophical Basis of Mining Sustainability In Africa: A Nigerian Perspective." *Olabisi Onabanjo University Law Journal* (2009) 1 O.O.U.L.J, p.172
[349]*Ibid*, see generally pp.174 &175

Therefore, the need to exploit these resources in sustainable manner so that in spite of the sometimes unavoidable effects which manifests in the degradation of the environment, the present generation will meet their needs without jeopardizing the right of future generations to meet their own needs, has become a matter of great concern for all.

At this juncture, we must bring to fore, the remarks of Ladan, when he stated in one of his works thus:

> Ensuring the development of land use systems [including systems for grant of relevant licences, leases and permits in relation to mining and for sustainable mining of solid minerals in Nigeria] which meet the needs of present and future generations without causing environmental degradation remain one of the major challenges we are confronted with today. For sustainable development, such land use systems must have capacity to prevent and control any form of gross abuse or unsustainable use of landresources.[350]

Against the background of all the foregoing relating to the concept of sustainable development, the Federal Government of Nigeria realizing the need for setting proper agenda for the sustainable mining of solid minerals in Nigeria and in line with current international trends which posits that any development that is not sustainable is no development; has put in place legislations, policies, structures and strategies for sustainable mining of the nation's numerous solid minerals. To this extent, it could safely be asserted that the Environmental Impact Assessment Act, Nigerian Minerals and Mining Act, National Environmental Standards Regulatory Establishment Agency Act, Nigerian Minerals and Mining Regulations, and the National Minerals and Metal Policy amongst other laws, regulations and policies have been put in place to further the objective of attaining sustainable development in the mining of solid minerals in Nigeria.

[350]Ladan, M.T. (2012)., *op cit*, p.117

The need for sustainable exploitation of the nation's mineral resources has become imperative and is even more appreciated in the light of the fact that solid minerals are non-renewable resources and so when their fixed quantities are exhausted they cannot be replaced or replenished. Therefore, from one generation to the other, the bequeathing of these mineral resources when properly exploited and used in the right manner is a further satisfaction of the protection of the interests of generations yet unborn.

In the mining of solid minerals in Nigeria, the concept of sustainable development is gradually being imbibed by practitioners and all stakeholders but the level of its appreciation is still on the lower rung. The concept transcends virtually every facet of meaningful activity or programme in the mining of solid minerals- from applying for and obtaining relevant licences/leases/permits,to the conduct of geological survey or reconnaissance of the existence and quantity of a mineral resource, to planning, adoption of appropriate methods and technology for exploitation, to the mining activity proper, to determination of the mining licence/ activity, removal of tailings and mining dumps; to the concept of use it or lose it engrained in the N.M.M.A, to the requirements of restoration, remediation, resuscitation, reclamation, rehabilitation and compensation. Also implicit in this is the issue of avoidance of over-exploitation of mineral resources so that the present generation can allow the future generations or generations yet unborn to have meaningful life and existence.

In linking the concept of sustainable development to the mining of solid minerals, it was stated in the Compendium of Guidelines for Mining and Sustainable Development thus:

> If sustainable development is defined as the integration of social, economic and environmental considerations, then a mining project that is developed, operated, and closed in an environmentally and socially acceptable manner could be seen as contributing to sustainable development. Critical to this

> goal is ensuring that benefits of the project are employed to develop the region in a way that will survive long after the closure of the mine.[351]

In practical terms, sustainable development is not a new issue but a new way of looking at issues.[352] According to Oke, Jeremy holds the view that mining sustainability rests on three legs: economic sustainability, environmental sustainability, and social responsibility.[353]In rightly representing the well-known view that sustainable development is not novel to Africa prior to the colonial intervention in Africa or even in the management of mineral resources and other natural resources prior to the popularization and globalization of the concept Oke, asserted that "sustainability is not a strange phenomenon in indigenous Yoruba communities, what is strange is the attempt to impose new understandings of known concepts without acknowledging or integrating indigenous viewpoints."[354]

Oke, still referenced thus: "Testifying before the West African Lands Commission in 1908, a Yoruba traditional ruler, Chief Elesi of Odogbolu, expounded the traditional conception of resource ownership and management thus: "I conceive that land belongs to a vast family of which many are dead, few are living and countless members are still unborn."[355] It must be stated that

[351] SeeCompendium of Guidelines for Mining and Sustainable Development (Final Draft), by the United Nations Environment Programme (UNEP) April 2001 cited inOkeYemi, "Philosophical Basis of Mining Sustainability in Africa: A Nigerian Perspective."*OlabisiOnabanjo University Law Journal* (2009) 1 O.O.U.L.J, p.165

[352] John Dernbach, *Sustainable Development as a framework for National Governance* (1998) 45 Case W. Law Review, at 1 cited byOkeYemi, "Philosophical Basis of Mining Sustainability In Africa: A Nigerian Per spective."*OlabisiOnabanjo University Law Journal* (2009) 1 O.O.U.L.J, p.167

[353]Jeremy P. Richards, *Sustainable Development and the Mineral Industry* (Article for Publication in the Society of Economic Geologists Newsletter, January 2002), 1-4 cited inOkeYemi, "Philosophical Basis of Mining Sustainability In Africa: A Nigerian Perspective."*OlabisiOnabanjo University Law Journal* (2009) 1 O.O.U.L.J, p.166

[354]OkeYemi (2010). "Sustainability and Indigenous Management of Natural Resources in Yorubaland."*The University of Ilorin Law Journa*l, Vol. 6, p.175

[355]Reports of the West African Lands Commission (1908) at 183 Para.1048 cited in OkeYemi, Sustainability and Indigenous management of Natural Resources in Yorubaland,*The University of Ilorin Law Journal* (2010) UILJ Vol. 6, p.175 foot note 32

this apt analysis applies to the stock of solid minerals in pre-colonial Nigerian and African societies, and underscores the concept of sustainable development within the African context.

In the quest of attaining sustainable development in Nigeria in the general aspects of environmental law and policy and in the particular area of the mining of solid minerals, the role of the Judiciary in interpreting laws, regulations and policies and the inculcation of the concept of judicial re-engineering or judicial activism cannot be over-emphasised. The foreign locus classicus of *Juan AntonioOposa&orsv.The Hon. Fulgencio S. Factoran&ano.*[356]popularly called *Oposav. Factoran* in this regard is most revealing and worthy of emulation by courts of other jurisdictions (including Nigeria) whose judicial system and machinery are still evolving and developing. The facts of the case are as stated below:

The petitioners were a group of Filipino minors who brought an action on their own behalf and on behalf of generations yet unborn, through their respective parents together with the Philippine Ecological Network Incorporated. They claimed that the Country's natural forest cover was being destroyed at such a rate that the Country would be bereft of forest resources by the end of the decade if not sooner. The trial Judge had ruled *inter alia* that the granting of the relief prayed for would result in the impairment of contracts, which was prohibited by the fundamental law of the land. On appeal, the Supreme Court held *inter alia*:

1. The petitioners had the right to sue on behalf of succeeding generations because every generation has a responsibility to the next to preserve the rhythm and harmony of nature for the full enjoyment of a balanced and healthful ecology.

[356] 33 ILM(1994) 173, Supreme Court of Phillipines

2. Unless the rights to a balanced and healthful ecology and health are protected and preserved, the day would not be too far when all also would be lost not only for the present generation but also for those to come generations which stand to inherent nothing but parched earth incapable of sustaining life.

The above Judgment gives some insight into the general concept and understanding of "Sustainable Development". Interlacing the understanding and basic implication of the grounding of the decision in Oposa's case to the field and sector of mining of solid minerals in Nigeria becomes most sanguine. Be it stated, that every general understanding of the concept as extrapolated above in Oposa's case has a bearing on the mining of solid minerals in Nigeria to the extent that it is not out of place for one to postulate the need for the imbibing of the practices engrained in the concept of sustainable development as well demonstrated in Oposa's case. The judiciary being the last hope of the common man or the bastion of justice will have to rise to the occasion by doing justice not according to what the law is alone but in accord with what the law ought to be and to better achieve the purpose for which the laws are enacted.

The reason for this statement might not be far-fetched; this is given the basic and elementary fact that the resources known as solid minerals belong to the category of those special and revered resources classified as non-renewable resources. A resource is categorized as non-renewable when its earth-given endowment and quantity are fixed and cannot in any way be regenerated or reproduced in order to expand or increase its God-given quantity, yield or endowment. All classes of solid minerals fall within this special category. Therefore, since the quantities of these mineral resources are fixed and cannot be expanded or recreated, it is the more reason why the present generation should utilize these resources in the most sustainable manner so as to still

bequeath those resources to coming or succeeding generations and generations yet unborn through imbibing safe and sustainable mining practices. This represents the hallmark of the concept of sustainable development in general and in the solid minerals sector, in particular.

While commenting on the complex inter-relationship between conservation and sustainable development, in the mining sector Osunbor,[357]reproduced the analysis of LovejoyW. F quoted in Femi Dada[358] thus:

> The efficient exploitation of a mineral deposit which might be applauded as good conservation in terms of that mineral might well result in the destruction of or harm of the environment which might be viewed as bad conservation. Economics provide some tools to help solve this sort of problem...ultimately society must collectively make a political choice as to what is good or bad conservation policy. The key question concerning the stock of minerals relate to the rate of production or exploitation through time that will maximize the net value of the mineral deposit.[359]

Finally, to conclude this chapter, reference must of necessity be made to the comment of a former Military President of Nigeria[360] who stated that "the old view that development must, of necessity, be accompanied by some degree of resource depletion and environmental degradation has given way to the modern concept of 'Development without destruction'. Mankind has also come torealize that the environment belongs to all generations, present and future."[361]

[357]Osunbor O.A., *op cit*, p.402
[358] Dada F. "Environmental Impact Assessment of Mining Projects In Nigeria: The Statutory Requirements." In: *Report of the National Workshop on the Review of the Minerals Act, 1946 and Related Laws*, held at Abuja Sheraton Hotels & Towers, 2-6 May, 1993.
[359]Osunbor O. A., *op cit*, pp.402 &403
[360]FormerPresident Ibrahim BadamosiBabangida was Nigerian Military President from 1985-1993
[361]"Transition to Sustainable Development in Nigeria."*Federal Environmental Protection Agency, Report for the United Nations Conference on Environment and Development,* Rio de Janeiro, Brazil, 3-14 June 1992

CHAPTERTHREE

IMPACTS OF MINING ON ENVIRONMENT, HUMAN HEALTH, LIVELIHOODS, CLIMATE CHANGE, BIODIVERSITY, SUSTAINABLE DEVELOPMENT GOALS ANDANALYSISOFLEGAL RESPONSES TO ENVIRONMENTALDEGRADATION.

3.1Introduction

The impacts of mining activities on the environment in Nigeria has assumed major concern to all stakeholders-governments at all levels, mining host communities, mining companies and the general populace. The ravaging effects of such concerns are not far-fetched and could be noticed in most parts of Nigeria where mining of solid minerals took place or is on-going. This is in the light of the fact that all aspects of the environment including particularly land, water and air are impacted/affected and the repercussion of this development constitutes menace not only for the present generation of Nigerians who are concerned about living a sustainable life style but also for the fact that the present generation of Nigerians have the moral and legal duty to bequeath a sustainable environment to future generations and generations yet unborn.

To the above extent, an analysis of this deleterious challenge which includes a consideration of the causes and effects of environmental degradation by the mining of solid minerals in Nigeria is important. Further to be discussed, are the particular impacts of mining activities on the Environment-Land, Water and Air; impacts of mining activities on human health, livelihoods, climate change, biodiversity and Sustainable Development Goals (SDGs).

A discussion of some basic common law principles/remediesrelating toNoise, Nuisance, Negligence, and a review of the case of *Ryland v. Fletcher* have also been undertaken for a fuller understanding of some of the dynamics of environmental degradation by mining of solid

minerals in Nigeria.As methods or strategies of preventing or mitigating the impacts of mining on the environment in Nigeria, matters of Compensation,Community Development Agreements and Dispute Resolution Mechanism were discussed. Finally in recognition of the crucial role of funding in protecting the environment from degradation by mining of solid minerals, Funding and its Sources within extant legal and institutional framework was examined. All the issues highlighted above, are hereunder considered.

3.2Causes and Effects of Environmental Degradation by Mining of Solid Minerals

Some scholars have attempted to distinguish between the cause(s) and sources of environmental degradation in general and have resultantly posited that the source of environmental degradation is one-i.e man; while the causes of environmental degradation could be numerous. This school of thought posits that "the only source of environmental pollution [and by implication degradation] therefore, remains man who so often acts as an alien to the natural set-up."[362]According to a scholar, the "causes of environmental degradation are multiple, although the sources of such causes are quite few. Speaking from the point of the Gaia hypothesis which can hardly be controverted, there is decidedly one source of environmental degradation namely, man.[363]

From the preposition above, it isopined that there may not be much of a difference between the words "cause" and "source" as both words have similar meaning.Cause, has been defined as the person or thing that makes something happen.[364]The term also means something that produces an

[362]Pickering, K.T. and Beckwith, S. (1994). *An Introduction to Global Environmental Issues,* Routledge, London, p.166 cited in Usman, A.K. (2012). *Environmental Protection Law and Practice,* Ababa Press Ltd, Ibadan, p.58
[363]Usman, A.K. (2012). *Environmental Protection Law and Practice*, Ababa Press Ltd, Ibadan, pp.59-60
[364]Hornby, A.S. (2010). *Oxford Advanced Learner's Dictionary, Eighth Edition,* Oxford University Press, UK, p.223

effect or result.[365]Source, has similarly been defined as a person or thing that causes something, especially a problem.[366]It has further been explained to mean the originator or primary agent of an act, circumstance or result.[367] In the light of the foregoing discussion, the terminological preference of "cause" is used in this segment of this thesis with the understanding that same may be used interchangeably with "source".

While appreciating the conclusion reached by the author and therefore the position that man is the only source of environmental degradation, it is also appreciated that the environment regulates itself and cleanses itself; in rare cases however, environmental pollution could be attributed to natural causes or sources; an example is, cases where there are volcanic eruptions which involves air pollution by the emission of gaseous substances and the contamination or degradation of water bodies. Therefore, in terms of general consideration of the environment, the example cited above would count as natural cause or source of pollution but within the precinct and understanding of environmental degradation by the mining of solid minerals, this example may not suffice as a cause or source of environmental degradation. To this extent, the assertion that man is the only source of environmental degradation as it relates to mining of solid minerals is deemed correct. This is notwithstanding the fact that there could be fewand insignificant cases of outpour of mineral resources such as iron ore as a result of natural processes of emission or ventilation.

In articulating the sources or causes of environmental degradation, scholars have opined that top on the list is mankind's wasteful exploitation of natural resources citing examples of extensive pollution of air, water, and land, and the release of contaminants into the environment, extensive

[365]Garner, B.A. (2009), *Black's Law Dictionary*, Ninth Edition, West, United States of America, p.250
[366]Hornby, A.S., *op cit*, p.1423
[367]Garner, B.A., *op cit*, p.1522

distortion and destruction of our food chain, ill-advised intrusions on the ecosystem among several others.[368]Many have attributed environmental problems to the geometric growth in population while numerous others have waived it aside as the resultant effects of technological development.[369]

3.3 Impacts of Mining Activities on the Environment, Human Health, Livelihoods, Climate Change and Sustainable Development Goals (SDGs)

This segment considers the impacts of mining on the environment, human health, livelihoods, climate change and sustainable development goals. It is pertinent to mention that all the other variables stated in the sub-topic above, are encompassed under the environment. However, for better analysis and appreciation of the impacts of mining of minerals on more particular aspects of the environment, this distinctions or categorizations became necessary.

3.3.1**Impacts of Mining Activities on the Environment- Land, Water and Air**

Proceeding from the premise of the definitionsof the environment provided in this thesis, the basic components of the environment are land, water and air; consequently the impacts mining on the environment are on these basic components which are accordingly discussed below:

(i) Land: The meaning of land and its cardinal role as the holding resource in the exploitation of solid minerals and the consequence of mining by way of degradation of land was considered in some chaptersof this thesis. The effects or impacts of mining on the environment are most

[368]Simpson S. and Fagbohun O. (eds.) *Environmental Law and Policy* (1998 Reprint 2000), Law Centre, Faculty of Law, Lagos State University, Preface p.iv

[369]Opening Remarks by the former Chief Judge of Lagos State, Hon. Justice OmotundeIlori at the International Conference on Environmental Law and Policy organised by LASU Law Centre published in Simpson S. and Fagbohun O. (eds.) *Environmental Law and Policy* (1998 Reprint 2000), Law Centre, Faculty of Law, Lagos StateUniversity,p.446

prominent or decipherable on land. The examples of the ravaging of land in the Jos-Plateau, Lukku-Minna in Niger State, Okaba-Odagbo in Kogi State, Baggega in Zamfara State,all recounted in this thesis are few examples of such incidences. In general, the forms of land degradation could assume any or a combination of surface disturbance for open pits, shafts, declines, head frames, mill building; tailing impoundments, waste rock and gob piles; loss of land for agriculture and timber production; the destruction of habitat for animal species; displacement or impacts on endangered animal species; and creation of refuse piles.[370]The absence of trees or other vegetation renders the soil vulnerable to erosion. Sometimes it may be necessary for mining purposes to divert the course of a stream or river and this may result in its drying up.

Some of the worst cases of damage to the landscape in this country are to be found in parts of the Jos plateau which from an aerial view, look like a lunar landscape with pits, gullies and ravines. The landscape can also be damaged by tailing and dumping of waste from excavations.[371] Apart from quarrying, mining of all sorts generally and inexorably causes damage to the environment on large scale. It is a process, which inevitably creates pits, ponds and mounds. It destroys the topsoil and the subsoil, and renders land non-arable and agriculturally wasted and ruined.[372]Okorodudu-Fabura aptly submitted thus:

> Three of the major minerals of the country, that is, tin, coal and petroleum have been exploited with very adverse consequences for the land environment, causing scarification, erosion, landslides,

[370]Akper, P.T. (2011). "Addressing Environmental Concerns in the Exploitation of Solid Minerals in Nigeria: Issues, Problems and Prospects."In:Fagbohun O. (ed.) *NIALS Journal of Environmental Law*, Vol. 1, Nigerian Institute of Advanced Legal Studies, Lagos, p.185

[371]Osunbor, O.A. (1998). "Environmental Consideration in the Development of the Solid Minerals Industry in Nigeria." In: Simpson S. and Fagbohun O. (eds.) *Environmental Law and Policy (1998 Reprint 2000),* Law Centre, Faculty of Law, Lagos State University, p.398

[372]Adaramola, F. (1998)."Environmental Consideration in the Development of the Solid Minerals Industry in Nigeria." In: Simpson S. and Fagbohun O. (eds.) *Environmental Law and Policy (1998 Reprint 2000),* Law Centre, Faculty of Law, Lagos State University, p.79

> destruction of wildlife habitat; impairing aesthetic value of land, destroying or diminishing the utility of land for commercial, industrial, residential, recreational, agricultural and forestry purposes, damaging the property of citizens, creating hazards dangerous to life and property, degrading the quality of life of local communities and counteracting government efforts to conserve soil, water and other natural resources.[373]

In spite of the mention of petroleum as one of those minerals whose mining degrade land environment, the analysis of the scholar is still very relevant to the subject of this thesis in the light of the fact that the scholar analyzed the vicissitudes of land degradation by the mining of tin and columbite in Nigeria. The mention of tin and columbite by the learned scholar as solid minerals whose mining degrade the environment, does not mean the list is closed as virtually the mining of all solid minerals in Nigeria has contributed to the degradation of the environment in Nigeria. For example lead mining in Zamfara and the humungous lead poisoning associated with it and coal mining in Okaba-Odagbo mines with its ravaging effects.Akper, corroborated thus:

> Environmental impacts from mining operations in Nigeria consist mainly of surface disturbance, from small operations engaged in the production of crushed stones and clays used in the manufacture of bricks. While larger surface disturbance has occurred for tin, coal and iron ore production. In addition, limited disturbance has resulted from the recovery of gold from streamed deposits.[374]

In order to mitigate or protect the environment particularly the component of land from all sorts of degradation including degradation by the mining of solid minerals, the NESREA Act contain numerous provisions for the purpose of ensuring that the environment is protected and mankind is able to bequeath a healthful land resource to generations yet unborn[375]. In more specific regards, the NESREA Act empowered the Agency to make regulations, guidelines and standards for the protection and enhancement of the quality of land resources, natural watershed, coastal

[373]Okorodudu-Fabura, M.T. (1998). *Law of Environmental Protection: Materials and Text*, Caltop Publications (Nigeria) Limited, Ibadan, p.370
[374]Akper, P.T.,*op cit*, p.185
[375]See Sections 7(a)(b)(d)(g)(h)(j)(k)(l)(m) & 8(d)(e)(f)(g)(l)(m)(o)(p)(q)(r)(s), National Environmental Standards and Regulations Enforcement Agency (Establishment) Act,No. 25, 2007

zone, dams and reservoirs including the prevention of flood and erosion, to serve the purpose of the Act.[376]

To underscore the importance of the protection of land resource from degradation, the sanction for contravention of the provisions of section 26(1) of the NESREA Act, by an individual offender is a fine not exceeding N200,000.00 or to imprisonment for a term not exceeding one year or to both such fine and imprisonment; and an additional fine of N10,000.00 for every day the offence subsists;[377] whereas the sanction for a body corporate is a fine not exceeding N1,000,000.00 and an additional fine of N50,000.00 for every day the offence subsists.[378]

In as much as the propelling philosophy for the above provisions is the prevention of environmental degradation including by mining of solid minerals, and thus the overall aim of attaining environmental protection, it is opined that the above penalties or sanctionswill not sufficiently deter persons and corporate bodies from violating the land resource. This is because it appears much cheaper to violate land resource and pay these un-deterring and inadequate sanction regimes than to take deliberate measures to prevent the degradation of land resource. Worst still is the notorious fact that even the paltry sanction regime has not been enforced because there are no reported case or cases filed before courts of appropriate jurisdictions and convictions entered.

As posited by Usman, "salutary as these provisions are, the problem has remained lack of enforcement by the Agency which is supposed to monitor and ensure compliance with these provisions. There is no single reported case in which sanctions have been applied against an

[376]*Ibid,* Section 26 (1)
[377]*Ibid,* Section 26 (3)
[378]*Ibid,* Section 26 (4)

offending corporation in Nigeria.[379]Laws are most likely to be obeyed and the environment better protected when sanction regimes are enforced to serve as deterrence and ensure sustainable development.

(ii) Water: Though, the NESREA Act did not define water, it however defined the phrase "Water of Nigeria" to mean "all water resources in any form including atmospheric, surface and sub-surface, and underground water resources where the water resources are interstate, or in the Federal Capital Territory, Territorial waters, Exclusive Economic Zone or in any other area under the jurisdiction of the Federal Government of Nigeria."[380]Water is a liquid without colour, smell or taste that falls as rain, is in lakes, rivers and seas, and is used for drinking,washing, etc.[381]

Water is universally acknowledged as fundamental to the daily need of man and indeed his survival here on earth. Water is second only to air as the most essential natural resources for the survival of man.[382]It is the view of this scholar that all components of the environment are equally important and exist as a body of divine resources for the survival of mankind; therefore none of the three components of land, water and air could be said to be more important than the other as the existence of man on planet earth would be totally impossible if any of the components were lacking.

Land is the physical habitat of man without which there can be no existence on earth; water is necessary for the survival of man on earth and is often referred to as life. Science has proven that

[379] Usman, A.K., *op cit,* p.243
[380]Section 37, National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2007
[381]Hornby, A.S.,*op cit*, p.1678
[382]Okorodudu-Fabura, M.T.,*op cit*, p.585

man can survive for at most three days without water.[383]Air on the other hand is equally of vital importance. The atmospheric net of air surrounding the earth is very critical to man's existence on this planet. Scientific findings show that the life in man will expire if he is deprived of air for a few minutes.[384]The foregoing represents in a cursory form the importance of these earthly-gifts by God to mankind. However, in terms of elasticity of needs of these resources, air may be ranked as utterly most necessary followed by water and then land. But we may need to pulse for a moment and deliberate what man's existence will be, if at all without the existence of land and it acting as mankind's centreof gravity? This perhaps justifies the position of equality of importance of all these natural media.

It is however rather unfortunate that in spite of the relevance of these resources to mankind, man has continually degraded the environment by the mining of solid minerals with far reaching and negative impacts on human existence and the need to bequeath a sanguine and healthful environment to succeeding generations of mankind in general and Nigerians in particular. One of the forms, or source or effects of degradation of the environment by the mining of solid minerals is through water and by implication water bodies of particularly ponds, streams and rivers which are usually the nearest water bodies closest to mankind used during the process of treating minerals in the mining of solid minerals.

The use of water in all human endeavours and in all spheres of life is prevalent and a necessity if man has to meet his needs and the desire to survive, procreate, re-generateand attain sustainable development with a view of bequeathing a healthful and harmonious environment to future generations. It is well appreciated by all that water when properly used is friend to all and enemy

[383]*Ibid*
[384]*Ibid,* p.386

to none. In articulating the importance of water in mining activities and the resultant degradation or pollution of water sources by the mining of solid minerals, Osunborespoused thus:

> Some mining operations require large quantities of water for treatment and purification. Examples of these are tin, gold and columbite. These activities pose a danger to the environment in three ways:
>
> (a) The large volume of water required for treatment, deplete the amount of water available for other uses. As rivers, lakes and underground water reservoirs dry up all over the world and especially in Africa there is the need to be cautious about the usage of water in mining.
> (b) The existence of mine dumps and tailing near rivers and streams increase the level of sedimentation in the water with deleterious effects on the flora and fauna. This can also contribute to rivers over-flooding their banks and the bursting of dams. Water from streams with a high level of suspended materials and sediments become unsuitable for industrial and economic uses unless first treated at great cost to render it suitable.

The scholar eventually discussed two activities that pose danger to the environment instead of three. Nevertheless, one cannot agree less with the virile articulation of the learned scholar which is even corroborated by the recent statistics of the drying up and the resultant reduction in water volume of the Chad Basin. The drying up of the River Niger thus warranting its alleged dredging by the Federal Government of Nigeria between 2011 to 2013 at huge costs, are few cases in point to demonstrate that water resource particularly of rivers are getting depleted in volumes. It is known that these two water bodies provide sources of water to numerous communities in the north eastern and north central geographical zones of Nigeria respectively and these zones have endowed solid mineral resources and mining take place in those zones.

For example in the Odagbo-Okaba area of the North Central zone of Nigeria where mining of coal took place, the chemicals from the mining sites got into some of the streams contaminated them killing all the fishes and made unhealthy for human consumption. The early stages of the

mining activities when the chemicals spilled into the drinking water sources, it was reported many people died after drinking water from the affected streams.[385]

In order to protect the environment from general degradation and particularly by the mining of solid minerals, extant laws relating to the subject matter of this thesis include National Environmental Standards and Regulations Enforcement Agency (Establishment) Act[386]which *inter alia* empowers NESREA in collaboration with other relevant agencies to make regulations for the purpose of protecting public health or welfare and enhancing the quality of water to serve the purpose of the Act[387]and prescribed punishment of a fine not exceeding N50,000.00 or to an imprisonment for a term not exceeding one year or to both such fine and imprisonment and an additional fine of N5,000.00 or N10,000.00 for every day the offence subsists depending on whether the offender is an individual or a corporate body, for violation of regulations made pursuant to the NESREA Act.[388]Whereas under the Criminal Code Act, any person who corrupts or fouls the water of any spring, stream, well, tank or reservoir or place, so as to render it less fit for the purpose for which it is ordinarily used is guilty of a misdemeanor and is liable to imprisonment for 6 (six) months or fine.[389]

The provisions in the above two enactments already create a conflict regime in the quest for the mitigation or protection of the environment from degradation of its water quality by mining of solid minerals. This is because the contradiction in the punishment regimes for violation will not aid certainty and clarity of punishment. It sends conflicting signals first to the citizenry, law

[385]*Okaba-Odagbo Coal: 84 years, After a Community Sitting on Black Gold Wallows in Poverty*. http://dailytrust.com.ng. Accessed on 13th July, 2015
[386]National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2007
[387]*Ibid*, Section 23(1)
[388]*Ibid*, Sections 23(3) & (4)
[389]Section 245, Criminal Code Act, Cap.38, Laws of the Federation of Nigeria, 2004

enforcement agencies, prosecutors and then to the judiciary. Though the Criminal Code Act nevertheless an otiose law in many respects haven being enacted in 1915 is still a law of the country.To ensure the protection of the environment through particularly the prevention of pollution or degradation of water quality, there is the urgent need to reconcile these contradictions.

It must be outrightly mentioned that even the penal regime specified for degradation of water by a law as recent as the NESREA Act is patently inadequate and makes a mockery of the efforts to protect this very essential natural resource. It is therefore opined that the penal fine specified in section 23(3) & (4) of the Act should be increased to N500,000.00 while the term of imprisonment should be amended to read a maximum of 3years.

The Nigerian Minerals and Mining Actand the Nigerian Minerals andMining Regulations are other enactments underpinning the issue of the protection of the environment (in this instance water bodies or resources) from the effects of degradation by the mining of solid minerals. The former makes varied provisions towards ensuring that the water system or water *simpliciter* is not polluted during mining activities or operations in the light of the numerous uses of water by mankind.Such pertinent provisions include the prohibition of pollution of water or water course in the area within the mining lease or beyond that area in the course of mining or exploration of minerals;[390]persons involved in mining operations requiring the use of water are mandated to ensure that the water so used does not contain injurious substances in quantities likely to prove detrimental to animal or vegetable life when the water leaves the mining area in which it has been so used.[391]A licensee or lessee shall pay compensation to the owner or occupier who suffers

[390]Section 123, Nigerian Minerals and Mining Act, No. 20, 2007
[391]*Ibid,* Section 124

damages as a result of pollution of any source of water, used for domestic and other purposes, as a consequence of the exploration or operations in any work connected with the property, for any such damage not otherwise made good.[392]

The Minister is empowered to make regulations prescribing the quantity of tailing that may be deposited in any natural water course by a lessee under the Act and consequently, mineral title holders are mandated to apply and obtain permit authorizing the deposit of greater quantities of tailing than that prescribed by the regulations and may make the grant subject to such conditions as deemed necessary.[393]

Mineral title holders or mine operators are mandated to *inter alia* make adequate arrangements to protect the general public, particularly the host community from the risks associated with tailings storage; ensure that tailings are properly treated before they are discharged into the water course; ensure proper treatment of mine waste before final disposal to prevent air and water pollution and contamination; and provide adequate measures to minimize the effect of air pollution.[394]The rationale for the foregoing provisions is to ensure the protection of the environment particularly the water component, from degradation by the mining of solid minerals through preventive and precautionary principles/ strategies of environmental law.

(iii) Air: Air is the mixture of gasses that surrounds the earth and that we breathe.[395]In an applied perspective, air is actually the component of the atmosphere. And the atmosphere is defined as the gaseous envelop that surrounds the earth or any of the heavenly bodies. The dichotomy between the "air" and the "atmosphere" is very simple. The air is "within" the atmosphere, while

[392]*Ibid*, Section 125(b)
[393]*Ibid*, Section 126 (a)(b)(c)
[394]Regulation 125, Nigerian Minerals and Mining Regulations, 2011
[395]Hornby, A.S.,*op cit*,p.31

the atmosphere is "without" (i.e. surrounding) the air.[396]The components of pristine, clear air or pure, dry air in the lower atmosphere consists mainly of nitrogen (78.084% by volume); oxygen (20.946%) the remaining 0.970% are argon, carbon dioxide, neon, helium, krypton, xenon, hydrogen, methane and nitrous oxide in decreasing order or percentage per volume.[397]The activities of mankind in making efforts to integrate the environment and development often times constitute concern on established or regulated air limits; one of such activity is the mining of solid minerals which process at some stages of operations infringes on set air ambient limit thus resulting in air pollution or degradation of the quality of air resource.

Air pollution is the accumulating of substances in the air, insufficient concentrations to produce measurable effects on man, plants and animals. It involves the emission of harmful substances into the atmosphere, which will cause danger to any living thing.[398]Air pollution is the presence of foreign matter (either gaseous, particulate or a combination of both) in the air, which is detrimental to the health and welfare of man.[399]For example, a source of atmospheric pollutant is fossil fuel in the form of coal, oil and natural gas. Fossil fuel when burned to generate energy release carbon dioxide among other atmospheric pollutants.[400]Cement, iron and steel industries are by far the worst culprits of atmospheric pollution. Cement production is the source of particulate contamination.

This type of pollution wherein very small particles escape and stay in the atmosphere has been denominated as the type of air pollution which produces the greatest hazard to human and animal health. Again, particulates in the atmosphere are of special concern because their presence can

[396]Okorodudu-Fabura, M.T.,*op cit*, p.387
[397]*Ibid*
[398]Atsegbua, L. et al. (2004). *Environmental Law In Nigeria: Theory and Practice*, Ababa Press Ltd, Lagos, p.75
[399]*Awake! Magazine* (May 22nd 1999). Child Labour, Its End in Sight, p.28
[400]Usman, A.K.,*op cit*, p.37

severely inhibit the dispersal of other air pollutants.[401]Other sources of atmospheric air pollution include mining and material handling operations. These emit fugitive dusts, which travel long distances, polluting the atmosphere and adversely affecting human and animal health.[402]

Air related impact of mining create dust emissions from mining, milling and hauling activities; release of volatile organic compounds and toxic air pollutants from milling processes, retorts and coking ovens; release of toxic heavy metals from smelting and refining operations; increased emission of sulphur dioxide, oxides of nitrogen and carbon monoxide from electric power and steam generation.[403]The aptness of this submission by the learned scholar appears to have been compromised by its failure to list or mention noise as one of the deleterious impacts of mining of solid minerals that is air-related.[404]

Air is deemed to be polluted when gasses and substances are emitted beyond acceptable limits into the atmosphere thus resulting in the fall of the quality of air below acceptable level which is considered desirable and safe for the health and welfare of humans and other living organisms.[405]In the course of extraction, processing and grinding of solid minerals large quantities of dust are released into the atmosphere. This is easily noticeable in quarries, cement factories and their vicinity where thick layers of dust accumulate on buildings and vegetation. Other chemicals and substances are also released into the atmosphere.[406]

Also, when air is laden with such dust it causes health hazards to some people. For example, pollution studies around Sagamu and Ewekoro cement works in Ogun State have shown that

[401]*Ibid*, p.39
[402]Pieckering, K.T. and Owen, L.A. (1994).*An Introduction to Global Environmental Issues,* London, p.110
[403]Akper, P.T.,*op cit*,p.186
[404]Osunbor, O.A., *op cit*, p.399
[405]Okorodudu-Fabura, M.T.,*op cit*, p. 388
[406]Osunbor, O.A.,*op cit*, p.398

several people are suffering eye pain, and asthmatic attacks due to the dust laden air that prevails within a few kilometres radius of the factories. Recent environmental impact studies of limestone mining and cement industry in Sagamu have revealed a declining Kola nut output from the plantations within a few kilometres radius of the cement factory. The particulate matter eventually gets deposited on the Kola nut leaves and flowers as well as the soil supporting plants. The overall effect of this is that the photosynthetic and fruiting ability of the Kola nut tree is impaired with consequent decrease in Kola nut production.[407]

In realization of the cardinal role of air in human's existence on earth and in order to protect the environment from degradation by mining of solid minerals which a times result in the degradation of air quality, the NESREA Act empowered the Agency to make regulations setting specifications and standards to protect and enhance the quality of Nigeria's air resources, so as to promote the public health or welfare and the natural development and productive capacity of the nation's human, animal, marine or plant life including setting minimum essential air quality standards for human, animal, marine or plant health, control of concentration of substances in the air likely to result in damage or deterioration of property or life; and provide most appropriate means to prevent and combat various atmospheric pollution.[408]The Agency may also establish monitoring stations or network to locate sources of atmospheric pollution and determine their actual or potential danger.[409]

[407]Aigbedion, I. &Iyanga, S.E. Environmental Effect of Mineral Exploitation In Nigeria.*International Journal of Physical Sciences Vol. 2(2),* p.36http://www.academicjournals.org/ijps accessed on 19th July, 2015, pp.33-38

[408]Section 20 (1), National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2007

[409]*Ibid,* Section 20(2)

To underscore the importance of the protection of air resource from degradation, the sanction for contravention of the provisions of section 20(1) of the NESREA Act, by an individual offender is a fine not exceeding N200,000.00 or to imprisonment for a term not exceeding one year or to both such fine and imprisonment and an additional fine of N20,000.00 for every day the offence subsists;[410] whereas the sanction for a body corporate is a fine not exceeding N2,000,000.00 and an additional fine of N50,000.00 for every day the offence subsists.[411]Earlier comments made on the philosophy behind the enactment of the penal regime relating to water above and the observed inadequacies, apply *mutatis mutandis*.

3.3.2 Impacts of Mining Operations on Human Health

The impacts of mining on human health are multifarious. Mankind has been said to be the principal cause of environmental degradation by the mining of solid minerals. Many health problems are associated with mining ranging from death, injuries, exposure to radiation as well as auditory and respiratory disorders. The problem is rendered more intractable because several of these diseases take a long time to manifest.[412] Mining therefore has many health implications, some of which are considered hereunder. Mining coal, the dirtiest fossil fuel on the Planet, exposes both miners and local populations to health hazards. When people who work in mines or live close by them, inhale coal dust and carbon, this hardens their lungs, leading to black lung disease (also called pneumoconiosis or CWP). An estimated 1,200 people in the US still die from black lung disease annually. This situation is even worse in developing countries.

[410]*Ibid*, Section 20 (3)
[411]*Ibid*, Section 20 (4)
[412]Osunbor, A.O. (1998 Reprint 2000)."Environmental Consideration in the Development of the Solid Minerals Industry in Nigeria."In: Osunbor, O.A and Simpson S. *et al*. (eds.) *Environmental Law and Policy*,Law Centre, Faculty of Law, Lagos State University, Lagos, p.396.

It has been asserted that people living near coal mines have higher than normal rates of cardiopulmonary disease, chronic obstructive pulmonary disease, hypertension, lung disease, and kidney disease. Local communities also suffer when coal fires occur. These fires emit toxic levels of arsenic, fluorine, mercury and selenium, contaminants that can enter the air and food chain of local communities.[413]

The mining of solid minerals particularly Lead in Bagega settlement and some other communities of Zamfara State of Nigeria is sufficiently illustrative. In March, 2010 Medecins Sans Frontieres (MSF) discovered an epidemic of lead poisoning in Zamfara State in North-Western Nigeria and subsequent investigations confirmed that hundreds of children under ages of five were at risk of death or serious acute and chronic health effects due to extremely high levels of lead and mercury. At least 10,000 people were estimated to be affected overall. The source of the outbreak was associated with artisanal gold ore processing that occurs in villages. The medium through which the people were affected include drinking water, food, inhaling of contaminated dust, oral ingestion of particles especially by children and through breast feeding.[414] In Nigeria, not less than 400 children died in Northern Nigeria from lead poisoning in Zamfara [State] from illegal mining activity. Symptoms exhibited due to lead ingestion ranged from abdominal pain, lethargy, headache, seizures, coma and death.[415]

The challenge to health mining activities in Nigeria and other Less Developed Countries is exacerbated by informal mining which is largely done by people who have little knowledge about the effects of chemicals on human beings. Many of these chemicals are knowntobe

[413]Section 20 (4), National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2007
[414]Ako, T.A. et al.*Environmental Impact of Artisanal Gold Mining in Luku, Minna, Niger State, North Central Nigeria,* p.2http://pubs.sciepub.com/jgg Accessed on 13th July, 2015
[415]Aigbokhaevbo V. "Environmental Abuses in Nigeria:Sectoral Implications for Reproductive Health Care." *NIALS Journal of Health Law and Policy*,pp.165-166

dangerous to human health. This knowledge is not readily available to many of the artisans and their communities. The result is that such mining activities are done without regards to health and safety regulations.[416]

Similarly, a lot of airborne particulate matters are generated by the numerous stone crushing industries in the country. When air is laden with such dust it causes health hazards to some people. For example, pollution studies around Sagamu and Ewekoro cement works in Ogun State have shown that several people are suffering eye pain, and asthmatic attacks due to the dust laden air that prevails within a few kilometres radius of the factories.[417]

Another related challenge of mining that sometimes result in deaths or accidents of miners and those around mining sites, is that of mine collapses. Mine collapses and accidents kill thousands of workers around the world every year. China Coal mine accidents killed 4,700 people in 2006[418]and more than 900 people in 2014 alone.[419]In Nigeria, mine collapses resulting in deaths or accidents are also experienced.Mining pits have become death traps whereby the pits collapse and kill as many as 5 to 10 miners inside, coupled with the hazards associated with such acts.[420]

3.3.3 Impacts of Mining on Livelihoods

Human livelihood is essential his existence and development and could be said to be one of the core basis for sustainability in mining of mineral resources. The impacts of mining on livelihoods have led to improvement in the standards of living of some mining communities through the

[416]Ladan, M. T (2014), *op cit*.
[417]Aigbedion, I. &Iyang, S.E. "Environmental Effect of Mineral Exploitation In Nigeria."*International Journal of Physical Sciences* Vol. 2(2), p.36http://www.academicjournals.org/ijps accessed on 19th July, 2015, p.33-38
[418]https://www.environment.co.za; assessed 22nd November, 2016.

[420]*Tin Mining and Ecological Insecurity in Plateau State, Nigeria*.http://westafricaninsight.org Accessed on 20thJuly, 2015

creation of infrastructure and basic facilities of life[421]. In certain instances as experienced by most mining communities in Nigeria, the positive impacts of mining have not been so felt viewed against the potentials the industry holds.

Historically, mining in Nigeria has been dominated by artisanal miners. This had provided employment and meansof livelihood to many families. However recent policy making with its emphasis on attracting foreign investment is threatening to end the means of livelihood of many people through the creation of conditions that would make foreign miners displace artisanal miners.[422] It is opined by this researcher that the devastation of agricultural farming lands, loss of vegetation, loss of biodiversity, effects on physical and ecological environment, effects on human health and climate change are inter-related and have over whelming influence on general human existence and livelihood.

3.3.4 Impacts of Mining Operations on Climate Change

The effects of climate change on all aspects of human existence and livelihood is a matter that must be given crucial attention and consideration in Nigeria and all over the world. It is in recognition of this indubitable fact that the United Nations Framework Convention on Climate Change (UNFCCC) was adopted in 1992.

Climate change refers to an increase in average global temperatures. Natural events and human activities are believed to be contributory to an increase in the average global temperature. This is caused primarily by increases in GHG such as carbon dioxide (C02). Nigeria is experiencing adverse climate conditions with negative impacts on the welfare of millions of people. The result

[421]Erhun, *op cit*, p.97
[422]Ladan, M.T. (2014), *op cit*, p.440

is fewer water supplies for use in agriculture, hydro power generation and other uses. The main suspect of all these is climate change.[423]

Climate change is a global phenomenon, and is evident in Nigeria. The negative impacts of climate change such as temperature rise, erratic rainfall, sand storms, desertification, low agricultural yield, drying up of water bodies and flooding are real in the desert prone eleven front line states of Nigeria.[424]

The main objective of the UNFCCC is to stabilize GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The very nature of climate change means that the status of global diversity and the process of diversification are both inextricably linked to the speed and extent of climate change. Climate change is already considered to be one of the five major drivers of biodiversity loss.[425]

It has been opined that climate change is unlikely to have a major direct impact on the mining industry, for which regulations and management strategies are already in place to manage factors such as water usage and environmental issues relating to rehabilitation; while a lack of water supply may affect some mining projects, most mining projects do not generally require potable water. Where high-quality water is required, some miners are already installing desalination units.[426]

The highest risk to the mining industry from climate change is most likely to come from meeting growing community concerns over environmental issues. This is likely to increase the difficulty

[423]*The effects of Climate Change in Nigeria*.Posted by Nasiru Idris Meduguon 18th April, 2011. https://environmentalsynergy.wordpress.com . Accessed on 16th November, 2016
[424]*Ibid*
[425]Ladan, M. T. (2014). *Op cit*, p.51
[426]*Projected Impacts of Climate Change on Mining.*http://www.dpi.nsw.gov.au; accessed 30th November, 2016

in obtaining approvals for mining projects (particularly for coal). Additional constraints on mining may also affect the economic viability of individual mines leading to flow-on effects to communities, through job losses and a decline in regional revenue, work to develop clean technologies may ameliorate this risk to some extent, however the actual process of mining is likely to face increasing community pressure.[427]

In the U.S, from 1930-2000, coalmining altered about 2.4 million hectares (5.9 million acres) of natural landscape, most originally forest. In China, coal mining degraded the quality of 3.2million hectares of land according to a 2004 estimate but total mine wasteland was restored at a rate of only 10 to 12 percent.[428]

In Germany, the mining industry pumps over 500 million cubic of water out of the ground every year. Only a small percentage of the water is used by industry or local towns- the rest is wasted. What is worse, removing so much water creates a kind of funnel that drains ground water from an area that is much larger than the immediate coal-mining environment. Coalmining releases methane into the atmosphere. Formed during the geological process that creates coal, methane is 84 times as powerful as carbon dioxide at disrupting the climate over a 20 year time span.[429]

Coal fires can burn for decades or even centuries, releasing fly ash and smoke laden with greenhouse gasses and toxic chemicals. These fires are a significant environmental problem in China, Russia, the U.S, Indonesia, Australia and South Africa. Coal fires can cause temperatures to rise at the surface, and contaminate ground water, water, soil and air. China has the world's most coal fires between 20 and 200 million tons of coal burn uncontrollably each year. This accounts for 0.5% to 5% of China's national coal consumption and related carbon dioxide

[427] *Ibid*
[428] *About Coal Mining Impacts*; posted 1st July, 2016. http://www.greenpeace.org; accessed 21st November, 2016
[429] *Ibid*

emissions. Although, coal fires are significant, emissions from China's power plants are far higher. India on the other hand, has the world's greatest concentration of coal fires.[430]Local communities also suffer when coal fires occur. These fires emit toxic levels of arsenic, fluorine, mercury and selenium, contaminants that can enter the air and food chain of local communities.[431]

Climate change strongly affects plants and animals. Every species on earth evolved to function best within certain temperature and moisture limits. As the climate warms, plants and animals are trying to adapt. Plants are flowering earlier, birds migrating and laying eggs earlier. Thousands of examples of change like these from around the globe send a hugely strong message that species and ecosystems are already responding to the 1% Celsius of warming so far.[432]

Earth's long climate record shows that past rapid warming events almost always caused mass extinctions of plants and animals, because life had no time to adapt. Yet today warming is set to take place 10 times faster than any change recorded in the past 65 million years. Rapid warming is already harming fragile ecosystems, including coral reefs. It's also causing extinctions- complete and permanent loss of unique forms of life.[433]

Each year oceans absorb about one third of the extra carbon dioxide building up in the atmosphere from burning coal, oil and gas. The carbon dioxide dissolves in the sea water as a weak acid. The acidity of ocean surface waters has already increased by about 30% on average;

[430]*Ibid*
[431]*Ibid*
[432]*Climate Change Extinctions and Ecosystem Damage.*http://www.greenpeace.org. Accessed on 30th November, 2016
[433]*Ibid*

oceans are acidifying 10 to 100 times faster than any time in the past 50 million years. Scientists, fear this acidity increases could cause even more harm to ocean life than warming waters.[434]

In order to ameliorate the effect of climate change on mining operations, some solutions have been proffered to include stopping the use of fossil fuels, rapidly shift the planet to use of energy provided entirely by the sun, wind, and other clean, safe renewable sources; efficient, smart and intelligent use of renewable energy squeezing more out of every bit of energy; financing the future by ensuring investors avoid or withdraw from risky, polluting coal mining and oil drilling projects instead; investment in secure, clean renewable energy should be supported; political action to counter barriers to use of renewable energy which are not technical or economic.[435]

It has also been posited that multinational mining companies have the wherewithal to tackle climate change adaptation from ground up, if they want to; and they now have a framework to guide them, created by the mining industry itself. The International Council on Mining and Minerals (ICMM) released in 2013 a comprehensive report, "Adapting to a changing Climate: Implications for the Mining and Metals Industry". The ICMM report is one of two key references that could be used when discussing strategies for tackling climate change for mining clients; the other being the International Finance Corporation (IFC), which has released performance standards that consider climate change.[436]

A changing climate presents physical risks to mining and metals operations and to the people and environments attached to those operations- the report ticks off a list of vulnerabilities, scenerios, implications and solutions for managing the risks. Higher temperatures, changing patterns of

[434] *Ibid*
[435] *Solution to Climate Change*.http://www.greenpeace.org. Accessed 30th November, 2016
[436] *Climate Change and the Mining Industry*.http://www.climatechangebusiness.com; accessed 23rd November, 2016

precipitation and higher sea levels, or conversely lower fresh water lake or river levels, will affect the mining and metals industry in a variety of ways, according to the ICMM. The ways include physical risks to assets and infrastructure arising from flood or storm damage, supply chain risks arising from disruption to transportation networks and increased competition for climate-sensitive resources such as water and energy.[437]

The foregoing discussion on the issue of climate change and its effects on mining and the examples cited, no doubt have implications for Nigeria and all countries of the world. This is because there is one environment and one globe. Some of these effects could be direct which others could be indirect and trans-boundary. The effects of a warming environment and the resultant changing climate in parts of the world, including Nigeria, are matters of concern for mining, human health, livelihood and environmental sustainability.

3.3.5Impacts of Mining Operations on Biodiversity

The term biodiversity refers to the total variety of living organisms (plants, animals, fungi and microbes) that exist on our planet. Biodiversity is usually conceptualized at three levels, genetic diversity, species diversity, and ecosystem diversity. Some ecosystem may require certain species in order to maintain their balance. Human beings require biodiversity as it assures them of food, raw materials, recreation, stable climate, medicine etc.[438]

In the light of the importance of biological diversity in management of the environment and its sustainability, the United Nations Convention on Biological Diversity (CBD) was adopted in 1992. The CBD aims at the conservation of biological diversity, the sustainable use of its

[437]*Ibid*
[438]Ladan, M. T. (2014). Op cit, p.65

components and the fair and equitable sharing of benefits arising from the use of genetic resources.[439]

Mining activities impacts in numerous ways on conservation of biological diversity and sustainable use of its components this is because in certain cases or situations it involvesthe clearing and preparation of vast hectares of land and the destruction of forest lives- trees, habitats, plants and animals, fauna and flora which altogether constitute the particular biodiversity of such region or places. Sometimes too, animals of particular species are bound to migrate to better and more conducive habitats. This impact on biodiversity constitutes one of the opportunity costs of mining; as mining activities in those areas take priority over conservation of natural habitats and the biodiversity of such places.

Aside from the foregoing, climate change strongly affects plants and animals. Every species on earth evolved to function best within certain temperature and moisture limits. As the climate warms, plants and animals are trying to adapt. Plants are flowering earlier, birds migrating and laying eggs earlier. Thousands of examples of change like these from around the globe send a hugely strong message that species and ecosystems are already responding to the 1% Celsius of warming so far.[440]

Earth's long climate record shows that past rapid warming events almost always caused mass extinctions of plants and animals, because life had no time to adapt. Yet today warming is set to take place 10 times faster than any change recorded in the past 65 million years. Rapid warming is already harming fragile ecosystems, including coral reefs. It's also causing extinctions-

[439]*Ibid*, p.37
[440]*Climate Change Extinctions and Ecosystem Damage.*http://www.greenpeace.org. Accessed on 30th November, 2016

complete and permanent loss of unique forms of life.[441]It is posited that mining of fossil fuels including mining of coal and their deleterious effects contribute in one way or the other to warming of the globe through release of *inter alia* carbon dioxide and methane and the resultant implication for climate change.

Each year oceans absorb about one third of the extra carbon dioxide building up in the atmosphere from burning coal, oil and gas. The carbon dioxide dissolves in the sea water as a weak acid. The acidity of ocean surface waters has already increased by about 30% on average; oceans are acidifying 10 to 100 times faster than any time in the past 50 million years. Scientists, fear this acidity increases could cause even more harm to ocean life than warming waters.[442]

3.3.6Impacts of Mining Operations on Sustainable Development Goals (SDGs)

The SDGs, otherwise known as Global Goals, are a universal call to action to end poverty, protect the Planet and ensure that all people enjoy peace and prosperity.[443]The SDGs were born at the United Nations Conference on Sustainable Development in Rio De Janeiro in 2012 (Rio + 20). The objective was to produce a set of universal goals that meet the urgent environmental, political and economic challenges facing the world. The SDGs replaced the Millennium Development Goals (MDGs) which started as a global effort in 2000 to tackle the indignity of poverty.

By content, the SDGs consist of 17 noble goals which are viz; No poverty; Zero hunger; Good health and wellbeing; Quality education; Clean water and sanitations; Affordable and clean energy; Decent health and economic growth; Industry, innovation and infrastructure; Reduced

[441]*Ibid*
[442]*Ibid*
[443]http://www.undp.org. Accessed on 17th November, 2016

inequality; Sustainable cities and communities; Responsible consumption and production; Climate action; Life below water; Life on land; Peace, justice and strong institutions; and Partnership for the goals.

The 17 Goals build on the success of the MDGs, while including new areas such as climate change, economic equality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are interconnected- often the key to success on one will involve tackling issues more commonly associated with another.[444]

The SDG agenda also faces squarely our duty to protect future generations by limiting climate change, adopting renewable energy and managing resources sustainably, climate change, in other words, demands that we re-think the relationship between energy and development.[445]Africa's renewable revolution is happening both on and off-grid; off grid energy has the potential to reduce the epidemic of death and injury resulting from in-door air pollution, and reduced pressure on food.[446]

It is necessary to posit that all the SDGs have impact on mining activities since all the goals are integrated, but the goal that centers on the objective of affordable and clean energy touch more on mining activities; since it is known that some mineral resources particularly coal is used for the purpose of generating power and energy used in homes and industries all over the world. The deleterious effects of the use of coal and other fossil fuels have been highlighted and discussed earlier on. Therefore, in order to ameliorate the effects of climate change on the environment and particularly on mining activities, and propagate the SDGs, there has been the conscious challenge

[444]*Ibid*
[445]http://www.africaprogresspanel.org. Accessed 10th November, 2016
[446]*Ibid*

and efforts to move towards the use of renewable and more environment-friendly sources of power and energy generation allover the world.

Hence, part of this revolution is happening at national utility scale. South Africa has emerged as global leaderin renewable energy, with wind-power now competitive with coal interms of price. Other countries- Ethiopia, Kenya, Morocco and Rwanda, among them are attracting large investments in renewable energy. While this is a bold and conscious step towards attaining the SDG on affordable and clean energy, it no doubt has implication on mining of mineral resources which on the long run may be relegated to the background with resultant effects of reduced contribution to the GDP and unemployment in most of Africa. An integrated and comprehensive approach towards the attainment of the SDGs by coordinating and harmonisingefforts towards the attainment of SDGs is therefore sacrosanct.

3.4 Instances of Environmental Degradation by Mining of Solid Minerals in Nigeria.

In Nigeria, so many instances of issues of environmental degradation by mining of solid minerals abound in various mining host communities of States of the Federation in spite of the legal and institutional framework for regulating the impact of mining on the environment in Nigeria. Examples include viz:

3.4.1**Jos-Plateau State**: In the Jos Plateau, Tin and Columbite mining has resulted in the destruction of places of scenic landscape which is replaced by unsightly large irregular holes and heaps of debris produced by the open cast method of mining. The alteration of the landscape almost invariably creates a problem of erosion in the mining localities with the result that most of the open cast pits are filled with water.[447]Tin mining and processing constitute a source of

[447]Aigbedion, I. &Iyanga, S.E. Environmental Effect of Mineral Exploitation In Nigeria.*International Journal*

pollution to the environment because with Tin the accessory minerals associated are harmful to human beings and animals. The mining of tin facilitates the release of radioactive minerals from the host rocks unto the environment.[448] Erosion by water is the most common form of soil degradation causing loss of soil nutrients, organic matter and damage to soil physical properties and standing crops.[449]Tin mining activities which have caused considerable erosion damages to lands arising from active gully equal to 7,240km in length. Around Bukuru mine tailings, neglected excavations and unfilled sample pits have an indelible disfiguration of a once rich and beautiful region.[450]

The country side has been greatly disfigured by heaps of compacted tips often bare or with very scanty vegetation, mining spoils of slurry and tin tailing spread over mine areas; earth banks of unconsolidated steep paddock, mounds of loose sands, clayey soils, deep mining pits, neglected mining excavations. There are also evidences of soil destruction and soil loss as a result of mining activities.[451] Food crops such as potatoes, carrots, maize, onions, tomatoes and vegetables grown in the mining areas are smaller in size and different in taste compared to those brought in from other areas such as Mangu, Bassa, Miango and other producing areas.[452]Studies have shown that there are over 4,000 mining ponds left, with high traces of radioactivity. Mining pits have become death traps whereby the pits collapse and kill as many as 5 to 10 miners inside, coupled with the hazards associated with such acts.[453]

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of Physical Sciences Vol. 2(2), p.36http://www.academicjournals.org/ijps accessed on 19th July, 2015
[448]Ndace, J.S &Danladi, M.H.(2012). "Impacts of Derived Tin Mining Activities on Landscape/Land Use In Bukuru, Plateau State, Nigeria." *Journal of Sustainable Development,* Vol.5, No.5, p.90www.ccsenet.org/jsd Accessed 19th July, 2015
[449]*Ibid*
[450]*Ibid*, p.91
[451]*Ibid*
[452]*Ibid*, p.93
[453]"Tin Mining and Ecological Insecurity in Plateau State, Nigeria."http://westafricaninsight.org. Accessed on 20th July, 2015

As part of the devastation caused to land in the Jos Plateau area, about three hundred and six (306) square kilometersof land were destroyed and still remain unclaimed.[454] It is charging to note that between May 2011 and May, 2012 -a span of one year, only a single highrisk, critically abandoned mine site was reclaimed in the Barkin-Ladi area of Plateau State of Nigeria.[455]

3.4.2 **Sagamu/Ewekoro**: In this area, large volume of dust from the cement factories and mining operations in the Nigerian limestone quarries are discharged into the air. Similarly, a lot of airborne particulate matters are generated by the numerous stone crushing industries in the country. When air is laden with such dust it causes health hazards to some people. For example, pollution studies around Sagamu and Ewekoro cement works in Ogun State have shown that several people are suffering eye pain, and asthmatic attacks due to the dust laden air that prevails within a few kilometres radius of the factories.[456]

Recent environmental impact studies of limestone mining and cement industry in Sagamu have revealed a declining Kola nut output from the plantations within a few kilometres radius of the cement factory. The particulate matter eventually gets deposited on the Kola nut leaves and flowers as well as the soil supporting plants. The overall effect of this is that the photosynthetic and fruiting ability of the Kola nut tree is impaired with consequent decrease in Kola nut production.[457]

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[454]Ehighelua I., *op cit*, p.121

[455]Ministerial Presentation by former Minister of Mines and Steel Development, Arc. MusaMohammed Sada at the Ministerial Platform on the Achievements and Accomplishment of the Ministry of Mines and Steel Development, May 29th 2011 to May, 2012, p.19

[456]Aigbedion, I. &Iyang, S.E. "Environmental Effect of Mineral Exploitation In Nigeria."*International Journal of Physical Sciences* Vol. 2(2), p.36http://www.academicjournals.org/ijps accessed on 19th July, 2015, p.33-38

[457]*Ibid*

3.4.3**Bagega,Zamfara State**: The mining of solid minerals particularly Lead in Bagega settlement and some other communities of Zamfara State of Nigeria is sufficiently illustrative. In March, 2010 *Medecins Sans Frontieres* (MSF) discovered an epidemic of lead poisoning in Zamfara State in North-Western Nigeria and subsequent investigations by MSF confirmed that hundreds of children under ages of five were at risk of death or serious acute and chronic health effects due to extremely high levels of lead and mercury. At least 10,000 people were estimated to be affected overall. The source of the outbreak was associated with artisanal gold ore processing that occurs in villages. The medium through which the people were affected include drinking water, food, inhaling of contaminated dust, oral ingestion of particles especially by children and through breast feeding.[458]

In another work, it was asserted that, not less than 400 children died from lead poisoning in Zamfara [State] of Nigeria from illegal mining activity.[459] Symptoms exhibited due to lead ingestion ranged from abdominal pain, lethargy, headache, seizures, coma and death.[460]It was recently reported that out of N850 million released by the Federal Government as intervention to Zamfara [State], almost N180 million was earmarked for the Federal Ministry of Mines and Steel to ensure proper enlightenment campaigns on safe mining practices in all the affected communities in Zamfara.[461] Three Hundred (300) compounds representing 75 per cent of lead Contaminated Compounds in Bagega village of Zamfara State were remediated and rendered safe for habitation.[462]

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[458]Ako, T.A. et al.*Environmental Impact of Artisanal Gold Mining in Luku, Minna, Niger State, North Central Nigeria,* p.2http://pubs.sciepub.com/jgg.Accessed on 13th July, 2015
[459]Aigbokhaevbo V. "Environmental Abuses in Nigeria:Sectoral Implications for Reproductive Health Care." *NIALS Journal of Health Law and Policy*,pp.165-166, 177 & 189
[460]*Ibid*
[461]Daily Trust Newspaper, Saturday, April 13, 2013,Page50.
[462]Daily Trust Newspaper, Thursday, May 2, 2013, Page 37.

It is opined that there are numerous mine sites in Nigeria requiring these interventionist approaches. This state of affair may not be unrelated to the fact that the cost of reclamation, remediation, restoration, resuscitation and rehabilitation are usually very high.

3.4.4 **Luku, Minna, Niger State**: Minna and its environment as a major gold field suffer, in the hands of artisanal miners particularly in Luku.[463]The effect of artisanal gold mining in the area is the destruction of natural landscape of the area as a result of erosion. The heaps of rock wastes and tailings generated as a result of the mining activity cannot easily be disposed off and this also leads to the destruction of the natural landscape. Large pits were also created as a result of the mining activity. Some of the pits are not filled with water while others are filled with water. These pits can be death traps to both man and animals. It could also become dangerous habitat for reptiles such as snakes and can cause harm to man. Due to the mining process, the soil in the area has lost its quality. This is due to erosion, sedimentation and contamination of the soil. The removal of the overburden and rocks from the mine has exposed the soil and therefore changed the original soil texture and structure.

The ultimate result of this is the poor crop yield as the soil has been rendered infertile. The clearing of the site for mining activities has resulted in deforestation. Large amount of vegetation has been destroyed and this exposes the soil to erosion and renders it unfit for crop production. Mine waste and rock dumps increase the total solid load of water bodies which affect the quality of water in the area. The water turns brown due to panning of gold which is discharged into

[463]Ako, T.A. et al., *op cit*, p.2

nearby streams. Water contaminated as a result of gold mining pose human health and environmental risk.[464]

3.4.5**Okaba-Odagbo, Kogi State**: The vast Coal reserve of Odagbo is identified with Okaba which is two kilometres away from Odagbo. Mining of Coal left the people in excruciating poverty and at the mercy of all kinds of environmental degradation. For instance the chemicals from the mining sites got into some of the streams contaminated them killing all the fishes and made unhealthy for human consumption. The early stages of the mining activities when the chemicals spilled into the drinking water sources, it was reported many people died after drinking water from the affected streams.[465] The coal company reneged on its promise to reclaim the land after exploration to make it useful for farming hence the land remain ravished with highlands and gullies resulting from unclaimed lands. Environmental degradation therefore pervades in an endemic proportion. Even though the people lost their farmlands, economic trees and source of drinking water to mining activities, they were not compensated.[466]

3.5 An Analysis of Legal Responses to Environmental Degradation by Mining in Nigeria

This sub-topic elucidateson some of the basic related common law cause of action for protection of the environment from the challenge of environmental degradation by mining of solid minerals in Nigeria. These include noise, nuisance, negligence and the Rule in *Ryland v. Fletcher*.

It is important to appreciate what constitutes a cause of action. In the case of *Sulgrave Holdings Inc. &ors v. Federal Government of Nigeria & 3 ors*[467]the appellants initiated their action on

[464]*Ibid*, pp.4-9
[465]"Okaba-Odagbo Coal: 84 years, After a Community Sitting on Black Gold Wallows in Poverty." http://dailytrust.com.ng. Accessed on 13th July, 2015
[466]*Ibid*
[467] (2012) 17 N.W.L.R. (Pt. 1329), 309

27/09/2001 to stop the respondents from writing letters of request for assistance from certain foreign countries to expose their illicit acts of money laundering and alleged frauds against the state. The letters complained about were written in 1999 and 2000. The respondents filed preliminary objection relying *inter alia*on provision of S.2(a), Public Officers Protection Act. The court upheld the objection; and on further appeal to the Court of Appeal, it confirmed the judgment of the trial court. In the appeal to the Supreme Court which dismissed the appeal, it held*inter alia* that a cause of action is the entire set of circumstances or facts giving rise to an enforceable claim. It includes all those things necessary to give right of action and every fact which is material to be proved to entitle the Plaintiff to succeed.

There is no doubt that in spite of statutory provisions scattered in our various laws and regulations these common lawconcepts of nuisance, negligence, noise and the rule in *Ryland v. Fletcher* remain relevant but their applicability may only, have been circumscribed or diminished by relevant extant provisions in our laws and regulations. Consequently, these concepts are briefly examined hereunder:

(i) Noise: This is an air-related effect of mining of solid minerals. In *Moore v. Nnado*[468] the plaintiff sued the defendant for noise and nuisance through playing music in his adjoining palm wine bar at excessively loud level very late into the night. The plaintiff claimed that the excessive noise caused him great inconvenience such that he had to close his windowsand relocated to the backyard of his house. The Plaintiff *inter alia* prayed for injunction. The court granted the Plaintiff's prayer.The instrumentality of the court system was utilized in this instance to protect the rights of the Plaintiff and the environment from abuse.

[468] (1970) 1 All N.L.R. 265

Noise is "a sound, especially when it is loud, unpleasant or disturbing."[469]Noise pollution is one of the fastest growing environmental concerns. It is an invisible but insidious form of pollution.[470]It damages the sensitive nerve cells of the inner ear which can cause permanent loss of hearing. It causes stress, fatigue, irritability and insomnia.[471] Noise pollution can be regarded as another form of air pollution associated with mining since it is transmitted through the air waves.[472] The use of explosives for blasting at quarries and heavy earth-moving equipment pose the greatest source of noise pollution and vibration; which are hazardous to health and residential areas as well as buildings and other physical structures.[473]In the course of mining, some explosive substances are used which can easily cause an earthquake. An earthquake occurs when something causes the rocks of an earth crust to vibrate.[474]

In the case of *George Ngbor v. CampaignieGenerale De Geophysique (Nig.) Ltd &anor*[475]The plaintiff claimed that his sound factory was damaged by the defendant's seismic activities. The plaintiff could not afford the cost of an expert witness in the industrial noise and vibration control in and outside Nigeria at the cost of one million naira (N1m) to testify that the dynamite shot which allegedly caused the damage was fired at a distance which was not safe. The defendant was able to call a witness who testified that the dynamite was shot at a distance which was considered safe by seismic standard. Such evidence was not contradicted. So the court relied on it and the plaintiff lost.[476]

[469]Hornby, A.S.,*op cit*,p.998
[470]Usman, A.K.,*op cit*, p.46
[471]*Ibid*, p.47
[472]Osunbor, O.A.,*op cit*, p.399
[473]*Ibid*
[474]Nwanzi, J. (2008). Compensation for Damage Arising from Seismic Operations in Nigeria: Constraints and Remedies, *University of Benin Law Journal, (2008) 11 (1 & 2)*, p.70
[475]Suit No. BHC/30/93 (unreported)
[476]Nwanzi, J., *op cit*, p.78

In order to protect the environment from degradation by the mining of solid minerals, through the menace of noise, Nigerian Minerals and Mining Act, NESREA Act, Nigerian Minerals and Mining Regulations and National Environmental (Noise Standards and Control) Regulations all make significant provisions which have been considered in this thesis.In more particular terms, NESREA Act empowers the Agency in consultation with appropriate authorities to identify major noise sources, noise criteria and noise control technology and make regulations on noise, emission, control, abatement, as may be necessary to preserve and maintain public health and welfare.[477]

It will however appear that since the above laws and particularly the National Environmental (Noise Standards and Control) Regulations have set noise limits for various activities that generate noise, recourse to the common law cases for determination of what constitutes noise within the mining of solid minerals sector may becomplimentary. However, resort may be made to the common law principles and remedies for nuisance where any lacunae are found within the statutory provisions of the laws and regulations mentioned above.

By way of further recall or reiteration, the main principles underpinning the enactment of the above mentioned laws and regulations could be found within the precincts or kernel of prevention of environmental degradation, polluter pays principle and the overall need for sustainable development in the mining sector and all other aspects of human endeavour.

To underscore the importance of the protection of air resource from degradation, the sanction for contravention of the provisions of section 22(1) of the NESREA Act, by an individual offender is a fine not exceeding N50,000.00 or to imprisonment for a term not exceeding one year or to both

[477]Section 22(1), National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2007

such fine and imprisonment and an additional fine of N5,000.00 for every day the offence subsists;[478]whereas, the sanction for a body corporate is a fine not exceeding N500,000.00 and an additional N10,000.00 for every day the offence subsists.[479]Earlier comments made on the philosophy behind the enactment of the penal regime relating to water above and the observed inadequacies, apply *mutatis mutandis.*

(ii) Nuisance: The law of nuisance since medieval times was the first legal response of the common law to environmental protection of individual property rights. While this might have worked well in medieval times, such a response is an inefficient and inadequate solution to the wide-ranging consequences of industrial pollution.[480]

In modern times and because of the changing faces and dynamism of environmental challenges in Nigeria including but not limited to degradation of the environment by mining of solid minerals, so many legislations (including criminal laws which penalize nuisance[481]), regulations, policies, guidelines and standards have been enacted to protect the environment from the humungous challenge of degradation by mining of solid minerals. Accordingly, Usman aptly posited thus "No doubt, the history of environmental law development in Nigeria is one whose main pivot of development is legislation. This is likely to remain the case in the foreseeable future."[482]

Nuisance is one of the causes of action available to an injured party in the law of tort. The attraction in the tort of nuisance in environmental litigations lies in the fact that unlike

[478]*Ibid,* Section 22 (3)
[479]*Ibid,* Section 22 (4)
[480]Usman, A.K.,*op cit*,pp.2&3
[481]See sections 192 & 194, Penal Code and sections 234(f) & 247, Criminal Code Act, Cap. C38, Laws of the Federation of Nigeria, 2004
[482]Usman, A.K.,*op cit*, p.5

negligence, it dispenses with the requirement of proof by the plaintiff of a duty of care, and its breach by the defendant. However, like the tort of Negligence, the plaintiff has the burden of establishing certain requirements in order to succeed against the defendant.[483]

In *Seismography Service (Nigeria) Ltd. v. Ogbeni (supra),*the plaintiff sued for nuisance caused by the defendants, their servants or agents in the course of carrying out oil exploratory exercise of exploding the oil testing chemicals around the region of the plaintiff's building, which said explosion wrongfully caused or permitted excessive noise and vibration which damaged the buildings.[484]The plaintiff failed in its claim. However, in*Adediran&ano.v.Interland Transport Ltd.,*the plaintiff sued for nuisance due to noise, vibrations, dust obstruction of roads of an estate. The Supreme Court held while granting some of the plaintiff's reliefs that it is well settled that nuisance whether public or private is an injury which confers on the person affected a right of action. The individual who suffers injury has a right of action because of the cause of action.[485]

Upon the authority of this case, a private person can maintain an action in public nuisance provided he can prove that he suffered personal injury sufficient to ground the action.[486]The tort of nuisance is the most potent of all torts in prosecuting environmental cases.[487]For an action in private nuisance to succeed, the right of the individual interfered could be a right he enjoys with others in common or a private right in which case, the plaintiff needs not involve the Attorney-General.

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[483]Omotola, J.A. (ed.), *Environmental Law in Nigeria including Compensation*, Faculty of Law, University of Lagos, p.121
[484]Tobi, N. (1998). "Environmental Litigation."In: Simpson S. and Fagbohun O. (eds.) *Environmental Law and Policy* (1998 Reprint 2000), Law Centre, Faculty of Law, Lagos State University, p.195
[485]Tobi, N.,*op cit*, p.195
[486]Aigbokhaevbo, V.O. and Achi, D.T.,*op cit*, p.9
[487]Ilegbune, T.O. (1998). "Environmental Regulation and Enforcement." In: Simpson S. and Fagbohun O. (eds.) *Environmental Law and Policy* (1998 Reprint 2000), Law Centre, Faculty of Law, Lagos State University, p.218

The case of *Abiola v. Ijeoma*[488]was an action commenced to protect and assert a private right. The plaintiff sued the defendant *inter alia* for disturbing acts of nuisance, excessive noise made by chickens which disturbed his sleep; and for odious smell from chicken pens. He brought this action claiming injunction and damages. The court held *inter alia* that the plaintiff was entitled to peaceful enjoyment of his property; it granted an injunction and awarded damages against the defendant.Courts of law will always readily grant necessary orders for the abatement of the cause of environmental degradation and thus protecting the rights of citizens.

Furthermore, where a person has suffered any injuries peculiar to himself from an interference with public rights, he needs not wait for representative action to commence. He can institute enforcement action against the violator provided he has sufficient facts to prove his special damage.[489]According to Ilegbune,

> Public nuisance is one which inflicts damage, injury or inconvenience on the public or a class of the public which comes with its sphere of operation and it is a statutory offence. The Attorney-General, as custodian of our rights, can commence legal action on it, or the affected public must commence action in relation to the Attorney-General. In *Interland Transport v. Adediran&ano.*[490]the court held that failure to bring an action of public nuisance in relation to the Attorney-General renders the case procedurally defective and incompetent.[491]

It would appear that the case cited above by the scholar as the legal basis for an action in public nuisance to be instituted by the Attorney General or by the affected public in relation to the Attorney General is no longer the position of law; as the Supreme Court decided otherwise when this same case went on appeal.In correlation to mining of solid minerals, some of the activities that could constitute acts of nuisance include but are not limited to-discharge of effluents, noise from moving earth equipment and from blasting of rocks through the use of explosives,

[488] (1970) 1 All N.L.R. 569
[489]*Ibid*, p.219 referring to Ipadeola&ano. v. Oshowole&ano. (1987) 5 SC 376
[490](1986) 2 NWLR (pt. 20) 78
[491]Ilegbune, T.O.,*op cit*, p.219

contamination and pollution of water sources, tailings, impoundments, sludges, dust and haze through discharge of particulate matters, fumes and offensive odours.

From the foregoing analysis, it could be safely concluded that acts of nuisance (once it causes disturbance to other persons) cut across the gamut of all forms of degradation of the components of the environment-i.e land, water and air. Being this comprehensive remedy perhaps, that could be one of the main reasons why it is considered as one of the effective cause of action for protection of the environment.

(iii) Negligence:

With changing times and the enactment of laws and regulations on the subject matter of the protection of the environment from degradation by the mining of solid minerals, it will appear that negligence as a remedy for pursuing rights may not hold much footage in this area except where it could be shown that there are no sufficient provisions in extant laws and regulations to resolve a particular challenge. Otherwise, the principle of prevention and polluter pays enunciated in some of the provisions of extant laws and regulations in this thesis will come in aid. In fact, the polluter pays principle being a strict liability principle, when adopted could provide requisite remedy to issues of negligence and particularly, its adjunct, the principle of *res ipsaloquitor*.

(iv) Rule in*Ryland v. Fletcher*:ThisRule or principle could be classified as an extensionof theprinciple or remedy for negligence.The attraction ofthe rule lies in the fact that it dispenses with the need to either prove negligence or special damages suffered by the plaintiff.[492]The facts

[492]*Ibid*, p.124

of the case were that the defendants constructed a reservoir upon their land in order to supply water to their mill, and upon the site chosen for this purpose there was a disused and filled-up shaft of an old coal mine, the passages of which communicated with the adjoining mine of the plaintiff. Through the negligence of the contractors or engineers by whom the work was done and who were not employees of the defendants, the reservoir was filled with water, and the water escaped down the shaft into the plaintiff's mine which was flooded causing damage estimated at USD937.

The court of Exchequer Chambers held the defendants liable, and on appeal the House of Lords dismissed their appeal holding *inter alia* that the person who for his own purpose brings on his land and collects and keeps there anything likely to do mischief if it escapes, must keep it at his peril, and if he should not do so is *prima facie* answerable for all the damage which is the natural consequences of its escape. He can excuse himself by showing that the escape was owing to the plaintiff's default, or perhaps, that the escape was the consequence of *vis major* or the act of God; but as nothing of sort exists here, it is unnecessary to inquire what excuse could be sufficient.[493]

In accessing and utilizing the remedy enunciated in the decision of this case, the Plaintiff must prove that the thing was brought and kept in the land under the control or operation of the defendant, that there is a non-natural user and that the thing is mischievous and if it escapes, could cause mischief; this is an extension of the strict liability principle in tort.[494]Non-natural user was interpreted to mean the usage of land in an extra-ordinary way.[495]The issue of what is non-natural user fifty years ago may become a natural user in view of economic and social

[493]Usman, A.K.,*op cit*, pp.138 &139
[494]Ilegbune, T.O.,*op cit*, p.220
[495]*Ibid*; the scholar cited*Richards vs. Lothian* (1913) AC. 263 at 279

changes.[496]Furthermore, what is non-natural user of land is not fixed but capable of changing as technology develops and according to the requirements of the age.[497]

In the light of the changing faces of environmental degradation issues and the concomitant challenge they pose for protection of the environment, it is pertinent to reproduce the exposition of Usman[498] thus:

> the factual threshold for environmental protection established by the facts of *Rylands v. Fletcher* must therefore move upward to capture these new dangerous things. Although liability in respect of these modern dangerous things is often regulated by statute, there is nothing preventing an aggrieved party proceeding against the custodians of these dangerous things on the basis of *Rylands v. Fletcher* particularly where the statute seeking to regulate such escape is inadequate in its provisions.

It is necessary to observe that this commentary by the scholar could be applied to matters relating to the need to protect the environment from degradation by the mining of solid minerals in appropriate circumstances where the facts or cause of degradation are not on all fours with those of the ones expounded in Fletcher's Rule but an apt analogy could be drawn or respite elicited.

3.6Community Development Agreements, Alternative Disputes Resolution Mechanism and Compensation as Platforms for Protecting the Environment

The above mentioned matters are crucial to the quest of protecting the environment from degradation by mining of solid minerals; but they are by no means the only relevant issues on this subject matter. Numerousother matters that could give leverage or impetus to the resolution of this challenge have been considered indepth in this thesis. However, the selection of these mentioned matters is based on the fact that while the dynamics of the first two are novel in the mining sector in Nigeria, the last which is compensation though not novel is a practice or remedy

[496]Omotola, J.A,*op cit*, p.125
[497]*Ibid*, p.56
[498] Usman, A.K.,*op cit*, pp.140&141

that is rarely imbibed or enforced in the sector as it pertains more to the issue of degradation of the environment by mining of solid minerals in Nigeria.

In circumstances where the practice is imbibed, compensation most time turn out to be inadequate thus defeating the quest for protection of the environment. The model or rationale for compensation is to restore the aggrieved party to his state prior to the occurrence of the act of degradation of the environment necessitating the compensation.We proceed to analyse the vicissitudes of this concepts as they relate or impact on the quest for protection of the environment from degradation by mining of solid minerals in Nigeria.

3.6.1Community Development Agreements

The rationale for entering into Community Development Agreements (CDAs) is to ensure the prevention or mitigation of environmental degradation by mining of solid minerals in Nigeria through the implementation of social, economic, health and developmental programmes or projects by mining companies for their respective host mining communities; the overall aim being the protection of the environment from degradation by mining of solid minerals and the attainment of sustainable development.

CDAs have become necessary in the light of the various forms of environmental degradation by the mining of solid minerals experienced by mining communities where the cardinal aim of mining companies is to extract mineral resources and leave the environment degraded without carrying out remedies of resuscitation, restoration, rehabilitation, remediation and reclamation in view of their desire to continuously make financial profits at the detriment of the environment with potential and colossal harm to humanity. Examples of such degraded sites and the mysteries of members of mining host communities have been articulated in so many previous works

referred to in this thesis and so many other incidences documented herein to include the environmental degradation and impact on mankind in the Jos-Plateau, Bagega in Zamfara State, Okaba-Odogbo in Kogi State, Ewekoro-Sagamu in Ogun State andLukku-Minna in Niger State.

In appreciation of the effects of mining of solid minerals on mining host communities in particular, the Nigerian Minerals and Mining Act[499]make provisions for CDA, its scope and implementation strategies in order to ensure the protection of the environment from the deleterious effects of mining of solid minerals and also for enthroning sustainable development in all facets of the livelihoods of members of mining host communities. Resultantly, the Holder of a Mining Lease, Small Scale Mining Lease or Quarry Lease shall prior to the commencement of any development activity within the lease area, conclude with the host community where the operations are to be conducted an agreement referred to as a Community Development Agreement or other such agreement that will ensure the transfer of social and economic benefits to the community.[500]

The CDA shall contain undertakings with respect to the social and economic contributions that the project will make to the sustainability of such community.[501]It shall also address all or some of other issues relevant to the host community such as educational scholarship, apprenticeship, technical training and employment opportunities for indigenes of the communities; financial or other forms of contributory support for infrastructural development and maintenance such as education, health or other community services, roads, water and power; assistance with the creation, development and support to small scale and micro enterprises; agricultural product marketing; and methods and procedures of environment and socio-economic management and

[499]Sections 116 & 117, Nigerian Minerals and Mining Act, No. 20, 2007
[500]*Ibid*, Section 116(1); and Regulation 193(1), Nigerian Minerals and Mining Regulations, 2011
[501]Section 116(2), Nigerian Minerals and Mining Act, No. 20, 2007

local governance enhancement.[502]The gamut of this provision and many more considered herein are deemed adequate in order to form the nucleus of protection of the environment from degradation by mining of solid minerals in Nigeria.

In articulating strategies for the formulation and implementation of CDAs, the Agreement is expected to specify appropriate consultative and monitoring frameworks between the Mineral title Holder and the host community, and the means by which the community may participate in the planning, implementation, management and monitoring of activities carried out under the agreement.[503]The duration of a CDA shall be subject to review every 5 years and shall, until reviewed by the parties, have binding effect on the parties.[504]The monitoring framework is essential in other to guide the parties in the appropriate direction of attaining the protection of the environment and sustainable development. The basis for it may lay in the appreciation of the fact that any task or human edeavour that is not monitored or regulated is most likely not to be implemented or executed in accordance with its objectives.

The Nigerian Minerals and Mining Regulations issued pursuant to the Mining Act, also contain copious provisions on the subject of CDA. Most of the provisions in the Regulations either reinforce the provisions of the Act on the subject matter or tacitly filled some gaps that would have ordinarily created problems in implementing the provisions of the Act. To give further life to this subject, under the Regulation, a mineral title holder is mandated to submit to the Mines Environmental Compliance Department a Community Development Action Plan which shall address the implementation plan of all the social concerns raised in the Environmental Impact

[502]*Ibid,* Section 116(3)(a)-(e)
[503]*Ibid,* Section 117
[504]*Ibid,* Section 116(5)

Assessment Study and the implementation plan of the contents of the Community Development Agreement.[505]

Mineral title holders are also obligated to hold consultations with host communities in implementing the community development agreements.[506]A mineral title holder shall submit to the Mines Environmental Compliance Department a Community Development Action Plan which shall address implementation plan of all social concerns and of the contents of the Community Development Agreement.[507]The Community Development Agreement shall address the programmes for the development of the community based on the needs of the community; the mechanisms for monitoring and implementation; environmental protection and compensation; conflict management or resolution; rights of the holder in relation to the mining area; and any other relevant issues.[508]

The Nigerian Minerals and Mining Act neither defined the word "community" nor the phrase "host community" but in a manner of filling this void, the Regulation defined the phrase 'the host community',"as the community where the mineral title area is located or the community closest to it.[509]However, where the host community is for any reason not easily ascertainable, a report shall be made to the Minister who shall in consultation with the State Government, the State Mineral Resources and Environmental Management Committee and other relevant State or Federal Government Agencies determine which community is the host community.[510]The

[505]Regulation 193(3), Nigerian Mining Regulations, 2011
[506]*Ibid,* Regulation 193(2)
[507]*Ibid,* Regulation 193(3)
[508]*Ibid,* Regulation 193(9)
[509]*Ibid,* Regulation 193(5)(a)
[510]*Ibid,* Regulation 193(5)(b)

Minister may, notwithstanding the foregoing provisions, determine the host community in any other manner.[511]

It is opined that in literal terms and taking the foregoing definition of a host community into consideration, the Regulation appeared to have as part of its kernel the need to create a congenial atmosphere for the mining of solid minerals and thus the protection of the environment. It is known the world over particularly in Africa, that issues of land and other resources acquisition including their control are fundamental causes of communal clashes and under development. Therefore, in a forward looking manner the Regulation made these prescriptions but that notwithstanding, in certain cases, particularly where resources are involved, boundaries between communities aforetime have become issue of disputes which degenerate into crisis and wars thus posing security and economic challenges to mankind. Therefore,according to Fagbohun, there is the need to "determine at what point an environmental problem rightly constitutes a threat to national security".[512]

In the light of the trans-boundaryeffects and impacts of mining of solid minerals on several inter-related or contiguously connected communities, and the sources of livelihood of members of host communities, it is possible that many other close communities other than the designated host community may equally be affected. In certain other cases, the effects could be localized to several communities within, surrounding or adjoining the area of mining. Adjoining community means host community next to or sharing common boundary with a quarry [mine site].[513] In this instance, the definition of a host community being the community where the mineral title area is

[511]*Ibid*, Regulation 193(5)(c)
[512]Fagbohun, O. (2011). "Environmental Degradation and Nigeria's National Security: Making Connections." In: Azinge, E. & Bello, F. (eds.) *Law and Security in Nigeria*, Nigerian Institute of Advanced Legal Studies, Lagos, p.360
[513]Regulation 43, National Environmental (Quarrying and Blasting Operations) Regulations, 2013

located or the community closest to it may not be apt in certain circumstances; as that will work injustice to communities within or surrounding or beyond the area of generation of the deleterious effects of mining of solid minerals.

The panacea may literally seem to be in the provision of Regulation 193(5)(c) and/or 193(5)(b) of the Nigerian Minerals and Mining Regulations; but on a careful consideration, the solution may not lay in any of these sub-regulations because in the case of the earlier sub-regulation which requires the Minister to determine the host community in any other manner, disputes and crisis may have arisen before the Minister may want to take the belated step. It is therefore, relevant that the phrase "the host community" be, re-defined or the scope of beneficiaries be expanded to include those similarly affected communities.

Thisscholarhowever concedes that the spread or distribution of the projects for mitigating the effects of mining should lean more towards the community within whose boundaryor domain the title areain question is located. This approach will better engrain the protection of the environment and populate the practice of sustainable development in the sector as all affected communities by the mining of solid minerals depending on the level of impact, will have their environments reasonably assuaged.

From the foregoing discussion, it is clear that the cardinal purpose of the provisions on this subject matter is to *inter alia* entrench the general mandate of protection of the environment from the effects of mining of solid minerals through the principles of precaution, prevention, polluter pays and mitigation so as to attain sustainable development of particularly, host communities. The enforcement of these provisions will enhance an integrated form of development from one

host or affected community to the other and the multiplier effects of this sanguine development will usher better livelihood for the people of host mining communities.

In practical terms however, CDAs though a requirement of extant legislation and the Mining Regulations, it will seem this germane matter has not really taken footage within the paradigm of protecting the environment from mining of solid minerals and bequeathing sustainable development to host communities from the resources taken from their communities. This is in the light of the virtual lack of basic amenities in most of these mining host communities. This unfortunate development is obviously quite contradictory to the somewhat perfect situation adumbrated by the Act and its Regulations.

The reason for this unpalatable state of affairs is attributable *inter alia* to the lack of enforcement of the provisions of the Act and the Regulations issued pursuant thereto as it relates to this vexed issue. The other reasons may not be un-related to the awareness level of most members of mining host communities. A lot therefore has to be done, if the amiable letters of the relevant provisions of extant laws and regulations are to be translated to concrete gains for host communities in particular and for the environment as a whole.

3.6.2Dispute Resolution Mechanism for Issues of Environmental Degradation by Mining

In mining of solid mineral resources in Nigeria, disputes of various types may arise and their prompt and amicable settlement will no doubt contribute positively to the protection of the environment and the attainment of sustainable development. It is trite that in all spheres of human endeavour, disputes are bound to arise but the methods or mechanisms adopted in their timely and effective resolution are usually matters of considerable importance.

In the realm of mining of solid mineral resources with its attendant degradation of the environment resulting in harmful consequences, disputes often time arise and are sometimes resolved through the Alternative Dispute Resolution mechanisms. The methods encapsulated within this mechanism are Negotiation, Mediation, Conciliation and Arbitration which are accordingly discussed below:

(i) **Negotiation:** In mining of solid mineral resources in Nigeria, disputes of various types may arise and their prompt and amicable settlement will no doubt contribute positively to the protection of the environment and the attainment of sustainable development. The mechanisms adopted in their timely and effective resolution are usually matters of considerable importance.

It is further submitted that the use of the phrase "on an amicable basis" in section 141(1) of the N.M.M.A admits of negotiation as one of the methods of achieving amicable settlement of disputes. It will appear that for now, this method is practiced on a low scale and at rudimentary level.However, as relevant to the mining of solid minerals sector, it may turn out that this method of negotiation may not adequately achieve the desired objective or might not guarantee the platform of balance or equity between parties particularly where host mining communities are involved because of their often disadvantaged position in negotiation arising from illiteracy, lack of awareness, lack of scientific and technological knowledge, inability to obtain expert advice and evidence, and chronic poverty levels.

(ii) **Conciliation and Mediation:** These are processes of dispute resolution where both parties negotiate a settlement and are assisted by a third party who is the Conciliator or Mediator to arrive at a consensus. The third party does not make a binding decision but assist the parties to reach agreement. In some jurisdictions, the terms are used interchangeably but in Nigeria, the

term recognized by law is 'Conciliation' as stated in section 37 of the Arbitration and Conciliation Act.[514]It has been posited that mediation is "a method of nonbinding dispute resolution involving a neutral third party who tries to help the disputing parties reach mutually agreeable solution.[515]In the light of this definition, it is opined that the Power of the Minister to Resolve Disputes and the Statutory Committee of the Minister to resolve disputes discussed hereunder may be considered as variant forms of mediation and conciliation:

(iii) **Power of Minister to Resolve Disputes:** This method appears to be within the fold of conciliation and mediation in the light of the fact that the Minister is mandated by the Act in the event of failure of a host community and a lessee to conclude Community Development Agreement by the time the title holder is ready to commence work on the lease area, to resolve the issues of dispute upon reference being made.[516] Also where an applicant for a water licence is unable to reach agreement with all persons likely to be affected by the grant of such water licence, the matter shall be referred to the Minister for appropriate action.[517]The decisions or pronouncements of the Minister in this method of resolution may not be binding since, if the Minister's action or decision is not accepted, the matter is referred to arbitration.

(iv) **Statutory Committee of Minister:**This is another incidence of dispute resolution in the solid minerals sector that is outside the regular methods known in the general alternative dispute resolution remedies. The Minister may as when necessary establish a committee to enquire into and resolve any dispute between holders of mineral titles either amongst themselves or between

[514]Entry Courses Leading to Associate Membership of the Chartered Institute of Arbitrators, Nigeria Branch, held at Transcorp Hotel, Abuja between 8th -10th May, 2008, p.25
[515]Garner, B.A.. (2009), *op cit*, pp.1070 &1071
[516] Section 116(4), Nigerian Minerals and Mining Act, No. 20, 2007; Also see Regulation 193(4), Nigerian Minerals and Mining Regulations, 2011
[517] Section 130(2), Nigerian Minerals and Mining Act, No. 20, 2007

them and mineral title applicants or third parties.[518]By the inclusion of third parties in the provisions of this Regulation, it will appear that disputes between mining title holders and host mining communities could also be accommodated under this provision where no clear provisions are made in such agreements for resolution of disputes.

The disputes envisaged under this umbrella may relate to disputed boundaries; assessment and payment of compensation; environmental or social obligations; any act or omission connected with mining operation; any dispute arising from the processing or refusal of application for mineral titles; and any dispute between applicants for and holders of mineral titles.[519]The Minister may approve and make any order which may be necessary for the purpose of giving effect to the decisions of the committee.[520]Similarly, the orders of the Minister pursuant to this method of resolution appears to be binding and to that extent negates the basic tenets of negotiation which has been defined as a nonbinding method of dispute resolution. However, an aggrieved or dissatisfied party may commence court action to ventilate his grievances and pursue his rights.

(v) **Arbitration:**It will appear that the scope of the application of Arbitration as stipulated in the Act may have been specifically circumscribed or limited to disputes relating to water licence or its application.

This limitation is with respect viewed to be unnecessary as it is the considered opinion of this scholar that the gamut of arbitration in the sphere of the protection of the environment from degradation by mining of solid minerals could be wider than stated. Therefore, it is

[518]Regulation 15(1), Nigerian Minerals and Mining Regulations, 2011
[519]*Ibid,* Regulation 15(2)
[520]*Ibid,* Regulation 15(3)

recommended that the Act should be amended to include the wider dimensions of arbitral practice in order to contribute to better protection of the environment. Arbitration is a method of resolving disputes of a civil nature.[521]It is a private law system available to those who agree to use it instead of litigation.[522]An arbitration award is enforceable as a judgment of court.[523]If the parties do not agree, they may refer the dispute to arbitration or to the court or take any step they deem necessary.[524]

It is however opined that though section 57(1) of the Arbitration and Conciliation Act provides that it must be a commercial arbitration i.e., of a relationship of a commercial nature,it will appear that by the provision of section 130(2) of the Nigerian Minerals and Mining Act, the requirement in the Arbitration Act for "commercial arbitration" may have been dispensed with in respect of arbitration matters arising from water license.Better still, the Nigerian Minerals and Mining Act may have created a special class of arbitration for the mining sector to ensure the protection of the environment from degradation by mining of solid minerals in Nigeria.This proposition or submission is based on the principle of law which states that where the provisions of two statutes are conflicting, that is where a latter provision is inconsistent with an earlier provision of a [or another] statute the legal presumption is that the latter has modified the former.

In the case of *National Examination Council (NECO) v. Sunday OjoTokode*,[525] The facts were that the respondent registered for the senior secondary school examinations, conducted by the appellant in 2000. When the results were published, mistakes were discovered in the results

[521]Entry Courses Leading to Associate Membership of the Chartered Institute of Arbitrators, Nigeria Branch, held at Transcorp Hotel, Abuja between 8th -10th May, 2008, p.7
[522]*Ibid*, p.24
[523]Sections 31 & 51, Arbitration and Conciliation Act, Cap. A18, Laws of the Federation of Nigeria, 2004
[524]*Ibid*, Section 42(3)
[525](2011) All FWLR, Part 574, p.105

because two subjects he sat for were not releasedwhile a subject he did not sit for was included in his results. Embarrassed by this, the respondent approached the appellant for correction of the omission, mistakes and errors on the results to no avail. He therefore instituted an action against the appellant claiming a mandatory order compelling the appellant to release his outstanding results and N10 million (ten million naira) damages for losses and sufferings. The appellant filed a preliminary objection, wherein they urged the court to strike out the suit for being statute barred not having being commenced within three months from the cause of action. The preliminary objection was dismissed. Dissatisfied the appellant appealed to the Court of Appeal Port-Harcourt Division.

In determining the appeal, section 19(1)(2)(3) of the NECO(Establishment) Act and section 2 Public Officers protection Act were considered. The Court of Appeal held*inter alia* thus:

(i) that section 19(1) of NECO Act limits the operation of Public Officers Protection Act (POPA) to only "any officer or employee of the council" of NECO and make the provisions of POPA dependent on NECO Act to the extent permissible by the said NECO Act, which is latter in time to the POPA Act enacted in 1916 as an Ordinance.

(ii) The appellant is not mentioned as one of those to be affected by the operation of the POPA, nor the limitation period provided under section 19 (2) of the NECO Act. The exclusion of the appellant in section 19(1) and (2) by the draftsmen of the NECO Act, 2002 was clear and intentional.

(iii) The NECO Act was passed specifically to control and regulate the affairs of the National Examination Council (NECO) and its offices and officers. The general

provision in the Public Officers Protection Act should give way to the NECO Act in respect of matters concerning the council and its officials.

(iv) Where a latter provision is inconsistent with an earlier provision of a statute the legal presumption is that the latter has modified the former.

(v) The National Examination Council (NECO) not being a public officer but a statutory establishment or institution is not entitled to the benefit of Public Officers Protection Act. The Act was passed to protect public officers as individuals and not institution, officers or public authority. It was intended to exclude it from the benefit of the limitation period.

In the light of the foregoing, it will appear that the submission of Busari[526]to the effect that "the Arbitration and Conciliation Act dictates that only commercial disputes can be referred to Arbitration and this does not seem to include environmental disputes" may no longer hold because the Nigerian Minerals and Mining Act which was enacted after the learned scholar's work, clearly made provisions for dispute resolution as discussed herein.

The foregoing are some of the dispute resolution methods that could be adopted in the resolution of disputes in the mining sector particularly as they relate to the degradation of the environment by mining of solid minerals. It would appear that maximum advantage has not been taken of these methods as a result of litany of factors including but not limited to the fact that the Nigerian Minerals and Mining Act is just barely nine years old since its enactment.It is recognized that environmental degradation take fairly long periods to manifest, this may therefore be the reason for minimal issues or no significant or no reported issues of environmental degradation by

[526]Busari, T. (2007).Environmental Disputes: The ADR and Arbitration Options, Being paper Presented at Judicial Training Workshop on Environmental Law in Nigeria held at Merit House, Maitama, Abuja, p.19

mining of solid minerals resolved through arbitrationfollowing the enactment of the Act.The other factors include the incidence of illiteracy, lack of education and awareness by members of mining host communities; and the fact that Community Development Agreements or other relevant Agreements on the subject may not have contained clauses for Alternative Dispute Resolution methods including Arbitration, in appropriate circumstances.

Though, there is statutory basis for arbitration in the Act, it is the considered opinion of this scholar that it is only disputes that are channelledthrough the resolution mechanism of the office of the honourable Minister for Mines and Steel Development that can proceed to arbitration in the manner provided by section 130 of the N.M.M.A. For other private disputes in the mining of solid minerals sector that may include those relating to the degradation of the environment by mining of solid minerals, it is posited that a framework dispute resolution mechanism commencing from negotiation and settlement and leading to arbitration would have to be specified in relevant Agreements between parties so as to contribute to the protection of the environment from degradation by mining of solid minerals.

Sometimes arbitration has been considered as a non-part of the Alternative Disputes Resolution method in the light that *inter alia* its outcome is enforceable and binding.[527]Therefore, some scholars and practitioners have decided to classify it under the court system of resolution of disputes; after all an arbitral award is enforced through the court system. To this extent, an aggrieved party or community in appropriate cases could commence court action to enforce his or its rights which may have been affected by the deleterious impacts of mining of solid minerals.

[527]*Ibid*, p.6

3.6.3 **Compensation as Tool for Protection of the Environment from Degradation by Mining**

The text or types of compensation considered herein are majorly within the parlance of government or private understandings/agreements; although compensation which may arise from decisions of courts relating to this particular subject matter is also discussed.

In carrying out mining operations for the exploitation of solid mineral resources, injuries or damages are usually occasioned against persons, groups, communities or their propertyand interests. These damages or injuries may include the degradation of land, air and water and other obvious economic, cultural and religious interests. On the basis of the foregoing, the Nigerian Minerals and Mining Act and its Regulations therefore specified instances where compensation could be paid to categories of persons or communities and these include viz:

(i) **Revocation or Repossession of Land:** Where by reason of the grant or existence of a mining lease, the President in the case of Federal land, the Governor of State, in any other case, revokes a right of occupancy over land the subject of a certificate of occupancy or resumes possession of any land occupied under the state lease, the mining lessee, shall pay to the Government the amount of the compensation paid by the Governor to the holder of the certificate of occupancy or the state lessee by reason of the revocation or resumption of possession, as the case may be.[528]This class of compensation is applicable to the revocation of titles and it is a consolidation

[528]Section 104, Nigerian Minerals and Mining Act, No. 20, 2007. Also, seesection 112(1) of the Act where the holder of a mineral title who surrenders any land as provided for by the Actshall be paid compensation for *inter alia* loss or reasonable expectation of profits from proved minerals on the land required for public purpose. Also see Regulations 11(1)(2)(3) of the Nigerian Minerals and Mining Regulations, 2011

of the provisions of the Constitution[529] and the Land Use Act[530]on the issue of assuaging or remedying damages done to persons or their interests.

(ii) **Disturbance of Surface Land and other Interests:** Where a holder of mineral title may, in addition to any other amount payable under the provisions of the N.M.M.A and subject to valuation report by Government licensed valuer, pay to the occupier of land held under a State lease or the subject of right of occupancy a reasonable compensation for any disturbance of the surface rights of the owner or occupier and any damage done to the surface of land on which the exploration or mining, is being or has been carried; and in addition pay to the owner of any crop, economic tree, building or work damaged, removed or destroyed by the holder of the mining title or by any of its agents servants, compensation for the damage, removal or destruction of the crop, economic tree, building or work.[531]

The Regulations also made provisions for the compensation of land owners, occupiers and any person who suffers any damage, loss or disturbance of his right arising from any damage, loss or disturbance of his right by reason of mining operations.[532]The Regulations[533]situates the assessment of a just and proper compensation in line with the provision of section 108 of the principal Act with the Mining Cadastre Office after consultation with the State Mineral Resources and Environmental Management Committee and a Government licensed surveyor.It is opined that this category of compensation admits of numerous instances including those resulting

[529] Section 44 (1)(a)(b) and 44(2)(m), Constitution of the Federal Republic of Nigeria, 1999 (as amended), Cap. C23, Laws of the Federation of Nigeria, 2004
[530] Section 29(2)(3)(4)(5)(6)(7), Land Use Act, Cap. L.5, Laws of the Federation of Nigeria, 2004
[531]Section, 107(a) &(b), Nigerian Minerals and Mining Act, No. 20, 2007. See also, section 113(1).
[532]Regulations 11(4), 162(1) & (2), Nigerian Minerals and Mining Regulations, 2011
[533]*Ibid,* Regulation 12

in deleterious effects of degradation of the environment by the mining of solid minerals in Nigeria.

(iii) **Degradation and Pollution:** Where land or interest in the land is injuriously affected by the exercise of the rights conferred by the licence or lease, for any such injurious effect not otherwise made good; and who suffers damages as a result of pollution of water, used for domestic and other purposes, as a consequence of the exploration or operations in any work connected with the property, for any such damage not otherwise made good.[534] This third category better admits of issues of degradation and pollution of the environment by the mining of solid minerals in Nigeria. It made specific reference for compensation for injury to land and pollution of water sources by the mining of solid minerals resources. It however, omitted to make clear provisions as to the degradation of air quality, which equally constitutes major aspects of degradation by the mining of solid minerals.

In the light of the critical importance of air resource to mankind, it important that the Act and or its Regulations make provisions for compensation of injured or affected persons when its quality is degraded in order to protect the environment from degradation by the mining of solid minerals. As a momentary means of filling this void, the provisions of Regulations 11(4)which relates to the disturbance of rights as a result of mining, may be deployed to handle thedeleterious effects of air quality degradation; and more particularly, the provisions of National Environmental (Noise Standards and Control) Regulations may be found germane for this purpose.Other modalities for attaining or, and enforcing the payment of compensation in Nigeria are:

[534]Section 125, Nigerian Minerals and Mining Act, No. 20, 2007

(i) Private Agreement for Compensation: To create an avenue for private remedy of compensation for degradation of the environment or pollution damage, an agreement of compensation between affected communities and/or individuals and mining companies being mineral title holders, without formal court action being embarked upon, may be reached.[535] This could be achieved vide a separate agreement aforesaid or by inclusion of relevant clauses in Community Development Agreements in order to ensure compensation of injured persons and act as a modem for prevention of the repeat of such harmful practices so as to protect the environment from degradation by mining of solid minerals. Other relevant agreements may be reached for this purpose.

(ii) **Court System:** In addition to all the foregoing, where compensation is paid but it is deemed inadequate or where it is not paid at all, an aggrieved person may ventilate his grievance and assert his rights by instituting court action in cases including but not limited to the degradation of the environment by mining of solid minerals. The clogs to access to justice particularly the notorious common law principle of *locus standi* appear to have been mitigated by the *locus classicus* of *Adediran v.Interlands*(*supra*).

Arising from the foregoing, it is the considered opinion of this researcher that in addition to the issue of compensation being constitutionally guaranteed,[536]an aggrieved person could commence an action before the High Court of a State or of the FCT or the Federal High Court as deemed

[535]Aigbokhaevbo, V.O & Achi, D.T., *op cit*, p.95
[536]Section 44(1) & (2), Constitution of the Federal Republic of Nigeria, 1999 (as amended), Cap. C23, Laws of the Federation of Nigeria, 2004

appropriate, to claim compensation for violation of his rights for degradation of the environment[537]including by the mining of solid minerals.

In spite of the overriding importance of the issue of compensation as entrenched in the Constitution of the Country and several other Acts of the National Assembly including but not limited to the Land Use Act and the Nigerian Minerals and Mining Act, it is the considered opinion of this scholar that the non-implementation or lack of enforcement of these laws have continued to constitute bane to the protection of the environment from degradation by mining of solid minerals in Nigeria. If and when violators of the environment by mining of solid minerals pay adequate compensation to affected persons, it will engender the culture of protection of the environment from degradation by mining of solid minerals.

In a way, the polluter pays principle presents itself as a form of compensation by mining companies to injured individuals. The difference is that while the polluter pays principle targets the environment as the medium deserving remedial action, compensation targets mankind through adequate monetary payments to ensure the polluter or company in breach restores the individual or community to its or their state prior to the act warranting compensation. No wonder Smith commented that the principle,

> ….does not afford respite to victims of environmental harm. To cater for such third party victims, principle 13 of UNCED Declaration mandates states to develop national laws regarding liability and compensation for victims of pollution and other environmental damage while stipulating that rules of international law regarding liability and compensation for adverse effects of environmental damage be further developed.[538]

[537]*Adediran v. Interland Transport Ltd* (1991) 9 NWLR 155 at 180 *paras. C-E* where the Supreme Court reiteratedthe unrestricted right of individual citizen's access to court. *Also see Gbemre's case (supra)* on the in-road made to access to justice in respect of cases of degradation of the environment and the right to relief.
[538]Smith, 1.O. (1998 Reprint 2000). "Sustainable Development And Environmental Diplomacy: Reconciling Economic Growth with Environmental Protection By the Year 2000 and Beyond." In: Osunbor, O.A and Simpson S. et al. (eds.) *Environmental Law and Policy*,Law Centre, Faculty of Law, Lagos State University,

3.6.4Funding and Sources, for Protection of the Environment from Degradation by Mining of Solid Minerals in Nigeria

In most spheres of human endeavours, funding or its corollary term "finance"is crucial to the consummation of most activities. In economics, the key factors of production are Labour, Land, Capital and Entrepreneurship. Funding, finance or capital in the instance under consideration is not required as a factor of production but rather as a platform for preventing or mitigating the deleteriouseffects of mining of solid minerals which results in degradation of the environment.

In the area of environmental degradation by mining of solid minerals, funding holds one of the aces to the prevention, mitigation and thus protection of the environment from degradation by mining of solid minerals. It has been shown that the quest and desire of governments to protect the environment in general, and in particular from degradation by the mining of solid minerals has been *inter alia* constrained by lack of adequate funds.[539] This assertion is not new in the light of the fact that while government resources in Nigeria continue to remain inadequate particularly at times of economic recessions, the contending needs of various sectors of the economy including the solid minerals sector continue to exert pressure on the lean national funds; thus making it impracticable for all sectors to meet their financial or funding needs.The following are some of the sources of funds for financing and implementing programmes for protection of the environment from degradation by mining of solid minerals:

(i) Tax Deductible Reserve for Environmental Protection:

Lagos, p.264 &265

[539]Akper, P.T., *op cit*, p. 195

The N.M.M.A mandates companies engaged in the exploitation of mineral resources to establish tax deductible reserve for environmental protection, mine rehabilitation, reclamation and mine closure costs provided however, that the appropriateness of the reserve is certified by an independent qualified person taking into account the determination made under the provisions of the N.M.M.A. The reserve is to be recorded in the audited financial statements of the companies; tax deductibility will be restricted to actual amount incurred for the purpose of reclamation; and the sum equivalent to the reserve amount is set aside every year and invested in dedicated account or trust fund managed by independent trustees appointed pursuant to the provisions of the Act.[540]This provision of the N.M.M.A had earlier on being critiqued in chapter three of this thesis and comments and observations made thereto apply *mutatis mutandis.* It is even very doubtful, if companies in the mining sector comply with the provision of section 30 of the N.M.M.A.

This is because the utility value of such provision has not impacted positively on the issue of protection of the environment from degradation by mining of solid minerals in Nigeria. The essence of any law or regulation is its ease of enforcement; if laws or regulations are not going to be enforced, it will be useless to deploy hard earned national resources to futile ventures such as making laws to adorn the bookshelves.

(ii) Solid Minerals Development Fund: This Fund was established pursuant to the provisions of the N.M.M.A[541]to be utilized for the purposes ofdevelopment of both human and physical capacity in the sector; funding for geo scientific data gathering, storage and retrieval to meet the needs of private sector led mining industry; equipping the mining institutions to enable them

[540] Section 30, Nigerian Minerals and Mining Act, No. 20, 2007
[541]*Ibid,* Section 34(1)

perform their statutory functions; funding for extension services to small scale and artisanal mining operators; and provision of infrastructure in mines land.[542]

By community reading of the above provisions of section 34 of the N.M.M.A, it is the considered opinion of this researcher that this Fund could be disbursed towards preventing or mitigating or generally protecting the environment from degradation by mining of solid minerals in Nigeria. This is because in providing infrastructure in mines land, the necessity to resolve issues of degradation of the environment to ensure the proper deployment of this mine infrastructure may become necessary. It is however, opined that in other to avoid any ambiguity as it may relate to the deployment of the Funds to issues of protection of the environment from degradation by mining of solid minerals, the section should be amended to specifically provide for this.This will guarantee increased funding source for this germane and herculean task.

(iii) Environmental Protection and Rehabilitation Fund: The N.M.M.A places the responsibility of establishing this Fund with the Minister for the purpose of guaranteeing the environmental obligations of holders of mineral titles as provided under the N.M.M.A.[543]Mineral title holders are obligated to contribute to this Fund in accordance with the amounts specified in the approved Environmental Protection and Rehabilitation Programme not later than one year from such approval.[544]The Mines Environmental Compliance Department and the title holder shall determine the appropriate amount to be contributed by a mineral title holder to the Fund based on the estimate and the work plan submitted by the mineral titleholder.[545]

[542]*Ibid,* Section 34(2)
[543]*Ibid,* Section 121(1)
[544]*Ibid,* Section 121(4)
[545]Regulation 184(2), Nigerian Minerals and Mining Regulations, 2011

The contribution stipulated by the Regulation shall depend on the level of mining operations that may have an adverse impact on the environment, as may be determined by the Mines Environmental Compliance Department.[546]The contribution shall be deposited with the Fund over period of five years beginning from the year of commencement of mining operations and five percent of the total cost of the project shall be set aside for the Fund pursuant to Regulation 164 of the Mining Regulations which obligates restoration of mining areas. The Fund and any sum accruing there-from shall be applied only for the implementation of the Environmental Protection and Rehabilitation Programme to which they relate in accordance with the timetable of payments established in the Environmental Protection and Rehabilitation Programme.[547]

It will appear that this is the most important funding mechanism set up by the N.M.M.A for the purpose of protection and rehabilitation of the environment. The configuration of the Fund and its effective administration may be fraught with some challenges which may include, the enormous powers given the Minister in the set up of the Fund. It is opined that in view of the importance of the protection of the environment from degradation by mining of solid minerals in Nigeria, the N.M.M.A could have directly established the Fund and prescribed the modalities for contribution and withdrawal from the Fund for the set objects. The Minister has been conferred with this germane power, but it is doubtful if the Minister has exercised this power and if he has, same has not been given the desired publicity to send the right signals or stage for protection of the environment.

More particularly, being specific fund for use in the interest of the public, there is no public statistics as to how much has been contributed and how and where the Fund has been deployed

[546]*Ibid*, Regulation 184(5)
[547]Section 121(9), Nigerian Minerals and Mining Act, No. 20, 2007

for protection and rehabilitation of the environment from degradation by mining of solid minerals. It is necessary to mention that the Fund is to be administered by a reputable institution customarily engaged in the business of trustees or fund managers, appointed by the Minister. As enforcement tool for recovery of amounts due from titleholders, the N.M.M.A empowered the Trustees to institute necessary court proceedings to recover the amount and suspend payment of any amount payable from a defaulter, and the mining lease shall thereon become liable to suspension.[548]In the task of protection of the environment from degradation by mining of solid minerals in Nigeria, the appointment of trustees or managers for administration of the Fund is considered unnecessary; what is necessary is how and when the contributions are collected and deployed towards the protection and rehabilitation of the environment.

Conclusively, it is recommended that an Environmental Protection and Rehabilitation Commission should be set up to take over the functions or powers of the Ministerand the Fund manager as stipulated in the Act and its Regulations as they relate to environmental rehabilitation; with additional powers to take care of the constraints observed herein in other to give fillip to the task of protection of the environment from degradation by mining of solid minerals in Nigeria.This is in the light of the increasing un-rehabilitated, un-resuscitated, un-restored, un-remedied and un-reclaimed mining sites in the Country.

(iii) Polluter Pays Principle: The meaning and ramifications of this principle had been considered in chapter two of this thesis. It is nevertheless one of the methods of funding the protection of the environment as a result of degradation by mining of solid minerals in Nigeria. The hallmark of this principle which gained recognition in both international instruments and in our local statutes and regulations, is that the polluter who degrades the environment by its

[548]*Ibid,* Section 122(3)

activities should be responsible for rehabilitating, remediating, restoring, resuscitating the damaged environment. This principle is both preventive and remedial. First, it represents a loose form of insurance against environmental degradation in the form of avoidance, reduction and control.[549]In the second form, the principle seeks to penalise polluters for environmental pollution pursuant to the so-called end of the pipe environmental pollution policy. This sense of polluter pays principle seeks to compel polluters to effect clean up, restore the polluted environmental media and compensate victims of environmental pollution or degradation.[550]

It is one of the direct mechanisms that could be utilized for funding the protection of the environment in Nigeria. Though such efforts may come in trickles and in piece meal, the combined effects of such pockets of activities of compliance will obviously be positive. The bane of this elegant principle as contained in international instruments, municipal laws and regulations as obtained under the Nigerian situation(in respect to the protection of the environment from degradation by mining of solid minerals), is the fact that most of the provisions of extant legislations and regulations underpinning this practice are not enforced by those institutions and agencies charged with such duties. It necessary to note that even the NESREA Act setting up the lead environmental protection agency (NESREA) in Nigeria, may have deliberately removed the kernel of this robust principle from its provisions.

It will be recalled that the precursor legislation setting up the defunct FEPA in its section 21, contained and legislated this principle into our legal regime. In spite of the foregoing, since NESREA has the powers to enforce all laws, regulations, standards and guidelines underpinning the environment in Nigeria except those relating to the oil and gas sector, it should identify all

[549]Usman, A.K,*op cit*, p.245
[550]*Ibid*, p.246

those relevant laws and regulations underpinned by the principle and enforce their provisions in a bid to protect the environment from degradation by mining of solid minerals in Nigeria. The clogs to attaining this lofty objective include corruption, lack of appropriate technology and manpower to evaluate the nature and dimensions of harms caused to the environment beyondthe apparent harm caused by the polluter in order to enforce comprehensive remediation and rehabilitation measures.

This is in view of the fact that the ramifications of environmental degradation by mining of solid minerals are not immediately known or visible within the periods of occurrence; their effects and consequences may transcend decades. Therefore, care and caution must be exercised in applying or enforcing this principle in the light of the inadequacy of technology and scientific evidence mentioned abovesince some of the effects of degradation may be obvious while many more are latent. An appreciation of the dimensions mentioned above in assessing the method and manner of applying the principle will therefore be most appropriate in underscoring the essential basis of this principle.

Also sanguine on this matter, is the fact that most of our laws including in particular those relating to the environment are barely enforced. As rightly posited by Usman, "salutary as these provisions are, the problem has remained lack of enforcement by the Agency which is supposed to monitor and ensure compliance with these provisions. There is no single reported case in which sanctions have been applied against an offending corporation in Nigeria."[551]

(iv) Funds of the Agency: The principal funds of the Agency are from the budget of the Agency as approved by the National Assembly. The term budget means the money that is available to a

[551] *Ibid,* p.243

person or an organization and a plan of how it will be spent over a period of time.[552]It is an official statement by the government of a country's income from taxes, etc. and how it will be spent.[553]Budgets are statements of the incomes and expenditures of a government, agency, ministry, organisation or corporate body. Some of the sources of funds for activities usually come from budgetary provisions. This position is also applicable to the financing of the protection of the environment from environmental degradation by mining of solid minerals in Nigeria.

The anchorage for this, is the provision of the NESREA Act which empowers the Agency to establish a Fund from which shall be defrayed all expenditure incurred by the Agency for the purposes of the Act[554]and there shall be paid and credited to the said Fund adequate take off grant from the Federal Government; annual subventions and budgetary allocations from the Federal Government; loans and grants in aid from national, bilateral and multilateral agencies; counterpart funding as may be provided from time to time; all sums accruing to the Agency by way of rents, fees and other internally generated revenues from services rendered by the Agency; and all sums accruing to the Agency by way of gifts, endowments, bequeaths or other voluntary contributions by persons and organisations.[555]

Apart from votes in the Agency's budget for protection of the environment from degradation by mining of solid minerals in Nigeria, some of the other major sources of funding for the aforesaid purpose under this head of Funding as could be read from the relevant provision, are possible counterpart funding, endowments, bequeaths and other voluntary contributions by persons or

[552]Hornby, A.S., *op cit,* p.183
[553]*Ibid*, p.184
[554]Section 13(1), NESREA Act, No. 25, 2007
[555]*Ibid,* Section 13(2)

organizations specifically indicated as being for protection of the environment from degradation by the mining of solid minerals or generally for the protection of the environment. So far, it will appear that aside from the budgetary provisions where amounts may be charged or voted for the protection of the environment from degradation by mining of solid minerals, the other sources deemed herein as major sources of funding for this purpose have been very rare in Nigeria.

This may be part of the reasons why so many mining sites remain un-reclaimed, un-rehabilitated, un-restored, un-resuscitated and un-remedied and the consequence of this is that the environment continues to remain unprotected as a result of degradation by mining of solid minerals. Considering the rate of degradation of the environment through this medium, it is the considered opinion of this scholar that these votes are quite paltry and inadequate considering the number of mining sites that have remained un-rehabilitated.

No wonder, Ladan[556]canvassed the need for adequate budgetary provisions for the Agency to enable it effectively discharge its oversight and enforcement duties. This matter appears to have been made worse by the lack of enforcement of the provisions of extant laws on polluter pays and the duty placed on mineral title holders to restore, rehabilitate, remediate and resuscitate mined out sites.Adequate funding for this important issue, commitment of trained and capable manpower together with the use of appropriate technology for protecting the environment will obviously go a long way in achieving set objects in this matter.

(v) Ecological Fund: The ecological fund intervention mechanism for protection of the environment emanated as a policy platform for protecting the environment from degradation. In 1978 the Technical Committee on Revenue Allocation set up by the Federal government

[556]Ladan, M.T. (2014).*Natural Resources and Environmental Law and Policies for Sustainable Development in Nigeria,*Ahmadu Bello University Press Limited, Zaria, p.277

recommended that 1% of the total federally collected revenue be allocated for addressing the nation's problem of environmental degradation.[557]Though the federal government has been implementing this financial policy on environment, it is yet to become a statutory obligation under the Nigerian Constitution or some other statutory instrument.[558]

The lack of legislation engraining this noble policy as part of the nation's laws may constitute a clog to the protection of the environment from degradation including those arising by mining of solid minerals. Being a policy, the Federal Government is not under obligation of any law to enforce the policy.The fund was created as a pool to fund environmental protection, and degradation prevention, reduction and restoration projects and strategies in Nigeria. However, proceeds from the fund have not been properly channeled into the task for which it was meant.[559]

It will however appear that over the years, this fund has basically been deployed towards environmental disasters like flooding and erosion control. Being a general fund to be deployed towards protecting the environment, it is submitted that the issue of protection of the environment from degradation by mining of solid minerals in Nigeria should receive attention from the vote of the fund. This is because this matter is equally as important in protection of the environment just as flood and erosion control. In order to consolidate the gains from this fund in protection of the environment, it is imperative that this policy decision and practice should receive legal backing by being codified in our laws as a recognised legal means for preventing or mitigating environmental degradation by mining of solid minerals in particular and thus the protection of the environment in general.

[557]Usman, A.K,*op cit*, p.239
[558]*Ibid*
[559]Nigeria National State of the Environment Report (2009), p.119

In doing this, it is also recommended that the current 1% of federally collected revenue being allocated, should be increased to 2%; out of which 0.5% should be earmarked for issues of protection of the environment from degradation by mining of solid minerals in Nigeria. This will ensure that if well utilized, this particular concern will receive the proper fillip and thus engendering the protection of the environment from degradation by mining of solid minerals.

(vi) Global Environmental Facility (GEF): This constitutes one of the ways through which the deleterious effects of environmental degradation by mining of solid minerals could be financed or necessary funds provided for remediation, restoration, rehabilitation, resuscitation and reclamation of mined out sites in Nigeria.

The Global Environment Facility (GEF) was established in October 1991 to provide new and additional grants and concessional funding to cover additional costs associated with transforming a project with national benefits into one with global environmental benefits. The GEF unites 180 member governments in partnership with international institutions, nongovernmental organizations and the private sector. It is today the largest funder of projects to improve the global environment and it provides grants for projects related to biodiversity, climate change, land degradation, ozone depleting substances, persistent organic pollutants and international waters.[560]

The African Development Bank (AfDB) joined the GEF in November 2003 as an Executing Agency, with direct access to GEF resources. Over the years, the Bank has increased its pipeline of projects in climate change, biodiversity and land conservation, and international waters. Demand for projects that protect the environment and promote sustainable development has been

[560] www.thegef.org accessed on 12th January, 2016

increasing over the past decade as countries expand their economic activity in sectors such as tourism, agriculture, energy and transportation. The AfDB and the GEF represent an important source of funding and technical expertise for countries in Africa with limited resources to finance such projects. The AfDB has helped its regional member countries secure $25 million of projects that was funded with grant resources from GEF.[561]

The AfDB's growing role as a major source of GEF financing reflects its capacity to combine these projects with its own investments so it can achieve a broader development goal. Moreover, as a multilateral organization, it can leverage the impact of these projects by bringing public and private partners to co-finance them. The Bank has devoted efforts to introduce itself as a GEF Executing Agency in national-level dialogues and actively engage with national GEF focal points in identifying opportunities for AfDB-GEF operations. On average, for every $1 of GEF resources, the AfDB has attracted $4 in co-financing since the Bank's partnership with the facility began in 2003. The AfDB-GEF project pipeline is expected to increase further with the fifth replenishment period for the Facility, which started in July 2010.[562]

At its 41st Council meeting held in Washington, D.C on 9th& 10th November, 2011 the GEF approved USD 20.5m grant for the Lake Chad Basin Regional Programme for the conservation and sustainable use of Natural Resources and Energy Efficiency.[563] Consequently, for the virile purpose of protecting the environment from degradation by mining of solid mineral resources, the Federal Government and its relevant agencies and institutions, will have to articulate and fine tune strategies for accessing this facility in order to reduce or mitigate the pang of ravage of the environment noticed in some parts of the country arising by mining of solid minerals.

[561] http://www.afdb.org accessed on 12th January, 2016
[562] *Ibid*
[563] ww.thegef.org accessed on 12th January, 2016

In concluding this chapter, it was appreciated that the effects of environmental degradation by mining of solid minerals are on land, air and water resources of the environment and in places where mining took place or is still taking place these effects are manifest and cause degradation to the quality of natural and human resources. The impacts of mining on Climate Change and vice versa, on Sustainable Development Change and Bio-diversity were discussed. Consequently, various laws and regulations penalise the breach or degradation of these environmental resources. The chapter also analysed legal responses to environmental degradation by mining of minerals in Nigeria.

CHAPTER FOUR

LEGAL FRAMEWORK FOR REGULATING THE IMPACTS OF MINING OF MINERALS ON THE ENVIRONMENT IN NIGERIA.

4.1 Introduction

Laws, regulations and policies play major roles in matters of environmental protection in general and in the area of mining of solid minerals in particular. The popular maxim is where there is no lawthere is no offence, duty or obligation. Laws are made to guide the conduct of man in society. The ideology of law informing legislations, regulations, policies and practices in the area or field of mining of solid minerals and the prescriptions made for preventing, mitigating or ameliorating the deleterious effects of degradation on the environment by mining of solid minerals in Nigeria, seemed to have been *inter alia* grounded in the paternal school of thought of jurisprudence. This proceeds on the premise that as people, we do not know what is good for us or, if we do, law knows it better.[564] "So when there is a conflict between what the law chooses for us and what we choose for ourselves, the choice of the law prevails."[565]

The examples of this is not far to fetch even within the precincts of the subject matter of this thesis where it is the obvious desire of capitalists who are involved in mining to maximize profits and leave the environment degraded by neglecting to restore, reclaim or resuscitate mined-out areas. But laws, regulations and policies mandate the rehabilitation of such sites to ensure protection of the environment and sustainable development; or else miners will continue to degrade the environment to the detriment of all; especially the less privileged in the society, who are unable to cushion the effects of such deleterious activities to improve their health and

[564]Aboki, Y. (2013). *Introduction to Legal Research Methodology*.Ajiba Printing Production, Kaduna, p.91
[565]*Ibid*

livelihoods. Little doubt therefore law is regarded as the instrument of change and social engineering.

The legal framework for protection of the environment from degradation by mining of solid minerals in Nigeria occupies a very central place in the exploitation of solid minerals. The purpose of this is to enthrone the precept of prevention or mitigation of the deleterious effects of mining of solid minerals on the environment and to catalyse the precept of sustainable development.

Further, critical to the interest of the scholar in this segment are- to what extent has relevant provisions in these laws, regulations and policies set the pace or tone for protection of the environment and the achievement of sustainable mining practices and regime in this very important area of our national development and of course, the overall objective of bequeathing sustainable environment to future generations and generations of Nigerians yet unborn. Some of the laws, regulations and policies examined either made general provisions on the environment or particular provisions relating to the subject of mining of solid minerals in Nigeria and where relevant, the inter-relationship between and amongst these laws, regulations and policies on the issues of prevention or mitigation of the degradation of the environment by the mining of solid minerals in Nigeria were discussed.

4.2 Legal Framework

The legal framework relating to the subject matter of this thesis, have been provided for or covered in the laws, regulations and policies listed hereinafter. Nigeria, therefore has articulated regime of laws and regulations underpinning this subject matter which altogether constitute the legal framework on same. These laws, regulations and policies include:Constitution of the

Federal Republic of Nigeria, 1999 (as amended) (hereinafter referred to as "the constitution"); Nigerian Minerals and Mining Act[566]; National Environmental Standards and Regulations Enforcement Agency (Establishment) Act[567]; Environmental Impact Assessment Act[568]; Land Use Act[569]; Nigeria Extractive Industries Transparency Initiative (NEITI) Act[570]; Nuclear Safety and Radiation Protection Act[571]; Explosives Act[572]; Harmful Waste (Special Criminal Provisions) Act[573]; Labour Act[574]; Criminal Code Act; National Policy on the Environment; National Minerals and Metals Policy; National Environmental (Mining and Processing of Coal, Ores and Industrial Minerals) Regulations; National Environmental (Noise Standards and Control) Regulations; Minerals and Mining Regulations; National Environmental (Quarrying and Blasting Operations) Regulations; and international conventions and treaties domesticated as part of our municipal laws. An appraisal of these laws, regulations and policies are considered hereunder:

4.2.1Constitution of the Federal Republic of Nigeria, 1999 (As Amended)

The constitution is the supreme law ofthe Federal Republic of Nigeria.[575]Therefore, any law that is inconsistent with the provisions of the constitution will be declared null and void to the extent of the inconsistency.[576] By implication, all laws relating to the environment including those in

[566]No. 20, 2007
[567] No. 25, 2007
[568] Cap. E12, Laws of the Federation of Nigeria, 2004
[569] Cap. L5, Laws of the Federation of Nigeria, 2004
[570]No. 36, 2007
[571] Cap. 142, Laws of the Federation of Nigeria, 2004
[572] Cap. E18, Laws of the Federation of Nigeria, 2004
[573] Cap. H1, Laws of the Federation of Nigeria, 2004
[574] Cap. L1, Laws of the Federation of Nigeria, 2004
[575]Section 1(1), Constitution of the Federal Republic of Nigeria, 1999 (as amended), Cap. C23, Laws of the Federation of Nigeria, 2004
[576]*Ibid,* Section 1(3)

respect of mining of solid minerals in Nigeria will have to be consistent with the provisions of the constitution.

In Nigeria, though the constitution did not make specific provisions for the protection of the environment from degradation by mining of solid minerals, the provisions of sections 17(2)(d) and 20 of the constitution make attempt to provide a general framework within which the environment could be protected from all forms of degradation including those arising by the mining of solid minerals in Nigeria. It should however be noted that, environmental matters are treated or provided in the constitution under Chapter 11 (Fundamental Objectives and Directive Principles of State Policy).Section 20 of the constitution provides thus: "The State shall protect and improve the environment and safeguard the water, air and land, forest and wide life of Nigeria."

The above provision appears to be very basic and should form the nucleus around which environmental rights and remedies could be pursued between and amongst Governments and individuals *inter se*, 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.[577]

Usman, while referring to the provisions of section 20 of the constitution stated that "so couched, the provision provides a framework for national environmental standards on land, water and air."[578]Further articulating views on the provision of the section the scholar and author observed that "this provision seeks to prevent environmental damage before such damage is inflicted on

[577]Section 6(6)(c), Constitution of the Federal Republic of Nigeria, 199 (as amended), Cap. C23, Laws of the Federation of Nigeria, 2004

[578]Usman, A.K. (2012). *Environmental Protection Law and Practice.* Ababa Press Ltd, Ibadan, p. 6

the environment, to that extent it is underpinned by the preventive principle than by any otherprinciple of environmental protection."[579]

In a very deliberate and succinct analysis of the provision of section 20 of the constitution, a scholar and author reflected *inter alia* thus:

> As a matter of state policy, it is incumbent on it [the Government], to ensure and take all necessary measures to have a healthy environment, but its failure in this regard does not give the citizen or any other person the right to legal action for the purpose of enforcement. Thus, environmental issues as far as the Constitution is concerned, is no more than a pious declaration since it is not justiciable.[580]

According to Odumegwu "the environmental objective contained in section 20 of the constitution places a duty on the state to refrain from impairing the environment".[581] The same scholar while expressing understanding of the non-justiciabilty of the provision of section 20 posited thus:

> Even though it appears that the provision of section 20 of the 1999 CFRN is non-justiciable by its singular appearance in chapter II of the constitution (fundamental objectives and directive principles of state policy), the court may still cause its justiciability by constructive interpretation of treaties and conventions on environment vis a vis the provisions of section 12 of the constitution where treaties and conventions have been domesticated most especially considering the state of decay and menace on the environment. The court can also rely on local legislations made to take care of these environmental abuse considering the decay and menace which the environment is currently facing.[582]

In as much as the above argument sounds interesting and fascinating in the light of the unsustainable depletion of environmental resources, the bottom line in resolving this challenge it isopined, will be between the clear provisions of sections 6and 20 of the constitution and of course, the domesticated convention or treaty; and where the provisions of the latter contradicts

[579] *Ibid*
[580] Ibrahim, B.Y. (2006). "The Framework of Environmental Law of Nigeria- A Critical Analysis", *Ahmadu Bello University, Zaria Journal of Private and Comparative Law* (J.P.C.L) Vol. 1 No. *2*,p.218
[581] Odumegu, G.S. (2010). "Environmental Rights **(**Rights to Cleanand Sustainable Environment): Are They Legal Rights or Matters of Conjecture." *NJI Law Journal*, National Judicial Institute, Abuja, 3 NJILJ p.162
[582] *Ibid*, p.170

the former, the provisions of the former will prevail and the latter shall be declared null and void to the extent of its inconsistency with the Constitution.[583]

Another provision in the ilk of section 20 of the constitution is section 17 (2) (d). The latter section provides that in furtherance of the social order, exploitation of human or natural resources in any form whatsoever for reasons, other than the good of the community, shall be prevented. The provision appears to be lofty when literally considered as a fulcrum for eradicating or mitigating the problems of environmental degradation that arise from the mining of solid minerals in Nigeria in particular and other forms or sources of environmental degradation in general. However, when considered in terms of its practical effects, the provision is another glossary one that does not ensure the assertiveness and enforceability of the rights of citizens to gain relief by way of remedies for environmental degradation in general and those emanating from the mining of solid minerals in particular. Since, on the score of this provision the Government could not be held to account for matters of environmental degradation. This is because the provision is part of the Fundamental Objectives of State Principle and therefore not justiciable.[584]

Environmental objectives like other objectives of directive state policies are not justiciable. Thus environmental issues, as far as the constitution is concerned is no more than a pious declaration.[585] The reality is that a mere policy statement unattended by legal consequences onbreach by the state has been posited by section 20 of the 1999 Constitution.[586] Therefore, it is

[583]Section 1(3), Constitution of the Federal Republic of Nigeria, 1999 (as amended), Cap. C23, Laws of the Federation of Nigeria, 2004
[584]*Ibid*, Section 6(6)(c)
[585]Ibrahim, B.Y., *op cit*, p. 218
[586]Usman, A.K., *op cit*, p. 7

strongly proposed that since environmental rights occupy such high pedestal in human existence, advancement and development and in the light of the importance of making sure that the present generation while satisfying their needs do not jeopardize the future and yet unborn generations from meeting their needs, the provisions of sections 17 and 20 of the constitution should be escalated from their current position of environmental objectives to full fledge environmental rights. By this, the citizenry would have the right to enforce thisprovisions as guaranteed rights without having to rely on the ingenuity of a Judge.

In the light of increasing issues of environmental degradation in Nigeria including those arising by mining of solid minerals and their negative effects on the environment and human development, some few Judges are becoming receptive of the need to imbibe the concept of judicial activism in resolving this challenge. In-road was made while exploring the forays of judicial activism, when a Nigerian court held that the right to life and human dignity as provided in the constitution includes the rights to clean, poison and pollution-free healthy environment. Ladan,[587] espoused thus:

> More recently, Justice C. V. Nwokere of the Federal High Court Benin City of Nigeria in *Jonah Gbemre v. Shell PDC Ltd and Ors*[588] granted leave to the Plaintiff to institute the proceedings in a representative capacity and to apply for an order enforcing their fundamental human rights to life and human dignity as provided *inter alia* under the 1999 Constitution. The court held that these constitutionally guaranteed rights include the rights to clean, poison and pollution-free healthy environment. The court declared that the Defendants action of continuous gas flaring in the Plaintiffs community was a violation of their fundamental rights. Furthermore, the Judge ruled that the failure of the companies to carry out an Environmental Impact Assessment in the said community concerning the effects of their gas flaring activities is a clear violation of the E.I.A. Act and has contributed to a further violation of the said environmental rights. The Judge's order restrained the respondents from further gas flaring.[589]

[587]Ladan, M.T. (2012). *Trend in Environmental Law and Access to Justice In Nigeria.* LAP Lambert Academic Publishing Company, Germany, pp.55-59
[588]Suit No.FHC/B/CS/53/05 (Unreported).
[589]Ladan, M.T. (2012), *op cit*, p.57

The provision of section 33(1) of the constitution which is pivotal in the above decision provides that "Every person has a right to life, and no one shall be deprived intentionally of his life save in execution of the sentence of a court in respect of a criminal offence of which he has been found guilty in Nigeria."

The above decision, is in our opinion, very plausible in the light of the fact that the right to life as constitutionally provided for and guaranteed by section 33 of the constitution cannot be meaningful and worthwhile in a degraded environment either arising from the mining of solid minerals or from other sources. Furthermore, the said decision in its expansive nature, has contributed in withering down a very significant difficulty to access to justice for enforcement of environmental rights which relates to the non-justiciability of environmental matters as entrenched in the provisions of sections 17(d) and 20 of the constitution.

It is therefore positedthat environmental rights could be pursued within the larger and basic understanding of some of the Fundamental Rights to Life, Dignity of Human Person and Private and Family Life. For example the courts in India in the case of *Indian Council for Environ-Legal Action v. Union of Indian*[590] (cited by Odumegwu[591]), while adopting the precept of judicial activism towards ensuring the protection of mankind and the environment, espoused the interpretation of "right to life" as provided for in the Indian constitution to include environmental right and right to live with human dignity. In this case, the Indian court held that dumping of toxic and dangerous waste pose danger to the environment and human life and is an infringement of the Constitutional right to life of Indians. According to Odumegwu,

[590](1996)2LRCp.226

[591]Odumegu, G.S. (2010). "Environmental Rights (Rights to Clean and Sustainable Environment): Are They Legal Rights or Matters of Conjecture",*NJl Law Journal,*Vol. 3, p.170

> The Nigerian courts are urged to adopt the expansive interpretation of fundamental right to life, dignity and liberty to encompass right to clean and sustainable environment free of toxic, dirty and offensive odour as these affect the right to life, dignity and liberty as enshrined in chapter IV of the 1999 constitution [as amended] under the Fundamental Human Rights.[592]

It is ourhumble submission that, the course of action suggested by the scholar above has beenadopted by a Nigerian court in the case of *Jonah Gbemre (supra)*. What remains to be done, is the popularization and vast application of this act of judicial activism by Nigerian courts at all hierarchies of the judicial system in the Country for this to permeate and gain the desired footage and adoption for the common good of the environment and mankind.

By the provisions of section 4 (1) of the constitution, the legislative powers of the Federal Republic of Nigeria shall be vested in a National Assembly for the Federation which shall consist of a Senate and a House of Representatives. It is the right and prerogative of the National Assembly to make laws relating to all the issues and matters listed under the Exclusive Legislative List, save as otherwise provided by the Constitution, to the exclusion of the Houses of Assembly of the States.[593]

The Exclusive Legislative List is included under Second Schedule, Part 1 of the Constitution and by virtue of same, item 39 of the list provides for mines and minerals, including oil fields, oil mining, geological surveys and natural gas. Therefore, all issues or matters concerning mines, geological surveys and mining of solid minerals in Nigeria can only be legislated upon by the National Assembly.[594]

[592]*Ibid*, p.171
[593]Section 4(2), Constitution of the Federal Republic of Nigeria, 1999 (as amended), Cap. C23, Laws of the Federation of Nigeria, 2004
[594]*Ibid*, Section 4 (2), Part 1,Second Schedule, Item 39

Section 251 (1)(n) of the constitution vests the jurisdiction in certain matters and causes in the Federal High Court and specifically provides as follows:

> Notwithstanding anything to the contrary contained in this Constitution, and in addition to such other jurisdiction as may be conferred upon it by an Act of the National Assembly, the Federal High Court shall have and exercise jurisdiction to the exclusion of any other court in civil causes and matters relating to-
>
> (n) mines and minerals (including oil fields, oil mining, geological surveys and natural gas).

The cases of*Conso Oil Ltd v. Mobil Producing*[595] and*NigeriaLiquified Natural Gas Limited v. Green*[596] restate the exclusive jurisdiction of the Federal High Court on matters pertaining to mines, minerals and natural gas. In the latter case, the Plaintiffs (Respondents) in the High Court of Rivers State claimed that the defendant (Appellant), a multinational company in Nigeria with several plants and pipeline installations in Bonny, in the course of production between 2000 and 2001, continuously discharged several quantities of poisonous and toxic chemicals into Bonny rivers and creeks and this affected their source of livelihood. They claimed special and general damages in the sum of N38billion (Thirty Eight Billion Naira). The defendant filed a preliminary objection challenging the jurisdiction of the court to entertain the matter being an action on natural gas emission and which falls under the exclusive jurisdiction of the Federal High Court. The trial court dismissed the objection. The defendant being dissatisfied appealed to the Court of Appeal which held relying on the provision of section 251(n), Constitution of the Federal Republic of Nigeria, 1999 that the subject matter of the suit being a matter connected with or pertaining to natural gas, the Federal High Court has exclusive jurisdiction.

It is however posited that since the Divisions of the Federal High Courts are only recently been established in various State Capitals in Nigeria, conferring such issues for adjudication by the

[595](2008) 2 FWLR (pt 419) p. 2403
[596](2010), All FWLR (pt. 530) p.1300 at 1310 paras. E-G

Federal High Courts to the exclusion of State High Courts who have Judicial Divisions in virtually all Local Government Headquarters in Nigeria, is a restriction of the access to justice and confinement of the rights of the citizenry. This is because for any citizen to institute or commence a suit on issues relating to the provisions of section 251 (l)(n) he or she may most likely after briefing a legal practitioner have to travel to a State Capital or Abuja in the Federal Capital Territory to pursue or ventilate his rights.

To pursue the argument of restriction of access to justice further and in order to properly confer jurisdiction on State High Courts in respect of such matters, the ideology or philosophy of ownership of mineral resources as entrenched in the constitution[597] will have to be changed and the provision of the said section together with the powers conferred on the National Assembly by section 4(2) and the exclusive jurisdiction conferred on the Federal High Court as summed in section 251(n) of the Constitution of the Federal Republic of Nigeria, 1999 (as amended) would have to be amended appropriately. This will lay the foundation for the amendment of several other federal legislations, regulations and policies pertaining to the subject matter.

4.2.2 Nigerian Minerals and Mining Act, 2007

The main purpose of the N.M.M.A as can be deciphered from its long title isthe regulation of all aspects of the exploration and exploitation of solid minerals in Nigeria and for related purposes.The N.M.M.A further gave a clue as to the rationale for its enactment when it stated thus:

> This Act creates a distinct role for the private sector as operator and owner of mineral resources won in accordance with the provisions of the Act and, a role for the Government as regulator of all matters relating to the reconnaissance, exploration, exploitation, beneficiation, possession, retention,

[597] Section 44(3), Constitution of the Federal Republic of Nigeria, 1999 (as amended), Cap. C23, Laws of the Federation of Nigeria, 2004

> transportation, transformation, sale, marketing and other related purposes of the mineral resources in Nigeria.[598]

To what extent these differing obligations and shared responsibilities of these 2 major actors/stakeholders in the solid minerals sector have been carried out, particularly as it relates to the mitigation or reduction of environmental degradation by the mining of solid minerals is a crucial issue for consideration and evaluation.

In ensuring the efficient and effective discharge of the Federal Government's role as an unbiased regulator, the N.M.M.A[599] established the Mining Cadastre Office as an independent body charged with the responsibility of processing and issuing of mining leases, licences and permits. This development is in line with international best practice in the solid minerals sector, where regulatory bodies in most advanced countries of the world are made totally independent of Government and thus insulated, removed or detached from its umbilical cord. This is to guarantee efficiency and effectiveness in the discharge of responsibilities. The issuance of licences to qualified applicants to mine solid mineral resources is a further strategy of the legislation to prevent environmental degradation by the mining of solid minerals in Nigeria. If mining activities are carried on in organized manner by fit and proper persons, their focus will *inter alia* be on prevention or mitigation of environmental degradation.

The basic and structural rudiments of the issues earlier examined above gives a hint as to the focus and philosophy of the N.M.M.A. Chapter onedeals with minerals, prospecting, mining and quarrying; Chaptertwo (small scale mining); Chapter three (possession and purchase of minerals)&Chapter four (environmental considerations and rights of host communities)and

[598]Explanatory Note, Nigerian Minerals and Mining Act, No. 20, 2007

[599]*Ibid,* Section 5

finally, chapters 5 & 6 covered offences and miscellaneous provisions respectively. All of these made cardinal provisions on the legal and regulatory philosophy and policy shift of Government in pursuing sustainable development in the mining of solid minerals in Nigeria. According to Akper,

> The Minerals and Mining Act of 2007 (hereinafter called 'the 2007 Act') is Nigeria's extant legislation that regulates the Mining Industry. The 2007 [Act] has expectedly legislated many of the environmental objectives of government into law. The aim is to give legal backing to the environmental objectives encapsulated in the Mining Policy and compel the observance and enforcement of the various environmental obligation imposed on holders of mineral titles.[600]

An analysis of the provisions of the N.M.M.A indicates the giant stride that is intended to be achieved for the sustainable mining of solid minerals in the following areas amongst numerous others;separation of the roles of the private sector as the owner and operator of mineral resources won from that of the Government as the regulator of the industry; establishment of mining Cadastre Office; setting up of Mineral Resources and Environmental Management Committee for every State of the Federation; provision for a tax deductible reserve for environmental protection, mine rehabilitation, reclamation and mine closure costs to be put up by companies; the establishment of institutions for the efficient and effective implementation of the provisions of the Act; regime of tax relief for the development of the industry; reasonable provisions in the Act that are, comparable to similar legislations in the international community.

In terms of providing the platform for ensuring the protection of the environment particularly from degradation as a result of mining of solid minerals in Nigeria, sections111, 114, 115 and 118 amongst other sections of the N.M.M.A place critical obligations and responsibilities on mine operators towards prevention of pollution of the environment,

[600]Akper, P.T. (2011). "Addressing Environmental Concerns in the Exploitation of Solid Minerals in Nigeria: Issues, Problems and Prospects."In: Professor Fagbohun O. (ed.) *NIALS Journal of Environmental Law*, Vol. 1, Nigerian Institute of Advanced Legal Studies, Lagos, p.190

restoration of mines land, reclamation and restoration of mined sites following the mining of solid minerals.On the whole, the philosophy behind the enactment of the Act is underpinned by a combination of the principles of prevention, precaution, polluter pays, mitigation, remediation or restoration and specification of criminal penal regime. This philosophy may have been necessitated by the importance of the Act to the mining of solid minerals and the need to protect the environment and ensure sustainable development in the sector.

In its forward-looking stride, the N.M.M.A specifically made provision for a tax deductible reserve for environmental protection, mine rehabilitation, reclamation and mine closure costs to be mandatorily established by companies engaged in the exploitation of mineral resources;[601] provided however, that the appropriateness of the reserve is certified by an independent qualified person taking into account the determination under the provision of the Act in section 30.

The provision of section 30 which is similar to the United States of America superfund, appeared to have been made following clarion calls by practitioners (including Okhaevbo,[602]) for the establishment of such fund. The scholar earlier posited thus on this issue; "A fund similar to the United States of America superfund should be set up to enforce compulsory contribution commensurate to the environmental risk inherent in a particular development project."[603]

The provision of section 30 takes into account the need for companies/operators who generate pollution substances through mining activities and thereby contributing to the degradation of the environment to live up to their responsibilities by taking measures to allocatefunds through this deduction for environmental protection, mine rehabilitation, reclamation and mine closure costs.

[601]Section 30, Nigerian Minerals and Mining Act, No. 20, 2007
[602]Okhaevbo, V.O.A. (2005). "Environmental Regulatory Standards: Problems of Enforcement in An Emerging Economy."*Igbinedion University Law Journal*, Vol. 3, September 2005
[603]*Ibid*, p.115

The objective of this deductible reserve which is underpinned by the general ideological concept of sustainable development is no doubt desirable but its implementation in practical terms towards environmental protection, mine rehabilitation, reclamation and mine closure costs might become a challenge for the sector. This is considering the fact that the section or the N.M.M.A in general has not specified how and who would oversee the deployment of this deductible reserve for the purposes stated, the percentage to be set aside; will an operator or company which did not make profit in an accounting year create or contribute to the reserve? Will it be from the already negative balance sheet? Also, section 30(c) only dwelt on management of the reserve and not its application for the purposes stated as it failed to articulate clearly the implementation strategies or criteria for the utilization of this reserve for the purposes stated by the N.M.M.A.

These are inherent gaps in the provision which should be filled by legislative certainty and specificity. A law is barely obeyed when its terms are nebulous. The issue of protection of the environment; and the prevention or mitigation of environmental degradation by the mining of solid minerals in Nigeria is *inter alia* clogged by ambiguous provisions which also constitute the bane of enforcement of provisions of laws in that respect. Through this type of clumsy legislative style, the desired impact or steam intended by the law makers appear to have been lost on the platform of legislative uncertainty and laxity. This loss is not a loss for the law alone but a fundamental loss for the genuine efforts at mitigating the deleterious effects of degradation of the environment by the mining of solid minerals in Nigeria; and it is indeed a loss, very painful for the environment and humanity.

In the light of the gaps noticed particularly as it relates to the issues surrounding the use of the funds for environmental reclamation, remediation and filling of mines sites, it is imperative that

the Minister puts in place relevant regulation to guide the proper collection and utilization of this reserve and for other relevant issues pending when this regulatory or legislative void would be properly and effectively filled.The advantage of this method is that such regulations could be amended without having to approach the National Assembly.

Corrupt practices in all sectors including the solid minerals sector continue to be a bar to sustainable development in Nigeria. Hence,this fund if not properly and timely utilized for the set purposes, may be embezzled by officials or used by governments for purposes other than prescribed by the N.M.M.A.

In relation to environmental degradation and the need to ensure rehabilitation of mined out areas of small scale mining activities, section 90(2) provides that all leaseholders shall carry out effective rehabilitation of mined out areas to the satisfaction of the MEC Department and also pay prescribed rehabilitation fee, proportionate to their profits as a way to defray further cost of rehabilitation and reclamation; without specifying in clear terms what percentage of such profits (gross or net) are to be paid in order to put the issue out of the realm of speculation and ambiguity. The phrase “proportionate to their profits” isnebulous and devoid of legislative clarity. The implementation or enforcement of this provision whose purport is to protect the environment from degradation by the mining of solid minerals could be abused by staff of the MEC Department by adopting inconsistent basis for enforcing this requirement; since no verifiable, realistic and enforceable yardstick is set for achieving this.

The provision of section 119(c)(ii) of the N.M.M.A mandating every holder of an exploration licence, small scale mining lease, mining lease, quarry lease and water use permit to submit to the Mines Environmental Compliance Department an Environmental Protection and

Rehabilitation Programat certain stages of their mining activities together with Environmental Impact Assessment Statement,if properly enforced will no doubt contribute immensely to having a reduction or mitigation in the level of environmental degradation arising from mining activities that have hitherto pervaded the Country.

This is because a vast majority of people involved in mining activities in Nigeria today fall within the categories specified by section 119. Hence, a good regulation of their activities will rub-off well in the mining sector viewed against the environmental gains that will be attained. Inherent in the provision of the section is the precautionary principle; as the environmental impact assessment statement envisaged by the section if followed-through, will assist in indenting all likely problems and challenges that might be posed by way of degradation of the environment as a result of proposed mining activities.As an integrated system, the Environmental Protection and Rehabilitation Program is therefore put in place to prevent, mitigate or cater for some of the critical elements that are likely to rare their heads from the degradation of the environment.

Cardinally, as could be garnered from the provision of section 120 of the N.M.M.A, the Environmental Protection and Rehabilitation Program enunciated by the Act, is set up*inter alia*as intervention point or program in certain areas including viz; providing for specific rehabilitation and reclamation actions, inspections, annual reports; a reasonable estimate of the total cost of rehabilitation; time table for the orderly and efficient rehabilitation and reclamation of the mineral title area to a safe and environmentally sound condition suitable for future economic development or recreational use.

The Environmental Protection and Rehabilitation Program once approved by the Mines Environmental Compliance Department is a contract between the categories of persons specified in section 119 who submitted the Program and the Ministry particularly, the Mines Environmental Compliance Department which is charged with the duty of ensuring the implementation of the program as provided in sections 120(6) and 121(10) of the Act. It is opined that the bane of the development of the mining sector includes the pervasive issues of environmental degradation.It is opined that unlike other commercial contracts where their terms are religiously complied with by parties because of consideration being the economic element of it, the contract between the Ministry and miners do not appear to be holistically complied with or enforced by parties because of *inter alia* the issue of corruption and the resultant docility of government officials charged with such duties.

There is no gainsaying that over the decades, some of the problems of the country have been quite aptly associated with non-implementation/non-execution and non-compliance with the provisions of laws including those underpinning the solid mineral sector and in particular the aspect of the protection of the environment from degradation by the mining of solid minerals. According to Awolowo, "…Nigerian environmental laws, in most respects comparable to their international equivalents, are poorly enforced."[604]Aigbokhaevbo, appreciates this issue in the following words "there exists a culture of non-enforcement of regulatory laws which has been condoned by successive administration."[605]

[604]Awolowo, O. (2011). "Environmental Rights and Sustainable Development in Nigeria", *OlabisiOnabanjo University Journal of Public Law,* Vol. 1 No. 1, November, p.180

[605]Aigbokhaevbo, V. (2011). "Corporate Criminal Responsibility for Environmental Crimes in Nigeria: An Appraisal", *Ahmadu Bello University, Zaria Journal of Private & Comparative Law*, Vols. 4&5 2010-2011, p.124

Legislations, including in this instance, the Nigerian Minerals and Mining Act, which have existed for fairly long periods in our statute books, are minimally enforced to derive the best or maximum gains for society. So when it becomes necessary to review such laws, there would have been wide gaps between the laws as stated on one hand and their implementation on the other; when the score is taken.

Education of the citizenry particularly stakeholders of the sector, information dissemination, use of appropriate technology and enforcement of all relevant legislations, regulations and policies are some of the veritable ways through which the cankerworm of environmental degradation by the mining of solid minerals can be prevented or mitigated.The provisions relating to pollution prevention, polluter pays, rehabilitation, remediation of mined out areas and sustainable mining practices through use of proper and environmentally friendly technologies earlier considered will have to be totally and completely enforced without the slightest of reservations, if the sector and the Nigerian environment is to have substantial relief from degradation arising by mining of solid minerals.

In spite of the gains visible from the N.M.M.A, the penalties stipulated in the N.M.M.A as punitive measures for some offences are largely inadequate if the purpose is for such to act as deterrent to offenders. Worsestill, in certain sections dealing with offences, such offences do not carry any express or specific penalties.For example section 131 created the offence of "illegal mining" but there appears not to be any specific punishment for same. Meaning that, in certain cases offenders could go scot-free depending on situations. In matters of offences and punishment there needs to be regulatory certainty and specificity so that doubts are not created in the minds of stakeholders including judges; or else, judges will be given the latitude to exercise

discretions within the elastic realm of the twin requirements of "judicially and judiciously" as known in the province of law.

By the prescription of the N.M.M.A, a person who conducts exploration or mines minerals or carries out quarrying operations otherwise than in accordance with the provisions of the N.M.M.A[606] or a person who removes, possesses or disposes of any mineral contrary to the provisions of the N.M.M.A,[607] commits an offence. Curiously, section 46(2) or 131 for that matter did not specify the punishment for an illegal miner. The provision of section 133 which states the punishment for the offences created by section 131, did not also specify the punishment for the offence of illegal mining beyond per adventure; rather, some cloud of doubts were cast over the position of the N.M.M.A on punishment or penalty for the offence of illegal mining. This is the basis for situating the issue of punishment for illegal miners within the discretion of the courts as earlier posited depending on facts presented and submissions articulated. The provision of the N.M.M.A is reproduced hereunder for clarity of purpose:

> A mineral title holder who is guilty of an offence under section 131 is liable to have his licence revoked and on conviction at the first instance, to a fine not less than N20,000,000.00; and imprisonment of not less than five years, if the offence is a continuing one, whether or not is a first offence, the person convicted shall, in addition, be liable to a fine of N20,000.00 in respect of each day during which the offence continues.[608]

By the clear provisions of this section, this researcher is respectfully, of the opinion that, it is a mineral title holder who is guilty of an offence and on conviction that will have the penalties or punishment specified in the section meted against him/it. From all ramifications, the section does not have within its ambit, an illegal miner as one of those the penalties specified therein will be applied to. This is for the basic reason that an illegal miner from all perspectives is not a mineral

[606]Section 131(a), Nigerian Minerals and Mining Act, No. 20, 2007
[607]*Ibid,* Section 131(d)
[608]*Ibid,* Section 133

title holder within the meaning of the N.M.M.A. It has long been resolved in a litany of cases that where the words of a statute are clear and unambiguous they should be given their literal meaning.[609]Furthermore, it is a principle or maxim of interpretation of statutes that the express mention of a thing is to the exclusion of the others (*expressiouniuses exclusion alterius*).[610]

Aside from the general fact that the penalty specified for offences by section 133 of the N.M.M.A is on the high side, it will be difficult to have cases being filed in our courts for the prosecution of offenders. Since the enactment of the N.M.M.A and its coming into force in 2007, a period of over 9 years there has not been any reported or known case filed to prosecute offenders pursuant to the section and therefore the issue of a conviction cannot arise. The lame position of provisions of laws remaining in our statute books including the one under examination, will not act as deterrent to illegal miners and all stakeholders. After all, what is the real value of legislation or provisions within it if they cannot be enforced. Such unsavory development negates the principles of legislation and constitutes a waste of the time and financial resources deployed by the legislature in making such laws. In Nigeria, with the high rate of corruption, it is opined that the lack of clear punishment for illegal mining aside from leading to environmental degradation may also fester corruption.

An obvious fundamental implication which is reiterated is that the provision of section 133 of the N.M.M.A has therefore failed to bring within its purview the populous and amorphous category of illegal miners whose activities highly contribute to environmental degradation by the mining of solid minerals in Nigeria for prosecution, conviction and application of the appropriate penalties. This is considered either a deliberate shy-away or inadvertence by the legislature. This

[609]*Cotecna International Limited v. Churchgate Nigeria Limited &ano.* (2011) All FWLR (Pt. 575) p.252 @274 para. F

[610]*National Examination Council (NECO) v. Sunday OjoTokode*(2011) All FWLR, Part 574, p.105

may be because the legislature appreciates the fact that bringing them within confines and applying the penalty of N20,000,000.00 to an illegal miner is simply put, killing a fly with a sledge hammer. More so, that these illegal miners who have no other means of livelihood engage in illegal mining as poverty alleviation measures; and some may view the extraction of these resources as their share of the "national cake".

It is however possible that, illegal miners were deliberately not brought within purview for punishment when found guilty, on the assumption that they will gradually be enlightened and educated and enveloped within the category of artisanal and small scale miners upon meeting the conditions precedent. From the vicissitudes of the activities of illegal miners and from unfolding developments, this battle is a raging one and unlikely to be won by those who may have held the probable opinion or position that the activities of illegal miners could be cascaded or brought within the province of artisanal and small scale mining operators without much ado, in the foreseeable future.

By not prescribing punishment for illegal mining, a lot of matters or decisions relating to the punitive measures to be taken against these illegal miners are left to the discretion of the courts when such cases ever come before them. A court of law must, however,exercise its discretion judiciously and judicially.[611] It will be difficult to establish template, framework or guidelines for measuring the appropriateness of the exercise of judicial discretion; since each case is to be decided by a court on its merits.The need for precision, specificity and clarity in the language of our legislations and statutes is therefore sacrosanct in order to aid compliance and enforcement of laws.

[611]*Babatunde v. Pan Atlantic* (2008) 1 F.W.L.R. (Pt. 409) Page 703 @ Pages 758-759; *Amure v. Iledu* (2008) 1 F. W. L. R- (Pt. 402} Page 2899

In the circumstances of the misnomer posed by the provisions of sections 46, 131(a) & (d) which made provisions for offences without correlative punishments, a clarion call is made for relevant amendments(s) to fill the lacunae, before the Judiciary is confronted with issues of wrong, improper or mala fide exercise of discretion in this realm. It is suggested that the punishment for illegal mining should be a maximum fine of N500,000.00 or an imprisonment for a term not exceeding 3 years or to both such fine and imprisonment for individual illegal miners and N10,000,000.00 for corporate bodies who engage in illegal mining activities.

These concerns have been expressed in the light of the fact that the activities of these illegal miners and their negative contributions to the deteriorating state of the Nigerian environment is a matter that should be met with appropriate penalties to act as deterrent to would-be illegal miners and to protect the environment and assist in conserving the slim financial resources which could be channeled for better national priorities than towards the mitigation of avoidable environmental degradation by the mining of solid minerals through illegal mining.

The lacuna in the law on this matter may no doubt be one of the cogent reasons for the increasing number of illegal miners all over Nigeria whose activities loom, pervade and have degraded the environment on monumental scale. This is corroborated by the fact there is no reported case of the prosecution of any illegal miner in the Country.

Underscoring the place or the effect of illegal mining activities on environmental degradation by the mining of solid minerals in Nigeria, the Nigerian State of the Environment Report (NSOER)[612] noted that other minerals that their exploration has also contributed or is contributing to environmental degradation in Nigeria include coal, iron ore and tin. Illegal

[612]Nigeria National State of TheEnvironment Report (NSOER), Abuja (2008)

mining of gemstones in some parts of north-central Nigeria is also degrading the quality of the environment there.[613]

As submitted by Aigbokhaevbo,[614]"the increasing incidents of illegal mining in Nigeria and the environmental mismanagement associated with it is a portrayal of the inefficiency of the Act [i.e the N.M.M.A] in the regulation and control of mining in Nigeria. The adverse health implications of the negligent handling of hazardous waste generated has resulted in death and increased incidence of lead pollution related ailments."[615]

The assertion by the above scholar is relevant when viewed against the backdrop of the earlier analysis in this thesis that the gap created in the Act in respect of lack of penalty for the activities of illegal miners is most undesirable. However, the increasing incidence of illegal miners cannot be placed at the door-step of the inefficiency of the N.M.M.A alone; rather the problem as posited earlier in a part of this thesis and as has been recounted by other scholars is also attributable to the inertia and ineptitude of relevant regulatory authorities and agencies of government saddled with the responsibility of enlightenment and enforcement of relevant laws.

4.2.3 Nigerian Mineralsand Mining Regulations, 2011

The Nigerian Minerals and Mining Regulations (hereinafter referred to as "theN.M.M.R")generally give effect to the implementation of the provisions of the N.M.M.A[616]and*inter alia*states the procedures and processes for the regulation of exploitation

[613]*Ibid*, p.248
[614]Aigbokhaevbo V. "Environmental Abuses in Nigeria: Sectoral Implications for Reproductive Health Care." *NIALS Journal of Health Law and Policy*,pp.165 &166
[615]*Ibid*, p.189
[616]Regulation 3, Nigerian Minerals and Mining Regulations, 2011

and mining operations.[617]It prescribes measures that will protect and ensure the safety of workers engaged in mining operations, the general public and the mining environment.[618] It also regulates the processes and procedures for enforcement and compliance with the provisions of the Act.[619]The N.M.M.R set out the powers of the Minister of Mines and Steel Development to include amending existing regulations, making additional regulations to deal with any matter not covered by the N.M.M.R, establish procedures 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.[620]

The N.M.M.R also enumerated the functions of the Ministry of Mines and Steel Development to include enforcing compliance with the provisions of the Act and the Regulations with powers to arrest without warrant any person found committing or reasonably suspected to have committed an offence under the Act and the Regulations[621]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.[622]

The N.M.M.R further obligates the Ministry to from time to time in writing and by notice publish in widely read national newspaper prescribe the manner in which tailings shall be managed by mining lease, small-scale mining lease and quarry lease holders under the Act and

[617]*Ibid,* Regulation 3(a)
[618]*Ibid,* Regulation 3(b)
[619]*Ibid,* Regulation 3(d)
[620]*Ibid,* Regulation 5
[621]*Ibid,* Regulation 6(1)(c)(i)
[622]*Ibid,* Regulation 6(1)(c)(iv)

Regulations.[623]It is however doubtful if the Ministry has begun the advertisement envisaged in the Regulation. When laws are not implemented, it creates problems within the society; a country with high record of non-enforcement of laws is a country in crisis. Aside from the waste of tax payers fund and man-hours deployed towards making these laws and regulations, the non-enforcement of laws lead to the diminishing of critical societal values, corruption and continued under-development of a country. It is opined that this reflects the current state of challenge in the protection of our environment from degradation by the mining of solid minerals where laws, regulations and policies are not implemented efficiently and effectively.

The N.M.M.R also made provisions for the compensation of land owners, occupiers and any person who suffers any damage, loss or disturbance of his right arising from any damage, loss or disturbance of his right by reason of mining operations.[624]The N.M.M.R[625]situates the assessment of a just and proper compensation in line with the provision of section 108 of the N.M.M.A with the M.C.O after consultation with the State Mineral Resources and Environmental Management Committee and a Government licensed surveyor.

As part of the obligations of a holder of a mineral title, they are to *inter alia* sensitize host communities on the benefits of the project and the measures to be taken to prevent the hazards and risks associated with mining operations, particularly pollution and environmental degradation.[626]

In providing sanctions regime for the industry, Regulation 20(1)(i) may have no doubt contradicted the provision of section 131(a) & (d) of the N.M.M.A because no matter the

[623]*Ibid*, Regulation 10(1)
[624]*Ibid*, Regulation 11
[625]*Ibid*, Regulation 12
[626]*Ibid*, Regulation 13(3)

phraseology adopted by the Regulation, the provision "if any person has conducted exploitation or mining activities or sold minerals without holding a mineral title or license issued under the Act or these Regulations….in such a case, the amount of the penalty shall not exceed the maximum penalty provided under the N.M.M.A and the N.M.M.R" contradicts in material terms the provisions of the Act. Within the confines of the N.M.M.A such activities constitute criminal offences.[627]In spite of this, it is our opinion that the civil fines specified in Regulation 20(1)(ii), 20(2)(i) & 20(2)(ii) are low compared to the breaches or the acts of infringement; and should therefore be reviewed upwards specifying relevant fines for such acts of infringements to range between N500,000-N1,000,000, N250,000-N500,000 and N100,000-N250,000 respectively.

From the foregoing, it is opined that the assertion that the legislature may have deliberately shied away from prescribing appropriate punishment for illegal mining activities may have been corroborated by the provisions of Regulation 20(1)(i) which rather created soft landing ground for illegal miners when it merely provided civil sanctions or fines for illegal miners. Civil sanctions alone are most likely not to deter offenders. Recent statistics indicate that the country losses about N8 trillion every 2 years to the activities of illegal miners.[628]In Nigeria, where corruption has eaten deep into the fabrics of the society, the power given by Regulation 20(1) to inspector of mines to impose penalties is enormous and could be subject of abuse. The implication of this is that such inspector of mines may well be the arresting officer, the complainant, the prosecutor and Judge and this is not good for the rule of law and development of the mining sector. After all, section 36 of the Constitutionof the Federal Republic of Nigeria presumes an accused person to be innocent until proved guilty by a competent court of law.

[627] Section 131(a) &(d), Nigerian Minerals and Mining Act, No. 20, 2007
[628]Nigerian Television Authority, Network News at 9.00p.m, Thursday, 19th November, 2015

An interesting feature of the N.M.M.R as statedunder Regulation 20 (4) as it relates to intentionally, falsely or fraudulently or attempting to reduce the revenue due to the Federal Government is that persons involved in such activities shall pay a fine between N100,000.00-N250,000.00.[629] This sanction regime when compared with the regime provided for by the Nigerian Extractive Industries Transparency Initiative Act[630]is ridiculous. The sanction regimefor this issue is divergent, and should be harmonized in the interest of the attainment of sustainable development for the industry.

Amongst so many other provisions in the Regulations on the issue of the safety of workers, in the discharge of its supervisory functions, the mines Inspectorate Department shall on routine basis inspect mining operations and exploration activities the subject of a mineral title for the purpose *inter alia* of examining and inquiring into the condition and ventilation of any mine or any building used in or connected with exploration, mining or mineral processing operations and all matters relating to safety, welfare and health of persons employed in any such mine or building;[631]inspect what arrangements have been made to protect the host community and the public against the hazards associated with mining operations and the storage of tailings[632]and examine the arrangements for the treatment of mine waste before it is finally disposed of, to minimize air and water pollution.[633]

Regulation 122(2)(i) empowers the Mines Inspectorate Department to request the assistance of the Nigerian Police Force, or any other persons to provide him or her with necessary security and

[629]See also Regulation 20(5), Nigerian Minerals and Mining regulations, 2011
[630]Section 21, Nigeria Extractive Industries Transparency Initiative (NEITI) Act, No. 36, 2007 provides for a maximum fine of N30,000,000.00 upon conviction.
[631]Regulation 122(2)(c), Nigerian Minerals and Mining Regulations, 2011
[632]*Ibid,* Regulation 122(2)(f)
[633]*Ibid,* Regulation 122(2)(g)

protection or otherwise needed for the lawful discharge of his powers, duties or functions under the N.M.M.A or the N.M.M.R.Regulation 155(a) obligates the Ministry through the Mines Environmental Compliance Department to issue directives and take such steps as may be necessary to enforce compliance with all laws and regulations relating to the protection, reclamation and rehabilitation and social issues of any mining environment.

In the light of divergent provisions contained in the Nigerian Minerals and Mining Act and the Environmental Impact Assessment Act on the issue of environmental impact assessment, the Regulations[634]provided for Environmental Impact Assessment Procedure for the Minerals Sector as contained in the Memorandum of Understanding signed between the Ministry and the Federal Ministry of Environment as contained in schedule 6 (though erroneously stated as schedule 6A). This represents a welcomed collaboration between agencies of government.

Regulations 185(4) represents efforts at filling the gaps noticed in modalities of the contribution to the Environmental Protection and Rehabilitation Fund by miners left by sections 115 & 121 of the principal Act (N.M.M.A) in not specifying the percentage or amount to be contributed. This Regulation provides that 5% of the total cost of the project shall be set aside for the fund pursuant to regulation 164.

4.2.4National Environmental Standardsand Regulatory Enforcement Agency (Establishment) Act, 2007

TheNational Environmental Standards and Regulatory EnforcementAgency (hereinafter referred to as "NESREA" was established pursuant to the provision[635] of the National Environmental

[634]Regulation 157(2), Nigerian Minerals and Mining Regulations, 2011
[635] Section 1(1), National Environmental Standards and Regulations Enforcement Agency (Establishment) Act,

Standards and Regulations Enforcement Agency (Establishment) Act (hereinafter referred to as "NESREA Act") and is charged with the responsibility for the protection and development of the environment in Nigeria; and for relatedmatters.[636]NESREA has wide powers in matters relating to the protection and development of the environment, biodiversity conservation and sustainable development of Nigeria's natural resources in general and environmental technology, including the coordination and liaison with relevant stakeholders within and outside Nigeria on matters of enforcement of environmental standards, regulations, rules, laws, policies and guidelines.[637]NESREA Act also contains provisionsdetailing additional powers for NESREA in the areas of enforcement of compliance with laws, guidelines, policies and standards on environmental matters however to the exclusion of the oiland gas sector.[638]

Section 8 (k)-(i)(ii)(iv)(vi)(xiii)(xiv), (m),(n) & (o) of the Act gives the Agency particular powers in relation to collaborative activities in the solid minerals sector.The Agency may make regulations, guidelines and standards for the protection and enhancement of the quality of the land resources, natural watershed, coastal zone, dams and reservoirsincluding prevention of flood and erosion, to serve the purpose of NESREA Act.[639]

The wide-catching collaborative powers of NESREA as codified in section 8 of NESREA Act, is reproduced hereunder for the purpose of elucidation:

> In collaboration with other relevant agencies and with the approval of the Minister, 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, oceans, seas and other

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No. 25, 2007
[636]*Ibid,* Short title
[637]*Ibid,* Section 2
[638]*Ibid,* Section 7
[639]*Ibid,* Section 26(1)

water bodies and for restoration and enhancement of the nation's environment and natural resources.[640]

The above provision is basically underpinned by the precautionary and mitigating principles. The core values of the polluter pays principle, remediation, rehabilitation and restoration of the environment and of course sustainable development as expressed in some sections of N.M.M.A appeared to have also been underscored by the provision of section 29 of NESREA Act when the section pungently states that "the Agency shall cooperate with other Government agencies for the removal of any pollutant excluding oil and gas related ones discharged into the Nigerian environment and shall enforce the application of the best clean-up technology currently available and implementation of best management practices as appropriate."

It is posited that a major contributor to the degradation of the environment by the mining of solid minerals is the obsolete equipment deployed in the mining sector in Nigeria.The paradigm shift that has been introduced by the NESREA Act as a way of contributing to the mitigation module of environmental degradation by the mining of solid minerals in Nigeria is the requirement specified in section 29 of NESREA Act mentioned above which reiterates the need for the utilization of "the best clean-up technology currently available and implementation of bestmanagement practices as appropriate" in removal of any pollutant excluding those from oil and gas discharged into the Nigerian environment.

A connected aspect of the Agency's power on the matter of use of appropriate and environmental friendly technology could be found in the provision of section 8 (d) of NESREA Act which prohibits processes and use of equipment or technology that undermine environmental quality. This provision though, appearing in a general form has good bearing and direct

[640] *Ibid,* Section 8(o)

implication on the use of appropriate technology in the mining of solid minerals in Nigeria, if and when properly enforced. In the mining sector, technology plays a vital role in the nature and quantum of any resultant pollution and environmental degradation.

In a recent interview granted by a former Minister of Mines & Steel Development[641] the Honourable Minister while commenting on why the exploration of the bitumen deposit in Ondo State was halted by the Federal Government, seized the opportunity to underscore the nexus between exploration of solid minerals and environmental degradation on the one hand and the technology adopted in the exploration on the other hand.[642]

It is opined that the enforcement of the provision of section 29(1) of NESREAAct amongst others lay at the heart of the success or failure of the Agency. The NESREA has no mechanism set in place for the type approval of mining equipment imported for use or generally used in the mining sector. This is a short coming that needs to be addressed when NESREA Act is to be amended or better still relevant regulation could be prescribed on this issue. Consequently, a leaf should be borrowed from the provisions of the Nigerian Communications Act, 2003[643] and particularly the Type Approval Regulations issued pursuant thereto.[644]

[641]Arc. Musa Mohammed Sada, fnia,fnmgs; interview granted Nigerian Television Authority (NTA), Channel NTAi, 11th January, 2014

[642]T'heformer Minister alluded to the fact that the exploration of the bitumen deposit in Ondo State was stopped because of the discovery or realization that the crude technology or method of using implements to explore or scavenge or scoop the bitumen deposit from the surface was most inappropriateandcould result in environmental degradation worse than in the oil and gas bearing communities of the Niger Delta.

[643]Section 70, Nigerian Communications Commission Act, 2003, Cap. N97, Laws of the Federation of Nigeria, 2004. This Section of the Act, *inter alia* empowers the Commission to make and publish regulations and guidelines in respect of certain listed matters, issues or areas relating to telecommunications industry in Nigeria. Furthermore, Sections 130 & 130(1) of the Act makes the use and supply of non-Type Approved equipment an offence in Nigeria.

[644] See Regulation 9, Type Approval Regulations, 2008 issued pursuant to the provisions of Section 70, Nigerian Communications Act, 2003. These Regulations sets criteria for approval and use of telecommunications equipment in Nigeria.

For NESREA to efficiently and effectively carry out its mandate, the need for inter-agency cooperation and collaboration between particularly the Federal Ministry of Environment and the Federal Ministry of Mines and Steel Development in order to sufficiently harness the benefits of the provision of section 8(o) of NESREA Act is therefore desirable.According to Ladan, "it is ineffective for environmental pollution control and protection not to pursue adequately inter-agency cooperation and collaboration including information sharing and exchange among government agencies and other federating units that have similar mandate or over lapping functions."[645]

A provision of NESREA Act that should assist in translating to an improved and less degraded environment arising from the mining of solid minerals in Nigeria, if well implemented, is the one in section 8(g) of NESREA Act which empowers NESREA to conduct public investigations on pollution and the degradation of natural resources, except investigations on oil spillage. This form of investigation will certainly relate to activities/operations in mining of solid minerals in Nigeria as earlier canvassed. The crucial consideration here is that, it appears that, it is not in the public domain that the Agency has ever carried out such public investigation in relation to pollution and degradation of the Nigerian environment in respect of operations/activities in the solid minerals sector. Should this be the situation, this obviously constitutesan issue of capacity under-utilization of the provisions of the statute such that when it is repealed, the propensity of its positive use and value-addition to the mining of solid minerals sector in particular and the Nigerian nation in general is undermined.

[645]Ladan, M.T. (2012). *Op cit*, p.4

In addition, in order to attain maximum capacity utilization, it may be necessary to amend the provision of section 8(g) of NESREA Act to specifically state that such public investigations on pollution and degradation of natural resources shall be carried out or undertaken in conjunction with other relevant Ministries, Departments and Agencies of Government. After all, there are enormous advantages in such collaboration and synergy.

With the increase in the inflationary trend in the country and by implication the reducing value of the Nigerian currency, an upward review of the amounts specified as penalties for various offences/infractions is desirable to keep in tune with the current inflationary trends in the country and the general realities of attaining better mitigation of the degradation of the environment. The current regime of financial penalties is not likely to deter offenders from violating the provisions of NESREA Act because under the present regime, it is cheaper to pollute the environment and pay the inadequate and un-deterring penalties prescribed by NESREA Act. The maximum penalty of N200,000 for individual offenders and 2,000,000 for corporate offenders specified in NESREA Act[646] will certainly not deter offenders. It is opined that it is only when fines, penalties or sanctions are appropriate or commensurate to acts of infraction that they could be truly punitive and act as deterrent. When sanctions are slack, it is an invitation to impunity and disobedience of laws.

Furthermore, the amounts stated as daily penalties in the cases of continuing offences are not realistic and therefore may have gone a long way in undermining the spirit of the legislation which in essence made the provisions for the purpose of compliance. Since the enactment of the Act in 2007, there is no known case of any offender that has been tried in a court of law,

[646]Sections 20 & 21, National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2007

convicted and made to pay these daily fines. Laws are made to be obeyed and if they are notobeyed or their compliance enforced, there is no point of making ridiculous provisions in our statute books. When laws are not implemented, it creates problems within the society; a country with high record of non-enforcement of laws is a country in crisis. Aside from the waste of tax payers fund and man-hours deployed towards making these laws and regulations, the non-enforcement of laws lead to lack of instilling of the right values, corruption and continued under-development of a country. It is opined that this reflects the current state of challenge in the protection of our environment from degradation by the mining of solid minerals where laws, regulations and policies are not implemented efficiently and effectively.

Also, in certain instances, the penalties do not provide succor to those who are affected by these acts of environmental pollution and degradation. The remedy that should or could cater for the losses suffered by citizens should be by way of remediation, resuscitation, rehabilitation and even compensation as provided for example by the N.M.M.A. Therefore, the assertion by a scholar that the polluter in addition to the damages payable by him should be made strictly liable for the restoration of the environment,[647] should be considered. It musthowever be pointed out that the NESREA Act is lacking by its failure to incorporate the polluter-pays-principle in its provision. This is in contrast to the situation under the repealed Federal Environmental Protection Agency (FEPA) Act. Under Section 21 of the repealed FEPA Act, the polluter was required to bear the cost of removal of the wastes including any cost that might have been incurred by any government body or agency in the restoration, or replacement of natural

[647]Okhaevbo, V.O.A., *op cit*, p.115

resources damaged, cost of third parties in the form of reparation, restoration, restitution as may be determined by FEPA.[648]

For the purpose of clarity, the provision of section 21 of the repealed FEPA Act provides that wherever hazardous substances are discharged in contravention of section 20 of the said Act, an owner or operator of the facility in question shall also be liable for the cost of the removal, cost of restoration, or replacement of damaged natural resources and reparations, restoration, restitution or compensation as may be determined by the Agency from time to time except where the discharge isproved to have been caused by natural disaster, act of war or sabotage.[649]

It is important to observe that on the issue of polluter pays, while the semblance of relative provisions of NESREA Actare cast in general terms[650] that of FEPA is quite pungent on the issue and places a direct and clear obligation/duty on the polluter to bear the cost of pollution/degradation of the environment. The hallmark of a good legislation is its clarity of terms and language;as it creates un-ambiguity and obviously ensures a high rate of compliance with the provisions of law and makes enforcement much easier. The provision of section 21 of FEPA Act should have therefore been re-enacted with necessary amendments if need be; as it is more environment-friendly on this issue.

Except for the observed lapse in NESREA Act which seems to haveomitted the application of the polluter pays principle as a kernel of the philosophy underpinning the Act, the Act is clearly

[648]Usman, A.K., *op cit*, p.242

[649]Ladan, M.T. (2012). *Op cit*, p.49

[650] Sections 7(d) & 8(s), National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2007

reinforced with provisions relating to the principles of prevention, precaution, mitigation, remediation and criminal penal regime.

In spite of all the foregoing analysis, some of the factors militating against the efficient and effective performance of the functions of NESREA include the fact that (as articulated by Fagbongbe) the enforcement of the NESREA Act and its Regulations may present some problems especially since penalties set out in the NESREA Act and its Regulations largely lack uniformity. In some cases, the maximum monetary penalties contained in the Regulations are far higher than those set out in the NESREA Act.[651]

4.2.5 Environmental Impact Assessment Act, 1992

The Environmental Impact AssessmentAct (hereinafter referred to as "the E.I.A Act" has as its kernel or philosophy of legislation, the Precautionary Principle. It presents a major plank for achieving sustainable development through the prevention and/or mitigation of environmental pollution and degradation in various sectors including the mines and steel sector.The E.I.A constitutes in recent times, an important instrument for the integration of environmental considerations into development plans, programmes and projects in view of a number of major ecological disasters and visible results of ill-considered and short term developments in the past.[652]

[651]Fagbongbe M. (2012). "Criminal Penalties for Environmental Protection in Nigeria: A Review of Recent Regulations Introduced By NESREA." *NIALS Journal of Environmental Law*, Vol. 2, p.174

[652]Smith, I.O. (1998 Reprint 2000). "Sustainable Development and Environmental Diplomacy: Reconciling Economic Growth with Environmental Protection By the Year 2000 and Beyond." In: Osunbor, O.A and Simpson S, et al. (eds.) *Environmental Law and Policy*, Law Centre Faculty of Law, Lagos State University, Lagos p.264

The E.I.A Act sets out the general principles, procedure and methods to enable the prior consideration of environmental impact assessment on certain public or private projects.[653] The E.I.A Act was enacted to put a restriction on public or private project without prior consideration of the environmentalimpact.[654] In broad terms the E.I.A Act seeks to ensure that the likely environmental impact of implementing projects are, given adequate consideration particularly at the early stage of project identification and planning.[655]Therefore, the underlining principle of the E.I.A Act is that of precaution. That is, taking all necessary factors that will affect the 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.

In the context of the E.I.A Act, mitigation means, in respect of a project, the elimination, reduction or control of the adverse environmental effects of the project, and includes restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means.[656]

With regards to mining activities/projects, the E.I.A Act provides[657] that environmental impact assessment should be undertaken in respect of mining of materials in new areas where the mining lease covers a total area in excess of 250 hectares; for ore processing, including

[653] Ibrahim, B.Y., *op cit*, p.221; see also Explanatory Note to the NESREA Act.
[654]Fagbohun, O. A. (1998 Reprint 2000).“Public Environmental Litigation in Nigeria- An Agenda for Reform.” In: Osunbor, O.A and Simpson S. et al. (eds.) *Environmental Law and Policy*, Law Centre Faculty of Law, Lagos State University, Lagos, p.144
[655]Olomola, O. A. (1998 Reprint 2000). “Nigeria's Environmental Laws- A critical Review of Main Principles, Policy and Practice.”In: Osubor, O.A., Simpson, S. et al. (eds.) *Environmental Law and Policy*, Law Centre Faculty of Law, Lagos State University, Lagos, p.13
[656]Section 63(1), Environmental Impact Assessment Act, Cap. E12, Laws of the Federation of Nigeria, 2004
[657]Schedule to the Act titled "mandatory study activities" particularly item 11 thereof

concentrating for aluminium, copper, gold or tantalum; sand dredging involving an area of 50hectares or more.

The implication of this provision is that a lot of mining activities that really contribute to the degradation of the environment over time including those of artisanal and small scale miners whose activities on individual basis obviously may not cover a total of 250 hectares may, have been exempted from this all important process. Categorically, the N.M.M.A[658] provides that the land mass coverage for small scale mining should not be less than 5 acres and not more than 3 square kilometers. It appears that this very important catchment area may have been expressly excluded from those activities that will require a mandatory environmental impact assessment to be covered in the light of the specification of basic minimum requirement of 250 hectares placed by the E.I.A Act. Emphasis has therefore been unjustifiably placed on size or coverage area of mining activity rather than the likely deleterious effects that will emanate from such puzzling mass collective activities. This seeming contradiction between the provisions of the N.M.M.A and E.I.A Act will have to be resolved in the interest of achieving the prevention or mitigation of environmental degradation by the mining of solid minerals in Nigeria.

It is submitted with humility that the mandatory study list as reflected in items 11& 14 of the schedule to the E. I. A Act should be amended to be in consonance with the provisions of the N.M.M.A (which requires the conduct of impact assessment for all types of solid mineral resources) and the current realities in the mining sector which has a view at the prevention and mitigation of environmental degradation by the mining of solid minerals as may be applicable.The environmental impact assessment report in respect of the mining of solid minerals in Nigeria is necessary in order to prevent, avoid or mitigate the deleterious effects of

[658]Section 90(1), Nigerian Minerals and Mining Act, No. 20, 2007

environmental degradation that characterized mining activities more particularly in the colonial era up till the enactment of the E.1.A Act in 1992.

Osunbor, subtly characterized or painted the picture of the gory state of the environment of the Jos Plateau and Enugu in the 1980s (predating the enactment of the EIA Act), which was as a result of mining of Tin and Coal in Jos and Enugu respectively in the following words:

> By the late 1980s the coal mines of Enugu had become flooded and fallen into neglect while the tin mines in Jos had all but ceased operations leaving behind a vastly devastated environment typified by a ravaged landscape dotted with man-made ponds and lakes. These continue to cause fatalities annually and have recently become a source of concern to environmentalists.[659]

Some of the basic factors to be taken into consideration in undertaking the environmental impact assessment of a project/activity include the purpose of the project, alternative means of carrying out the project that are technically and economically feasible, the environmental effects of any such alternative means, the need for and the requirements of any follow-up programme inrespect of the project etc.[660]

Some of the deficiencies or frailties of the E.I.A Act include the fact that it is one of the most inelegantly or badly drafted legislation relating to the mining of solid minerals and underlying the development of environmental law in Nigeria. According to Olomola, "there are several cases of obscurity of language and poor grammar. The very first section of the decree [now Act] is an example in this regard where it illogically require an assessment of the effect of the environment of an activity on an activity rather than the other way round."[661]

[659]Osunbor O.A., *op cit*, p.396
[660]Section 16(2), Environmental Impact Assessment Act, Cap. E12, Laws of the Federation of Nigeria, 2004
[661]Olomola O.A., *op cit*, p.13

The E.I.A Act is also laced with a number of wrong cross-referencing issues. This could be found in for example section 49(1); and the definition of a purported "exclusion list" in section 63(1) in relation to a non-existent section 55 (l)(b), (d) or (e) of the Act. This development to say the least is most undesirable in a legislation of the prominence of the E.I.A Act. The E.I.A Act by its drafting style may not allow the international investment community to take the Country seriously on account of the somewhat conjured or warped avoidable inadequacies in the E.I.AAct and above all, this inelegance poses a huge constraint for the enforcement of the provisions of the Act and the protection of the environment from degradation by mining of solid minerals in Nigeria.

A legislation of the nature of the E.I.AAct, needs to have and give regulatory certainty in order to ensure compliance and aid its enforcement. On this score amongst others, the Act should be amended to take into cognizance the burning need for certainty and clarity of provisions which is a hallmark of a good legislation. In the mining sector, it is often very difficult to reversemistakes that result in the degradation of the environment, hence the need to ensure clarity of provisions of laws in order to avoid giving escape routes to operators which could latch on an absurd legal framework, to deliberately avoid liability.

The case of *Oronto Douglas v. Shell Petroleum Development Company Limited &5ors*[662] providestest for privatecitizens to institute action seeking compliance with the provisions of the E.I.A. Act. In that case one of thereliefs was for "a declaration that the 1st to 4th defendants cannot lawfullycommission, carry out and operate their Liquified Natural Gas Projects without complying strictly with the Environmental Impact Assessment Decree [now Act]. The learned

[662]Suit No. FHC/L/CS/573/93 (Unreported). The Ruling was delivered on 17th February, 1997

trial judge, His Lordship the then Chief Judge of the Federal High Court *inter alia* reached a decision that the Plaintiff had no locus standing to institute the action.

On the vexed issue of the right to comment on E. I. A. Reports by individuals *vis-a-vis* their locus standi to institute actions as done in *Oronto Douglas* (supra), a learned scholar Fagbohun, submitted thus:

> It is our view that the absence of clear reference to the right to judicial review or appeal of a commentator who is aggrieved will continue to be a problem for the courts in their interpretation of this Decree [now Act] as regards their resolution of issues touching on enforcement of public environmental rights.[663]

From a practical perspective of the implementation of the provision of section 119 (1) of the N.M.M.A, it is indeed curious that the Mining Cadastre Office in certain instances proceed to give permits or licences to investors to commence mining activities in various local communities of the Country without the conduct of the mandatory and expected environmental impact assessment of the environmental hazards that may follow such activities thus undermining the import, purport and spirit of the E.I.A Act[664]whose ultimate goal is to enthrone sustainable development in the Country. This ugly development is contrary to the clear text and provisions of section 119 of N.M.M.A which provides that:

> Every holder of an exploration licence, small-scale mining lease, mining lease, quarry lease and water permit shall (a) prior to the commencement of mining operations; or (b) upon application for an extension of the term; or (c) upon an application for the conversion of a Mineral title, submit to the Mines Environmental Compliance Department-(i) an environmental impact assessment statement approved by the Federal Ministry of the Environment in respect of the exploration or mining operations to be conducted within the Mineral title Area; and (ii) an environmental Protection and

[663]Fagbohun, O.A., *op cit*, p.147

[664]In a recent development, the former Governor of Bauchi State of Nigeria, Mallam Isa Yuguda deplored the practice where some foreign nationals particularly Chinese entered some communities in Bauchi State and started mining solid minerals without the much needed Environmental Impact Assessment Report. These companies were rightly sent packing by the State Government. This further underscores the position that in terms of issues or practices relating to the mitigation of the environment by the mining of solid minerals in Nigeria, various States Governments and Local Governments also have cardinal roles to play in ensuring that laws, regulations and policies are complied with, by all stakeholders.

> Rehabilitation Programme containing such details as may be provided for in the environmental regulations issued pursuant to the provisions of the Act.

While the giving of the E.1.A Act seems to be within the province of new projects as expressed in the E.I.A Act;[665] by the provisions of the N.M.M.A[666]an environmental impact assessment relating to mining of solid minerals should be carried out even in respect of existing mining activities where licences, leases and permits are to be renewed. The provisions of the N.M.M.A on this issue and the coverage area for environmental impact assessment, we submit are no doubt better and forward-looking in efforts at addressing the mitigation of environmental degradation by the mining of solid minerals in Nigeria.

It suffices to mention that while the Environmental Impact Assessment Act is of general applicability to projects in all sectors of the nation, which qualify for the carrying out of such assessment studies, the domain of the application of the N.M.M.A relates to the mining sector; thus for mining activities to be commenced and continued there has to be compliance with the requirements of environmental impact assessment as prescribed in particularly, section119 of the N.M.M.A.

This assertion agrees with the position of law, that where there is any contradiction between the provisions of two statutes, the provisions of the latter of the two statutes supersedes to the extent that it is in conformity with the provisions of the Constitution.[667] Also, where the conflict is between a law having effect on a general matter and the one on a specific matter, the one on the specific matter shall prevail.[668] It must be however pointed out that one of the shortcomings of

[665] Sections 1(a), 2, 3(1) & 16, Environmental Impact Assessment Act, Cap. E12, Laws of the Federation of Nigeria, 2004
[666] Section 119(1), Nigerian Minerals and Mining Act, No. 20, 2007
[667] *National Examination Council (NECO) v. Sunday OjoTokode* (2011) All FWLR, Part 574, p.105
[668] *Supra*

the E. I. A. Act is the non-implementation of its provisions. Okorodudu-Fubara, eloquently posited thus:

> It is sad to note, however, that such compliance has not been quite forthcoming in respect of the recently enacted Impact Assessment Decree, 1992. Some projects have taken off in certain parts of the country which are subject to the requirements of that decree, but which obviously are yet to comply with that law. Government should watch out for such violations of the Environmental Impact Assessment Decree, in order to forestall a possible subversion not only of the E.I.A., Decree but more importantly those of the National Policy on the Environment and the major environmental protection statutes upon which the legal framework for the protection of the environment and conservation of natural resources is built.[669]

Consequently, the situation where mining activities are commenced or carried on without requisite environmental impact assessment study needs to be checked if the country's march towards sustainable mining activities with the prime focus of prevention, mitigation or reduction in environmental degradation from mining of solid minerals is to be actualized now and in theforeseeable future.

4.2.6 Harmful Waste (Special Criminal Provisions, etc.) Act, 1988

The purpose of Harmful Waste (Special Criminal Provisions, etc.)**,** Act (hereinafter referred to as "H.W.A**")** is to prohibit the carrying, depositing and dumping of harmful waste on any land, territorial waters or contiguous zone or Exclusive Economic Zone of Nigeria or its inland waterways and matters relating thereto. The H.W.A. prohibits and declared unlawful certain activities relating to the purchase, sale, importation, transit, transportation, deposit, storage of harmful wastes[670] and also criminalizes the carrying, depositing, dumping, or causing to be carried or dumped or being in possession for the purpose of carrying, depositing or dumping any harmful waste on any land or in any territorial waters or contiguous zone or exclusive economic

[669]Okorodudu-Fabura, M.T. (1996). "Statutory Scheme for Environmental Protection in the Nigerian Context: Some Reflections of Legal Significance for the Energy Sector." In: Ayua, I.A., Guobadia, D.A. et al. (eds.) *Nigerian Current Law Review*, p.39

[670] Section 1(1), Harmful Waste Act, Cap. H1, Laws of the Federation of Nigeria, 2004

zone of Nigeria or its inland waterways[671]or transporting or causing to be transported or being in possession for the purpose of transporting any harmful waste[672]or importing or causing to be imported or negotiating for the purpose of importing any harmful waste[673]or selling, offering for sale,buying or otherwise dealing in any harmful waste.[674]

The Act defined "harmful waste" to mean any injurious, poisonous, toxic or noxious substance and, in particular, includes nuclear waste emitting any radioactive substance if the waste is in such quantity, whether with any other consignment of the same or of different substance as to subject any person to the risk of death, fatal injury or incurable impairment of physical and mental health; and the fact that the harmful waste is placed in a container shall not by itself be taken to exclude any risk which might not (sic) expected to arise from the harmful waste.[675]Tobi, in a critique of the above definition remarked thus:

> Such is the large and ambitious definition of 'harmful waste'. While one is in sympathy with the omnibus definition, it may give rise to some interpretational problems in the court. This is because of, the highly confused and rigmarole language of the draftsman. In an effort to load the definition with every possible human conduct of waste in the context of harm, the draftsman with the greatest respect, seems to have succeeded in loading the boat to a sinking or capsizing level. And that is bad, both for the draftsman and the administration of criminal justice. Judges are not trained to interpret rhetoric, infatuations or conjectures but rather, they are trained to interpret real human issues in a human world and society, which is dynamic.[676]

In spite of the above well-crafted criticism, the scholar did not proffer any amendment to the definition. It is our considered opinion that no doubt the definition availed by the H.W.A is wide;it however made a good effort at bringing within its fold all conceivable human activities that could be termed as harmful waste thus substantially covering the field. In legislation, it is

[671]*Ibid* , Section 1(2)(a)
[672]*Ibid*, Section 1(2)(b)
[673]*Ibid*, Section 192)(c)
[674]*Ibid*, Section 1(2)(d)
[675]*Ibid*, Section 15
[676]Tobi N. (1998 Reprint 2000). "Environmental Litigation." In: Osunbor, O.A and Simpson S. et al. (eds.) *Environmental Law and Policy*, Law Centre, Faculty of Law, Lagos State University, Lagos p.177

better to be verbose and cover the field than to be economical with words and omit important ingredients of an offence or act. The crucial hallmark of a law is its ability to stand the test of time and remain futuristic. In the light of this, we posit that the definition is relevant and does not throw up issues of conjecture or infatuation as alleged by the scholar. Also, contrary to the scholar's view, it is opined that Judges will not find it difficult to interpret the definition.Okorodudu also commenting on this Act, observed thus-

> The Decree [now Act] emerged as the nation's swift response to the problem of the discovery of toxic wastes dumped at the Koko sea port of the old Bendel state of Nigeria. As a result of the circumstances necessitating its swift promulgation, some have criticized it as a reactionary or impulsive legislation.[677]

According to Usman, wastes could be classified with reference to their sources as domestic wastes, commercial wastes, industrial wastes and agricultural wastes. Wastes classified with reference to their character as toxic wastes, radioactive wastes, biodegradable and non-biodegradable wastes.[678]Industrial wastes according to section 27 of the Lagos State Environmental Pollution Control Edict 1989 are wastes generated from any premises used wholly or partly for the purpose of manufacturing and or servicing operations or business and these include wastes from any mine or quarry. Industrial effluents, toxic wastes and non-biodegradable wastes fall within this categoryof wastes.[679]

Within the purview of harmful wastes resulting from mining of solid minerals in Nigeria, tailings, hazardous chemical substances and mineral dusts or particles are some of the harmful wastes that trail the mining of solid minerals and contribute to environmental degradation. It should be reiterated that some of this wastes or deleterious substances have trans-boundary

[677]Okorodudu-Fubara, M.T. (1998). *Law of Environmental Protection: Materials and Text*, Caltop Publications (Nigeria) Limited, Ibadan-Nigeria, p.796
[678]Usman,A.K., *op cit*, p.95
[679]*Ibid*, p.96

effects[680] and therefore efforts at mitigating the effects of degradation of the environment by the mining of solid minerals becomes most imperative.

Hazardous wastes or substances constitute elements which are consequential in the mining of solid minerals and which in turn contribute to the degradation of the environment. They could be in the form of sludge, mine tailings, dumping of wastes from excavations, resultant increase in the level of sedimentation in the water with deleterious effects on the flora and fauna,[681] polluted water system resulting from substances used in processing some solid minerals or other deleterious substances which emanate from mining operations/activities. Some of the other forms of harmful waste or hazardous substances released onto the environment include dust particles released unto the atmosphere from quarries and cement factories and radioactive emissions fromthe mining and storage of radioactive materials.[682]

The H.W.A. proceeded largely by specifying offences and stating the penalties for those offences. For example, any person found guilty of a crime under the provisions of sections 1 to 5 of theH.W.A. shall on conviction be sentenced to imprisonment for life.[683]The provision of section 7 of the H.W.A is also germane and critical to the extent that for offences committed under the Act by corporate bodies, where it is proved that such offence was committed with the consent or connivance of or is attributable to any neglect on the part of a director, manager, secretary or other similar officer of the body corporate[684]or any person purporting to act in the

[680]Section 49(1), Environmental Impact Assessment Act, Cap. E12, Laws of the Federation of Nigeria, 2004
[681]Osunbor O.A., *op cit*, p.399
[682]*Ibid*
[683]Section 6, Harmful Waste (Special Criminal Provisions) Act, Cap. H1, Laws of the Federation of Nigeria, 2004
[684]*Ibid* , Section 7(a)

capacity of a director, manager, secretary or other similar officer[685]he as well as the body corporate shall be guilty of the crime and shall be liable and proceeded against and punished accordingly.

From the perspective of environmental law, the principle or ideological plank guiding the H.W.A. seems to have been footed in the prevention principle than any other principle and the use of criminal sanctions to punish offenders in order to act as deterrent. Little wonder, the Act did not make comprehensive or effective provision for the remediation, removal, restoration of the environment in specific terms to compel violators who dump harmful waste on the environment to take necessary remedial steps. The imposition of an obligation as proposed herein will no doubt assist in acting as additional deterrent and entrenching the principles of pollution prevention and polluter pays; as these are some of the cornerstones for achieving sustainable development in all sectors of societal development particularly in the mining of solid minerals in Nigeria. The N.M.M.A addressed these issues in some of its provisions.[686]

Aside from criminalizing and making provisions for certain offences, section 6 provides for the forfeiture to and vesting in the Federal Government of any carrier, including aircraft, vehicle, container and any other thing whatsoever used in the transportation or importation of the harmful waste including any land on which the harmful waste was deposited or dumped. The penalties provided in section 6 obviously do not compare to the remedy provided in the well-articulated and long standing principle of polluter pays which is intended to assuage wrongs done to persons and the environment. Also, in a similar vein, the power of sealing off of dump site curiously, by the Minister of Works and Housing for a maximum period of 12 months commencing with an

[685]*Ibid* , Section 7(b)
[686]Section 111, Nigerian Minerals and Mining Act, No. 20, 2007

initial period of 3 months and subsequently for further periods of 3 months is also not a remedy in the realm of polluter pays principle as it would neither assuage the critical loss of the inhabitants of the violated environment nor restore the degraded environment.

From all ramifications, the sealing off of dump sites is not likely to act as deterrent to polluters and dumpers of harmful wastes in Nigeria as new dump sites could easily be opened by these violators. The closure or sealing of such facilities do not compare in any way to the harm suffered by the environment and its inhabitants; and particularly, the lack of reprieve by way of restoration, reclamation, resuscitation, remediation and even adequate compensation to the inhabitantsof the degraded environment.

A subtle attempt to remedy the non-forward looking provisions of the H.W.A. in relation to the institutionalization of the polluter pays principle may be found in section 12 (1) of the H.W.A. whose side note reads "Civil liability". This makes the person who deposited, dumped or imported the harmful waste or caused the harmful waste to be deposited, dumped or imported to be liable for the damage except where the damage was due wholly to the person who suffered it; or was suffered by a person who voluntarily accepted the risk. This last exception comes under the common law principle of *volunti non-fit injuria*[687] in the law of tort. This provision albeit commendable, it is humbly submitted, does not meet the yawning void adumbrated in this thesis.

The Ecowas Community Act (hereinafter referred to as “the Ecowas Act”) makes provision against the dumping of hazardous and toxic waste within the sub-region.[688] This is in recognition of the fact that the dumping of waste is injuries to the environment,health and well-being of

[687]This is a common law maxim which means “no injury is done to a consenting person”
[688] Article 30, Ecowas Revised Treaty

mankind; as it may have trans-boundary implications for other neighbouring countries within the Ecowas region.

In the light of modern developments and trends in the deposit of harmful waste which has assumed an international dimension, a crucial feature of the H.W.A. is the removal of immunity from prosecution conferred on certain persons by or under the Diplomatic Immunities and PrivilegesAct in respect of any crime committed under the H.W.A. by those categories of persons.[689]

The above matter came under heavy criticism by Tobi, when he *inter alia* stated thus:

> By the provision, all the persons mentioned in the Diplomatic Immunities and Privileges Act, can be prosecuted as accused persons if they commit any of the offences provided for in the Act. Does this accord with the Diplomatic Immunities and Privileges Act? Does this accord with the international law and practice?[690]

The scholar continued and stated that:

> Section 9 of the Harmful Waste (Special Criminal Provisions, etc.) Act is a clear source of problem, with all its delinquent ambitions. It is submitted that section 9 is bad law and should be expunged from the Act. It has a riotous ambition and international law and practice has no space for riots. Accordingly, it is our view that the category of persons mentioned in section 1(1) of the Diplomatic Immunities and Privileges Act should not be made accused persons to answer offences committed under the Harmful Waste (Special Criminal Provisions, etc.) Act.[691]

It is submitted with profound respect to the learned scholar, that the above argument does not only encourage rape to be committed on the Nigerian environment and the perpetrators are allowed to walk the streets as untouchables, but it propagates an unnecessary class distinction, segregation and elitist adventurism even in the face of heinous crimes.

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[689]Section 9, Harmful Waste (Special Criminal Provisions) Act, Cap. H1, Laws of the Federation of Nigeria, 2004

[690] Tobi, N., *op cit*, p.184

[691]*Ibid*, p.185

In this researcher's considered opinion the provision of section 9 of the Harmful Waste (Special Criminal Provisions, etc.) Act as earlier mentioned is a welcomed development viewing the circumstances necessitating or heralding the birth of the H.W.A. The need to continuously take steps and measures to protect the environment which has no protector and which should not allow for any class distinction cannot be over emphasized.Some of the major ingredients of the concept of the rule of law are that "the law is no respecter of persons" and "all persons are equal before the law". The days when the principles of diplomatic immunity could provide unlimited facade to diplomats are fast disappearing even in the international domain.

In discussing the issue of diplomatic immunity, Kera[692] while referring to the work of Ladan,[693] aptly reminded "that the actual circumstances in which immunities are granted are usually settled by the laws of each state". The scholar posited that immunity cannot be said to be unqualifiedly absolute.[694]The scholar further submitted thus:

> Accordingly, many countries including Nigeria adopted the restrictive approach under which immunity was available in respect of governmental activity but not where the state was engaging in commercial activity. Governmental acts with regard to which immunity would be granted are termed as act *jure imperil*, while those relating to private or trade activity are termed acts *jure gestionis*.[695]

The concept of diplomatic immunity could be said to constitute an exception to the universally accepted principles of equality before the law and that the law is no respecter of persons. In a similar way, the removal or non-recognition of immunity in respect of offences of dumping or dealing in harmful wastes specified by section 9 of H.W.A., which occupies the pedestal of a heinous crime or crime against humanity, in this scholar's opinion should be a justified exception

[692]Kera, F.A. (2014). "Jurisdiction Over Sovereign States And Diplomats: An Appraisal", *Journal of Private and Comparative Law, Ahmadu Bello University, Zaria* Vols. 6&7, p.183
[693]Ladan, M.T. (2007). *Materials and Cases on Public International Law*, Ahmadu Bello University Press Limited, Zaria.
[694]Kera, F.A., o*p cit*., p.185
[695]*Ibid*, p.188

to the provisions of the Diplomatic Immunities and Privileges Act. Therefore, it is the further opinion of this researcher, that the said provision should not be expunged from the Act *inter alia*for the reasons afore-stated.

A scholar simply gave their approval of the novelty of section 9 of the H.W.A. in the following words "some sections of the Act are very commendable. For instance, there is a section that deals with the exclusion of diplomatic immunity. It states….."[696]

A regime of grey area or uncertainty seem to have been presented by the definitions of the phrase "harmful waste" by the Harmful Waste (Special Criminal Provisions etc) Act and the adoption and definition of the phrase "hazardous substance" by the NESREA Act. By definition, both phrases were defined differently by the 2 separate legislations. However, generally speaking, both phrases are in substance similar and are at times interchangeably used by scholars. The need for appropriate amendments or reconciliation of this matter is therefore germane to the success of the prevention or mitigation of environmental degradation by the mining of solid minerals in Nigeria.

Another regime of conflict could be deduced from the provisions of section 27 of the NESREA Act which prohibits and criminalizes "the discharge in such harmful quantities of any hazardous substance into the air or upon the land and the waters of Nigeria or at the adjoining shorelines, except where such discharge is permitted or authorized under any law in Nigeria. The penalty for such criminal acts in certain cases ranged from a fine not exceeding N 1,000,000.00 or imprisonment for a term not exceeding 5 years. Whereas, under the Harmful Wastes (Special

[696]Jangkam, D.N. &Alubo, A.O. (2008). In: Sani, A.M. et al (eds.) "Legal Framework for Environmental Protection and Sustainable Development in Nigeria." *University of Ado-Ekiti Journal of Private & Commercial Law Department*, Ado-Ekiti, p.252

Criminal Procedure etc.) Act, the penalties for most of the offences upon conviction ranged fromimprisonment for life to death penalty. These two legislations specify very contrasting regime ofpenalties for similar offences.

There is urgent need for reconciliation and amendment of these laws; since the current regime of conflict of provisions does not allow for a harmonized enforcement focus particularly as they relate to the sanctions or remedies available for the dumping of harmful waste or hazardous substances that may result in environmental degradation by the mining of solid minerals in Nigeria. Contradictions between laws in Nigeria with their resultant incongruence in penal regimes for offences have continued to pose problems for all stakeholders including the Judiciary;[697] and constitute likely platforms for breeding of corrupt practices and decadence of national values and institutions.

4.2.7Land Use Act, 1978

In Nigeria, the principal legislation regulating the use of land is the Land Use Act (hereinafter referred to as "the L.U.A").Issues of environmental degradation by the mining ofsolid minerals are also incidents affecting in most instances land. The pride of place or the centrality of theL.U.A in environmental matters in general and in the area of mining of solid minerals in particular makes this legislation overtlyimportant. It recognizesownership of land as being that of either the Federal Government or the State Governor.[698] By the provisions of the L.U.A., all land

[697]The ugly effect of contradictions and conflicts in legislations reared its monstrous head in the recent trial of Mr. Teidi involved in the Police Pension scam where billions of national pension funds belonging to poor and weak retired Police pensioners of the country were embezzled. The unfortunate aspect of this sad saga was that the Economic and Financial Crimes Commission charged him with a lesser offence that had a penalty of an imprisonment of 6 months or an option of fine under the Criminal Code (an otiose and obsolete law) rather than properly, under the Economic and Financial Crimes Commission Act, 2003 which prescribed a more punitive regime. The convict was fined a paltry sum of N750,000.00 by Justice Talba of the F.C.T High Court.

[698]Olomola, O.A., *op cit*, p. 13

comprised in the territory of each state in the Federation are vested in the Governor of that state and such shall be held in trust and administered for the use andcommon benefits of all Nigerians in accordance with the provisions of the L.U.A.[699]

The vesting ofall land in the State does not however abrogate private interests in land.[700] Essentially, the Land Use Act is not strictly for environmental protection.[701]However, environmental protection is one of those considerations which a holder of certificate of occupancy has to observe, though it is not explicitly provided for in any of the provisions of the L.U.A. If the L.U.A. is read without such importation, the result is bound to be absurd and environmentally unsound.[702]

The L.U.A. failed to make provisions for the protection of the environment against degradation from the mining of solid minerals. This might however be as a result of the exclusion of mineral resources from the meaning of land.

4.2.8 Labour Act, 1974

The LabourAct (hereinafter referred to as "the L.A.") basically makes provision for contracts of employment, terms and conditions of employment, conditions of work, recruiters and recruiting generally. It defines "mine" and makes provisions for the categories of persons that could be employed to work in any industrial undertaking.[703] Accordingly, no young person under the age

[699]Section 1, Land Use Act, Cap. L5, Laws of the Federation of Nigeria, 2004
[700]Olomola, O.A., *op cit*, p.12
[701]Ladan, M.T. (2012). *Op cit*, p. 120; See also Okorodudu-Fubara, M.T. (1996). *Op cit*, p.25
[702]Ladan, M.T. (2014). *Natural Resources and Environmental Law and Policies for Sustainable Development in Nigeria,* Ahmadu Bello University Press Limited, Zaria, p.257
[703]By the provision of section 91, Labour Act 1974, Cap. L1, Laws of the Federation of Nigeria, 2004 an industrial undertaking includes mines,quarries and other works for the extraction of minerals from theearth.

of fifteen years shall be employed or work in any industrial undertaking.[704] A young person means a person under the age of eighteen years.[705] A young person over the age of sixteen years may be employed during the night in industrial undertakings or activities involving gold mining reduction work[706] but shall however not be employed to work underground.[707] Although, the Act did not define the term "underground", it is opined that its connotation includes working in mines that involves excavation of underground tunnels, pits, gorges and boroughs to reach the mineral resources. The phrase has also been defined to mean "under the surface of the ground."[708]

The philosophy behind placing age limits on categories of mining activities is to protect the younger generation which are unlikely to be adequately skilled; so as not to expose them to accidents that could affect their ability to contribute more positively to economic and social activities in the future. Also as a result of inexperience and lack of appreciation of the vicissitudes oflives they may be unable to take rational decisions about risks they could be exposed to in mining activities. It is known that the youths are the future and link to coming generations.

An employer who contravenes the stipulations shall be guilty of an offence and on conviction shall be liable to a fine not exceeding N100.00.[709] The Act needs to be reviewed as it relates to the penalties specified for the various offences including those mentioned for offences adumbrated herein. The fine of N100.00 is obviously very paltry and will not act as deterrent to

[704] *Ibid*, Section 59(2)
[705] *Ibid*, Section 91
[706] *Ibid*, Section 60(2)(e)
[707] *Ibid*, Section 59(5)(a)
[708] A. S. Hornby (2015).Oxford Advanced Learner's Dictionary, New 9th Edition, Oxford University Press, United Kingdom, p.1700
[709] Section 64(1), Labour Act 1974, Cap. L1, Laws of the Federation of Nigeria, 2004

employers as it is easier and cheaper todeliberately contravene the provisions of the Act and pay the fine. The direct implication of these penalties is that the Act is obsolete.

The Minister of Labour may by order declare a remote and isolated area a labour health area thus obligating an employer to provide such facilities and make such arrangements as may be specified by regulations made under section 67 of Labour Act.[710] The numerous health matters, facilities and personnel for which the Minister may make regulations in respect thereto are listed in section 67 of Labour Act and include the measures to be taken to prevent the introduction or spreading of infections and contagious diseases.[711]

The LabourAct implicitly recognizes the need to take measures to prevent the introduction or spread of infectious andcontagious diseases, in appreciation of the understanding that environmental pollution and degradation obviously have negative impact on mankind; mankind being a major component and propeller of most environmental degradation arising by the mining of solidminerals in Nigeria. For example the index case of Ebola virus disease in Nigeria in the person ofLate Mr. Patrick Sawyer[712]was reported to be a mine worker.[713]

The role of theLabour Act in ensuring the health and well-being of workers in carrying out their duties in general and particularly in ensuring the avoidance or mitigation of environmental degradation by the mining of solid minerals cannot be over-emphasized in the light of the fact that implicit in the understanding of a healthy worker is the capacity to prevent or mitigate

[710]*Ibid*, Section 66
[711]*Ibid*, Section 67(f)
[712] A Liberian national resident in the United States of America who visited Nigeria in 2014 and was diagnosed of the Ebola disease. He later died but spread the disease in Nigeria through contacts he made (including with medical personnel) on arrival in Nigeria.
[713]Information given by the former Minister of Mines and Steel Development Arc. Musa Sada, on the Nigerian Television Authority (NTAi) at the recent 2014 Ministerial Platform held in December, 2014.

environmental pollution and degradation, by the mining of solid minerals in Nigeria. The philosophy of the LabourAct on the relevant issue of this thesis is therefore that of prevention and mitigation of environmental degradation within the concept of sustainable development.

The above understanding seem to have been well articulated by the provisions of the Nigerian Minerals and Mining Act, when it empowered the Minister of Mines and Steel Development to *inter alia* prescribe measures for the general welfare and safety of workers engaged in mineral resources operations.[714]

4.2.9 Nigeria Extractive Industries Transparency Initiative (NEITI) Act, 2007

The Nigeria Extractive Industries Transparency Initiative (NEITI) Act (hereinafter referred to as "NEITI Act") was enacted with the cardinal aim of ensuring due process, transparency and accountability in the extractive industry in Nigeria. The objectives of NEITI Act as enunciated, is provided for in section 2 of NEITI Act. The functions of NEITI are also set out in NEITI Act.[715]The philosophy behind the enactment of NEITI Act is that of sustainable development through transparency, accountability and the judicious use of revenue derived from extractive industries. It is however pertinent to clarify that NEITI Act did not contain provisions touching on or relating to issues of or effects of degradation of the environment by the mining of solid minerals in Nigeria. The extraction of mineral resources, particularly solid minerals have deleterious effects on the environment- land, water and air. Unfortunately, in spite of the above generally acceptable fact, NEITI Act under review failed to take cognitive value of these effects and set aside funds under the provisions of NEITI Act for proffering remedies of remediation,

[714]Section 4 (j), Nigerian Minerals and Mining Act, No. 20, 2007
[715] Section 3, Nigeria Extractive Industries Transparency Initiative (NEITI) Act, No. 36, 2007

remediation, resuscitation, reclamation, rehabilitation and compensation to mitigate or ameliorate some of these deleterious consequences.

The thrust of NEITI Act and its necessity is traceable to the need to mitigate or eradicate the negative effects of corrupt practices that pervaded all aspects of extraction of minerals and natural resources in Nigeria by extractive industry companies. The NEITI Act was therefore enacted to *inter alia* take care or ameliorate the challenges of lack of accountability and falsification of records adumbrated in earlier sections of this thesis; in order to boost the revenue of the federal government.

The NEITI Act specified some offences and penalties thereof. For example, any extractive industrycompany which gives false information or report to the Federal Government or its agency regarding its volume of production, sales and income or which renders false statement of account or fails to render a statement of account required under the Act to the Federal Government or its agencies which results in the underpayment or non-payment of revenue accruable to the Federal Government or its statutory recipients, commits an offence and is liable on conviction to a fine of not less than N30,000,000.00[716]

On a review and assessment, it will candidly appear that some of the penalties for offences provided under NEITI Act especially in the instance cited above are obviously incredibly very high and this may not make or allow for an efficient and effective compliance regime by extractive industry companies in Nigeria. This is particularly so, when there is no provision or schedule in NEITI Act categorizing extractive industry according to area or sector, yield andprofitability. It is for certain that the net profits of most of these extractive industry

[716]*Ibid,* Section 16(1)

companies other than those involved in the exploration and mining of liquid and gas mineral resources may not be up to the penalty of N30,000,000.00 provided for a single offence. The penalties should bereviewed down wards to conform to the realities of time or there should be a categorization of companies in the industry based on sectors and a graduation of the penalties according to the yield of each sector; to aid and ensure compliance, and implementation or enforcement of these provisions.

Another lapse is that nowhere in NEITI Act was any provision made for the setting aside of a percentage of the verifiable revenues or profits collected or generated from extractive industry companies for the purpose of restoration, remediation, reclamation, resuscitation and rehabilitation of the degraded environment and even compensation of persons affected by the extractive activities of these companies. This is rather bizarre and unconscionable. As is the expectation, thegoose that lays the golden eggs should be adequately appreciated and rewarded. It is needful toamend the NEITI Act to resolve these challenges in the interest of the well-being of the environment,human existence and sustainable development of the mining sector.

4.2.10 Nuclear Safety and Radiation Protection Act, 1995

The Nuclear Safety and Radiation Protection Act (hereinafter referred to as "N.S.R.P.A.") established the Nigerian Nuclear Regulatory Authority; whose functions include the control and regulation of the use of radioactive substances, material, equipment, emitting and generating ionizing radiation.[717]By the provision of section 4(1) of N.S.R.P.A., the functions and powers of

[717] Section 4, Nuclear Safety and Radiation Protection Act, Cap. N142, L.F.N 2004

the Authority amongstothersinclude regulating the possession and applicationof radioactive substances and devices emitting ionizing radiation.[718]

The responsibility ofthe Authority extends to regulating as appropriate, the exploration, mining and milling of radioactive ores and other ores associated with the presence of radioactive substances.[719] The licence for exploration, excavation, mining and milling of ores containing radioactive material shall be subject to the appropriate Code of Practice as laid down by the Authority.[720]

A noble provision of the N.S.R.P.A. which entrenches the concept of sustainable development through the planks of polluter pays principle and environmental restoration is the liability and the restorative plan enshrined in the N.S.R.P.A. Aside from placing financial or other liabilities on the carrier of radioactive materials or waste for all incidents and accidents during transportation or storage in transit of the said radioactive materials or waste, the N.S.R.P.A.also places the responsibility for the restoration of the environment or for the cost of such activities as are necessary for therestoration of the environment to its original state on the carrier of radioactive materials.[721]

4.2.11 Explosives Act, 1967

In the exploitation or mining of solid minerals, the use of explosives of various forms, dimension and capacities are necessary in blasting, reaching, accessing and utilizing certain mineral deposits. The main purport of the Explosives Act as could be deciphered from the explanatory note is to make provisions for the control of explosives for the purpose of maintaining and

[718]*Ibid*, Section 1(1)(a)
[719]*Ibid*, Section 4(2)(b)
[720]*Ibid* , Section 30
[721]*Ibid* , Section 43(1) & (2)

securing public safety; and for purposes connected therewith. Explosives when deployed in the mining of solid minerals give multifarious effects including but not limited to heavy noise, subtle movement of the soil, minor earth movement, far reaching transportation of blast materials, substances or mineral resources, dust and haze around the area of mining, accidents and injuries of various dimensions, destruction of vegetation, effect on fauna, flora and animals and plants. The environmental effects of all of this by way of degradation is humungous viewing the fact that mining activities in Nigeria take place in virtually all states of the federation.

The Explosives Act empowers the Minister responsible for explosives to make regulations for matters relating *inter alia* to the importation of explosives into Nigeria, the manufacture, storage,transportation or use of explosives, penalties for offences in prescribed manner in the Explosives Act and the seizure of explosives in respect of which an offence is alleged to have been or has been committed and the forfeiture of explosives in respect of which such offence has been committed.[722]The provisions of the Explosives Act is so terse barely a page to cater for all vital issues relating to the use and management of explosives in the country by all relevant sectors and stakeholders particularly in themining of solid minerals sector.

The coordination and implementation of the provisions of the Explosives Act also raises a lot of concern particularly in the light of the fact that the Explosives Act places the responsibility of making relevant regulations in respect of explosives on a purported "Minister responsible for explosives". Under thecurrent dispensation, there is no Minister known as the Minister responsible for explosives. This appellationis ambiguous.Also, the categories of offences created by the Explosives Act and the envisaged penal regime are patently obsolete and in need of urgent

[722] Section 1, Explosives Act, Cap. E18, Laws of the Federation of Nigeria, 2004

review. The need to re-invent the Explosives Act and expand its scope to conform to modern realities of time and best international practices is therefore sacrosanct.

4.2.12 National Policyon the Environment, 1999

In responding to the challenges and opportunities raised in pursuing government policies and programmes towards achieving environmental sustainability, the National Policy on Environment (hereinafter referred to as "N.P.E.") originally developed in 1989 and revised in 1999 is currently being reviewed.[723] In particular, the N.P.E is to secure a quality environment that is adequate for good health and well-being, conserve and use the environment and natural resources for the benefit of present and future generations and restore, maintain and enhance the ecosystems and ecological processes for conservation of biological diversity.[724]

The implementation strategies also cover such sections as wildlife, marine and coastal area resources, mining and mineral resources, industry, energy, oil and gas, construction, health, education, transport and communication systems, trade and tourism, science and technology, natural disasters and desertification, flood and erosion.[725]

Pursuant to the FEPA Act, the N.P.E. was formulated in 1989 and revised in 1999. The main thrust of the policy was to ensure that environmental concerns are integrated into major economic decision-making processes and environmental remediation costs are built into major development projects.[726]

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[723]Nigeria National State of the Environment Report, Abuja (2008) p.526
[724]*Ibid*, p.252
[725]*Ibid*
[726]Ehighelua I. *Environmental Protection Law*, New Pages Law Publishing Co., Effurun/Warri, p.122

As far as solid minerals exploration and exploitation are concerned, the new policy requires that a mandatory environmental impact assessment be carried before any approval is given to initiation of any mining project; the prospector for solid minerals is also required to prescribeoperational standards to minimize dust and noise pollution from open mines, minimize environmental degradation associated with benefaction (sic) and refining of minerals, prescribe stringent regulation for stacking and disposal of mine and benefaction (sic) tailing, monitor compliance with approved procedures for reclamation and restoration of land, top soil and vegetation of mined-out areas.[727]It is necessary to state that most of these policy objectives and strategies have been enacted as part of the provisions of the N.M.M.A to enhance the level of prevention or mitigation of environmental degradation in Nigeria. It is hoped that since the N.P.E. is undergoing review, the proposed new policy document will cater more for issues of prevention or mitigation of environmental degradation by the mining of solid minerals in Nigeria.

4.2.13 National Mineralsand Mining Policy, 2008

The National Minerals and Mining Policy (hereinafter referred to as "N.M.M.P.") has, been considered the most revolutionary mining policy with regard to the protection of the environment from the harmful effects of mining operations. The N.M.M.P. clearly identified the root cause of the problem by acknowledging that the neglect of the minerals industry led to disorder of illegal miners whose activities are characterized by inefficient mining, illegal trading of highly priced minerals, severe ecologicaldegradation and high loss of revenue to the government through

[727]*Ibid,* pp.122&123

smuggling amongst others.[728]The N.M.M.P. specified Government's focus on Nigeria's Minerals and Metal development objectives and implementation strategies for sustainable development.

The N.M.M.P. is divided into two sections with the first section dealing with Minerals Policy while the other dealt with the Metals Policy. The N.M.M.P. underscored the fact that in the pre-independence years, solid minerals contributed immensely to the economic development of Nigeria and that the decline of solid minerals industries started with the discovery of oil and with the corresponding decline of metal prices in the world.

The thrust of theMinerals Policy included the development of modern legislative framework, diversification of the economy with enhanced leadership role for the private sector and separation of the distinctive role of the Government as regulator/administrator from that of the private sector as operator and manager; and the overall protection of the environment from degradation by mining of solid minerals in Nigeria. The Policy recognized the key technical departments and agencies of the Federal Ministry of Mines and Steel Development as pivotal to the attainment of set objectives/goals and specified strategies to be adopted by these institutions through carrying out their functions. The legislative framework to drive the N.M.M.P. was stated to be the N.M.M.A., 2007.

4.2.14 Road Map for the Growth and Development of the Nigerian Mining Industry

The Road Map for the growth and development of the Nigerian Mining Industry hereinafter referred to as "the Road Map" is a recent policy document put together by the Federal Ministry of Mines and Steel Development in 2016 and published/launched in 2017 in order to realize the huge potentials inherent in the industry for the benefit of the Nigerian economy. It is posited that

[728]Akper, P.T. (2011), *op cit*, p.187

like most policy documents, the Road Map is a zealous guide to action to enable stakeholders particularly the federal government, state governments, mining companies and host mining communities navigate through how to attain sustainability development.

The Road Map is a comprehensive and illustrative policy document comprised of six inter-related chapters captioned viz: the industry today, constraints and challenges to full potential, proposed strategic framework to full mining potential, implementation and action plan, communication strategy and next steps, respectively. It has five appendixes detailing issues on historical context of the Nigerian mining industry, Nigeria's mineral endowment, sample case studies of mining sector transformations and, financing mining exploration and production. The Roadmap also has within it, activities/line of action, strategies for attaining them, and time lines for achieving stated milestones. This obviously makes monitoring of implementation or execution less arduous.

It has been severally asserted that the problem with Nigeria may not be totally that of inadequacy of laws, regulations and policies but lies with their poor implementation.[729] It would appear that it may be in the light of the foregoing, that the committee set up to put the Road Map together, recommended the formation of a Mining Implementation and Strategy Team (MIST) that will be the process owner of the Roadmap and will be accountable for its implementation. MIST, as an advisory team to the Minister, will work across multiple MDAs, stakeholders and private institutions to ensure the full potential of the minerals, mining and metals sector is achieved.[730]

4.2.15International Instruments on Environmental Protection

[729] Mining Roadmap, Published by Federal Ministry of Mines and Steel Development, p.32
[730] *Ibid*, Executive Summary, p.16

The sources of environmental laws in Nigeria are mostly legislations, regulations and standards. The other sources include common law, customary laws and international law. International law has tremendous influence on the development of Nigerian municipal environmental laws. Some international instruments on the protection of the environment that relate to the subject matter of this thesis include the United Nations Conference on the Human Environment (Stockholm Convention) 1972, United Nations Conference on Environment and Development (UNCED) 1992, United Nations Framework Convention on Climate Change (UNFCCC) 1992, United Nations Convention to Combat Desertification (UNCCD) 1996, Convention on Biological Diversity (CBD) 1992, Vienna Convention for the Protection of the Ozone Layer 1985, Montreal Protocol on Substances that Deplete the Ozone Layer 1987, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989 have been adopted by countries of the world.

On the level of the Africa continent numerous germane efforts have also being made to *inter alia* prevent or mitigate the impacts of mining of minerals on the environment through the adoption of conventions and treaties by member states. Some of these include the African Charter on Human and peoples' Rights, Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa 1991 and the Revised African Convention on the Conservation of Nature and natural Resources 2003.

At the regional level, for example at the West Africa Region, the Ecowas Treaty was entered in 1975 and revised in 1993. In the revised version, Chapter VI thereof (comprised of articles 29, 30 and 31), deals with co-operation on environment and natural resources. By Article 29(1) member states undertake to protect, preserve and enhance the natural environment of the region and co-operate in the event of natural disasters. Also, by Article 30(1) member states undertake

individually and collectively, to take every appropriate step to prohibit the importation, transiting, dumping and burying of hazardous and toxic wastes in their respective territories; while Article 31(1) states that member states shall harmonise and co-ordinate their policies and programmes in the field of natural resources.

It is pertinent to state that the Stockholm Declaration of 1972 *inter alia* encourages States to safeguard and protect the environment for the benefit of present and future generations[731]and created in Nigeria the necessity to evolve a holistic rather than sectoral approach to issues relating to the environment. It also proclaimed that appropriate national institutions must be entrusted with the task of planning, managing or controlling the environmental resources of States with the view to enhancing environmental quality.[732] The Federal Environmental Protection Agency was consequently created in 1988 and charged with the responsibility of protecting the Nigerian environment.[733]

It must be stated that NESREA is the successor body of the defunct FEPA currently charged with this responsibility. Also, it is important to shed light on the Basel Convention on the Control of Trans-boundary Movement of Hazardous Wastes and their Disposal which has as one of its cardinal objectives the need to reduce trans-boundary movements of hazardous waste to a minimum, consistent with environmentally sound and efficient management of such wastes.The Ecowas Community Treaty also makes provision against the dumping of hazardous and toxic waste within the sub-region.[734] This is in recognition of the fact that the dumping of waste is injurious to the environment and the health and well-being of mankind; as it may have trans-

[731]See generally Principles 1,2,5,6 Stockholm Declaration, 1972
[732]*Ibid*, Principle 17
[733]Aigbokhaevbo, V.O. (2005). Environmental Regulatory Standards: Problems of Enforcement in an Emerging Nigerian Economy.*Igbinedion University Law Journal*, Vol. 3, September, p.103
[734] Article 30, Ecowas Revised Treaty

boundary implications for other neighbouring countries within the Ecowas region. Further germane is the African Charter on Human and Peoples Rights which makes provisions for the protection of rights including the right to clean and healthful environment.

All of these conventions, treaties and agreements at the global, continental and regional levels have been articulated with a view to *inter alia* protect the environment from the impacts of mining and ensuring sustainability in the mining sector.

It is necessary to recount that the NESREA Act empowers the Agency to enforce compliance with the provisions of international agreements, protocols, conventions and treaties on the environment.[735]However, to have the desired virile positive impacts, these conventions and treaties would have to be holistically domesticated by various national governments.

As far as Nigeria is concerned, it must be noted that by the provision of section 12(1) of the Constitution of the Federal Republic of Nigeria, 1999 (as amended) "No treaty between the Federation and any other country shall have force of law except to the extent to which any such treaty has been enacted into law by the National Assembly." This means that for any treaty to become part of the Nigerian laws and thus enforceable, it must be domesticated as part of our municipal laws.

4.2.16Regulations Issued Pursuant to NESREA Act for the Protection of the Environment from Degradation by Mining of Solid Minerals

[735]Sections 2 & 7(c), National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2007

The Minister[736]pursuant to the powers conferred on him by the NESREA Actissued series of regulations for the purpose of protecting the environment from degradation by the mining of solid minerals in Nigeria. These Regulations were developed to address the various anthropogenic abuses done to the environment, whose impacts have resulted into serious environmental pollution and degradation being experienced in Nigeria.[737]The Regulations that are relevant to the role of the Agency for ensuring the protection of the environment from degradation by the mining of solid minerals in Nigeria are considered below:

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

The Regulations 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 prescribed the use of up-to-date, efficient cleaner production technologies to minimize pollution to the highest degree practicable.[738]The phrase "up to date, efficient and cleaner production techniques" is nebulous as it lacks regulatory certainty and may pose problems of enforcement.

In appreciating the importance of transition from the use of old technology platforms to new and modern platforms, and the costs and expertise associated thereto, the Regulations allowed the use of old operating methods subject to the taking of necessary measures to limit risks by installing leachate collection tanks and such others. Aigbokhaevbo,[739]while commenting on the purpose of

[736]The Minister responsible for issuing regulations pursuant to the powers conferred thereto by sections 34 & 37 of the NESREA Act, is the Honourable Minister responsible for environment.
[737]*Nesreanews*(2012), Volume 14, p.4
[738]Regulation 2(1), National Environmental (Mining and Processing of Coal, Ores and Industrial Minerals) Regulations 2009
[739]Aigbokhaevbo A. (2011). "Combating Environmental Crimes in Nigeria: A Daunting Uncertainty."*NIALS*

the Regulations and the mandate to apply up to date, efficient, cleaner production techniques to minimize pollution, proffered "where new designs are utilized mines are expected to evaluate their installations and ensure that control routine are sufficient to prevent risks of pollution or accident."

The Regulation did not prescribe time limit for all industry operators to transit from the use of old technologies to new ones. The implication of this is that old technologies would continue to be used side by side with new ones as long as their owners desired. The result of this is that though old technologies may be cheaper but their contribution to the degradation of the environment is enormous and therefore their use should be discouraged by specification of a time frame within which such use must abate. Underscoring the relationship between use of obsolete, old or inappropriate methods of mining and environmental degradation, a former Minister[740] alluded to the fact that the exploration of bitumen deposit in Ondo State of Nigeria was stopped because of the discovery that the crude technology or method of using implements to scoop the bitumen deposit from the surface was most inappropriate and could result in extensive environmental degradation. Also the Bagega lead poisoning havoc has been partly attributed to the use of crude technique of mining.

In its articulation, the Regulations made specific provision for polluter pays principle aside from the general underpinning principles for polluter pays[741]by providing that the collection, treatment, transportation and final disposal of wastes within the specified standards and guidelines shall be

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Journal of Environmental Law, Vol. 1, p.217

[740]Arc. Musa Muhammed Sada, fnia, fnmgs; interview granted Nigerian Television Authority (NTA), Channel 251 on 11th January, 2014

[741] By Regulation 43, National Environmental (Quarrying and Blasting Operations) Regulations, 2013 polluter pays principle means (sic) principle that a company or person that causes pollution should pay for the cost of removing or it or provide compensation to those who have been affected by it.

the responsibility of the facility generating the wastes.[742]However, in the event of a pollution resulting in an impact on the environment whether socio-economically or health wise, the facility shall as specified in Schedule 4 of the Regulations (which makes provision for insurance bond for reclamation and compensation plan) be responsible for the cost of clean-up, remediation, reclamation, compensation to affected parties and cost of damage assessment and control.[743]

Within the ambit and spirit of protection of the environment from degradation by the mining of solid minerals (particularly the processing of coal, ores and industrial minerals) the Regulations made it mandatory for all facilities to have pollution monitoring units within their premises and have on site pollution control unit. Liquid discharged from such facilities shall be analyzed and reported to the nearest office of the Agency every month, through a Discharge Monitoring Report (DMR).[744] The Regulation in a bid to ensuring the enforcement of its provisions gave wide powers to enforcement officers for the protection of the environment from pollution and degradation by the mining of solid minerals. Such powers if well utilized will contribute to protecting the environment and the quest for sustainable development in Nigeria.

Some of the duties and responsibilities of enforcement officers and by implication the Agency include the coordination, monitoring compliance and enforcement of the Regulations, determining the times and places of effluent discharge, air emission and noise interference in the area of jurisdiction, investigating complaints relating to the violation of the Regulations and prohibiting the continuation of undesirable activities which cause violation of the Regulations.[745]

[742]*Ibid*, Regulation 13(1)
[743]*Ibid*, Regulation 13(2)
[744]Regulation 5, National Environmental (Mining and Processing of Coal, Ores and Industrial Minerals) Regulations 2009
[745]*Ibid*, Regulation 8(1)

The above functions and powers of enforcement officers are no doubt laudable but functions and powers without requisite or robust enforcement will not guarantee the desired level of protection of the environment from degradation by mining of solid minerals. In certain cases, the improper or lack of enforcement or application of these enforcement powers, is as a result of factors including but not limited to inadequate budgetary allocation and lack of standard laboratories. Therefore as corroborated by previous writers, the exercise of these powers may have been clogged by the constraint of inadequate budgetary allocation,[746] lack of standard laboratories, insufficient Personal Protection Equipment (PPE),[747] use of appropriate technology for enforcing compliance and the employment of trained manpower. Ladan stated, "There is need for adequate funding of the new agency to adequately perform its oversight and enforcement duties. There is also the need for trained technical manpower."[748]

To entrench regulatory clarity and certainty in its implementation, the Regulation further specified the precept of fairness, transparency and justice when it stated that every facility shall be given equal treatment without preference on inspection and enforcement matters.[749] This will ensure that operators are treated equally and not on the basis of their status or connections or other extraneous factors. This provision of the Regulation may have been necessitated by probable sharp practices by some enforcement officers who may have compromised their powers or roles for personal and corrupt gains[750] thus undermining the need to protect the environment from degradation by the mining of solid minerals. It is established that societies that entrench

[746]Nesreanews (2015), Vol. 27 Jan-Apr, p.8
[747]*Ibid*, p.12
[748]Ladan(2014), *op cit*, p.277
[749]Regulation 6, National Environmental (Mining and Processing of Coal, Ores and Industrial Minerals) Regulations 2009
[750]Ibrahim, A. (2014). *An Assessment of the Legal and Institutional Framework for the Prevention of Environmental Degradation by Oil and Gas Companies in Nigeria*. PhD Dissertation, Faculty of Law Ahmadu Bello University, Zaria, p.244

justice through equity, equality before the law and recognize that the law is no respecter of persons no doubt achieve sustainable development more than other societies who do not comply with these noble principles.

In order to enhance the practice of protection of the environment from degradation and thus attain environmental sustainability in all sectors of the country, the Regulations set standards and guidelines for effluent limitations to be complied with by facilities including those engaged in mining operations.[751]Furthermore, operators involved in mining and processing of coal, ores and industrial minerals shall ensure that their activities conform with prescribed guidelines for safe levels of air pollutants tolerable to human, aquatic organisms and vegetation.[752]In mining and quarrying activities, tailing piles and ponds, blasting of materials are some of the fugitive emission air pollutant sources that contribute to degrading our environment.[753] Therefore, operators are mandated to ensure that their activities do not impact on ambient and indoor air, beyond regulatory limits for safe levels of air pollutants for specific substances in the air.[754]

The Regulations *inter alia* disallows any facility to cause or allow the generation of any odour from any source, that unreasonably interferes, or is likely to unreasonably interfere, with any other person's lawful use or enjoyment of his property as such facilities are encouraged to use good practices and procedures to reduce such odours to a reasonable minimum including any method for reducing odour as may be specified by the Agency. Mining activities particularly through the discharge of effluents and hazardous wastes generate offensive odours hence the need

[751]Regulation 10, National Environmental (Mining and Processing of Coal, Ores and Industrial Minerals) Regulations 2009
[752]*Ibid*, Regulation 30(1)
[753]*Ibid*, Regulation 30(2) & (3), Schedule 9
[754]*Ibid*, Regulation 32, Schedule 11

for treatment of effluents before their discharge subject to relevant permits, in order to protect the environment.

The deleterious role of improperly managed or improperly discharged effluents into the environment particularly into water bodies cannot be over emphasized. Accordingly, tailings and mine water containing heavy metals or other toxic materials or substances shall be treated to acceptable level before disposal.[755]Consequently, every facility shall ensure that no waste material beyond permissible limits is released from the premises at which the operation is being carried out; and all effluents are cleaned up and disposed of at an appropriate discharge point or waste treatment facility at the conclusion of each operation;[756]burrow pits containing mine water are safely secured;[757]while Acid Mine Drainage testing shall be carried out by the facility throughout the operations and closure.[758]These provisions relating to the discharge of effluents is important in order to entrench the practice of prevention and/or mitigation of environmental degradation by the mining of solid minerals in Nigeria. It is trite that a little poison or contaminant can pollute or degrade a large volume of water body. Water is life and the source of livelihood and therefore its protection from all forms of contaminants is imperative.

In the case of *John Young v. Bankier Distillery Co*.[759]The respondents were owners of a distillery situated on the banks of a stream, the water of which they used for their business. The appellants were the owners of coal mines higher up the stream. In the course of working their mines the appellants pumped large quantities of water into the stream; which although pure, was hard, and, did not affect the water in the stream for ordinary purposes, it rendered it much less suitable for

[755]*Ibid*, Regulation 10(3) & (4)
[756]*Ibid*, Regulation 10(5)(a) & (b)
[757]*Ibid*, Regulation 10(6)
[758]*Ibid*, Regulation 10(8)
[759](1893) All E.R 439

distilling purposes. The court granted injunction against the appellants and dismissed their appeal.

As a virile means of enforcing the powers or orders of the Agency, the Regulation provides the need for the service of an enforcement notice on operators, the circumstances under which an enforcement notice shall be served and the content of such notices. The rationale for these provisions is to *inter alia* provide the fulcrum for engagement between the Agency and operators prior to the proper and strict enforcement of the requirements of the notice. It is believed that this strategy of engagement and collaboration if followed through will ensure greater gains in protection of the environment from degradation by quarrying operations. The method engrains the practice of the Agency and operators being partners in the task of protection of the environment. It is cost effective, time saving and encourages self-audit and performance by facility owners as it gradually instills in the operators the culture of self-compliance. This practice or method is similarly proactive and to that extent encourages the protection of the environment from degradation by the mining of solid minerals through the precautionary principle of environmental law. However, where there is failure to comply with the terms of a second notice, appropriate legal action[760]shall be taken. The Regulation created offences for the violation of its provisions; the fine being a maximum of N100,000.00 or imprisonment for a term not exceeding two years or both.

In appropriate circumstances, an Enforcement Officer may seize, impound or confiscate any property, tool, machinery or other instrument which is likely to, or has caused the violation in the

[760]Regulation 25, National Environmental (Mining and Processing of Coal, Ores and Industrial Minerals) Regulation 2009

area of operation.[761]This is a necessary power for the protection of the environment from degradation by the mining of solid minerals. The virile and lawful exercise of such powers would ensure regulatory certainty, protection of the environment and sustainable development of the sector. This is because on the other hand, non-compliance undermines respect for the rule of law, engenders environmental degradation, and undermines progress towards sustainable development.[762]

4.2.16.2**National Environmental (Noise Standards and Control) Regulations, 2009**

One of the forms of degradation of the environment by the mining of solid minerals is noise.[763] The purpose of these Regulations is to ensure maintenance of a healthy environment of all people in Nigeria, the tranquility of their surroundings and their psychological well- being by regulating noise levels and generally, to elevate the standard of living of the people through the prescription of maximum permissible noise levels a facility or activity to which a person may be exposed; providing for the control of noise and for mitigating measures for reduction of noise; and generally for giving effect to the provisions of section 22 of NESREA Act.[764]Mining of solid minerals involves activities which generate noise and this include blasting by the use of commercial explosives and dynamites and the use of heavy duty earth-moving equipment that generate unbearable noise; thus the need to set noise limits to ensure tranquility.

[761]*Ibid*, Regulation 8(13)
[762] Nesreanews, vol. 26, p.27
[763]Regulation 18, National Environmental (Noise Standards and Control) Regulations, 2009 defines 'Noise' as any unwarranted and annoying sound that is intrinsically objectionable to human beings or which can have or is likely to have an adverse effect on human health or the environment.
[764]*Ibid*, Regulation 1. Also see Ladan(2014), *op cit*, p.293

It is trite that people are unable to perform maximally under a noise-ridden environment which has attendant immediate and long term health implications and hazards.[765]Consequently, by the provision of Regulation 2(9) and the First Schedule, Table IX, Column I, the maximum permissible noise level from a quarry or mine to which a person in the affected area may be exposed shall not exceed the level specified in Column 2 of that Table i.e 109dB (C) for any building used as a hospital, school, convalescent home, old age home or residential buildings and 114dB (C) for any building in an area used for residential and one or more of the following purposes: commerce, small scale production, entertainment and industry. For any person involved in quarrying and mining activity to emit noise in excess of the maximum permissible limit he or she or it must hold a permit authorizing such.[766]

The Regulation in order to enhance environmental tranquility and sustainable development 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.[767]It is the considered opinion of this scholar that over-reliance or dependence on the meters or schedules of facility owners or occupiers could constitute clog to the enforcement of the Regulations and thus the protection of the environment.

In order to engrain the application of preventive, precautionary, mitigating as well as polluter pays principles, the Regulations provided that improvement notice shall be served on the person responsible or alleged to have caused or likely to cause noise pollution or annoyance if the noise

[765]Usman (2012), *op cit*, p.46
[766]Regulations 3 & 7(3), National Environmental (Noise Standards and Control) Regulations, 2009

[767]*Ibid*, Regulation 4

or annoyance has not yet occurred.[768]It also propagates the application of the principle of polluter-pays on the owner of any item seized, impounded or confiscated under the Regulations as it thrusts on them, the responsibility of bearing the costs incurred.[769]

The Regulations gives power to the Agency in consultation with other relevant organizations to issue guidelines[770] and code of practice[771] requiring the use of any plant or machinery or devices or arrangements for purposes of reducing excessive noise. The guidelines if and when issued will set the stage for the use of only approved plants or machinery or devices or arrangements for the purpose of reducing excessive noise.

To enforce compliance of its provisions, the Regulations empowered the Agency to seize, impound, confiscate or prohibit the use of any property, tool, machinery or other instrument which is likely to, or has caused the emission of excessive noise, if, in the Agency's opinion the sanction will restore the permissible noise level in the area.[772]The Agency may also order the removal from the source of the noise; or render inoperable by removal of any part from; or lock or seal or close so as to make unusable, any instrument, appliance, vehicle, or machine that is producing or contributing to the excessive noise.[773]These are necessary powers for protection of the environment from degradation.

In the case of *Seismograph Services (Nig) Ltdv.Ogbeni*[774]The plaintiff/respondent claimed from the defendants/appellants the sum of one thousand pounds special and general damages for nuisance in carrying out exploratory exercise which wrongfully caused or permitted excessive

[768]*Ibid*, Regulation 11(4)
[769]*Ibid*, Regulation 12(3)
[770]*Ibid*, Regulation 14(1)
[771]*Ibid*, Regulation 15
[772]*Ibid*, Regulation 12(1)
[773]*Ibid*, Regulation 12(2)(a)-(c)
[774] (1976) 10 NSCC, 130

noise and vibration which damaged plaintiff's building. The trial court awarded damages but the Supreme Court set aside and substituted a judgment dismissing the claim *inter alia* on the basis of the expert evidence called by the appellant which showed that the exploratory exercise was not the cause of damage to the plaintiff's building. The plaintiff's claim including that relating to excessive noise may have succeeded if he had engaged the services of an expert to discharge the burden of proof.

The Regulation created offences for the violation of its provisions and specified the penalty of a fine not exceeding N50,000.00 or imprisonment for a term not exceeding one year or to both in the case of individuals convicted of such offences and the penalty of a fine not exceeding N500,000.00 for corporate bodies. The penalty for individual offenders may have been dictated by the fact that most of the people whose activities generate noise particularly in the mining of solid minerals are the poor artisanal or illegal miners. To that extent, the said fine is considered reasonable.

4.2.16.3 **National Environmental (Quarrying and Blasting Operations) Regulations, 2013**

The cardinal objective of these Regulations is to control the effects of quarrying and blasting operations on the environment and human health[775] and specifically, the Regulations aims *inter alia* to prevent environmental degradation;[776] ensure the use of environment-friendly technologies in quarrying[777] operations;[778] prevent the contamination of both surface and ground

[775] Regulation 2, National Environmental (Quarrying and Blasting Operations) Regulations, 2013
[776]*Ibid*, Regulation 2(a)
[777]*Ibid*, Regulation 43; which is the interpretation part defines the word "Quarry" as not including an excavation or system of excavation made for the purpose of or in connection with the extraction of such minerals or products of minerals where the exclusive purpose of that extraction is to enable minerals or products to be used for any building, civil engineering or engineering construction work on site at which such extraction has taken place.
[778]*Ibid*, Regulation 2(b)

water;[779] prevent air and noise pollution;[780] ensure control and use of commercial (blasting) explosives;[781] and ensure the safety of workers in the quarry and the public in general.[782] The Regulations is implanted with the precautionary principle, polluter pays principle and the holistic concept of sustainable development.

The Regulation by way of a self-assessment strategy towards preventing or mitigating environmental degradation by the mining of solid minerals in Nigeria articulated the basic principles underlining the philosophy for specifying the Regulations when it *inter alia* provided that the precautionary principle shall be observed- where there are threats of serious or irreversible damage, the absence of scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation.[783]This regulation particularly resonate the long standing principle of precaution engrained in Principle 15 of the Rio Declaration[784]which provides thus: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." It must however be mentioned that the phrase "according to their capabilities" is nebulous, lacks specificity and may constitute barrier for objective assessment and attainment of sustainable development.

Furthermore, according to the Regulations while the polluter-pays-principle[785] shall be applied to discourage air, water and land pollution,[786] quarrying and blasting operations are to be conducted

[779]*Ibid*, Regulation 2(d)
[780]*Ibid*, Regulation 2(f)
[781]*Ibid*, Regulation 2(g)
[782]*Ibid*, Regulation 2(i). Also, see generally Ladan(2014),o*p cit*, p.312
[783]Regulation 3(1), National Environmental (Quarrying and Blasting Operations) Regulations, 2013
[784] Rio De Janeiro Conference in 1992
[785] By Regulation 43, National Environmental (Quarrying and Blasting Operations) Regulations, 2013 the

using the best available technologies that are environment-friendly.[787]Extraction of rocks shall be carried out with adequate protection of the environment, plant, man, animal and the general ecosystem.[788]In order to further entrench the kernel of sustainable development in the mining sector, the Regulation in a forward-looking manner provided and mandated on mineral title holders post quarrying, mine closure, land rehabilitation, resuscitation and remediation plans to form an integral part of the pre-conditional requirements for approval to operate a quarry, the provisions of which shall be enforced by the Agency.[789]This provision also implants the polluter-pays-principle and the principle of precaution in order to either prevent as in the latter principle or mitigate as in the former principle, environmental degradation by the mining of solid minerals in Nigeria since quarrying activities are quite predominant in Nigeria causing all forms of environmental degradation.

The Regulation prescribed myriad of measures for ensuring the health and safety of workers and all persons lawfully on quarry sites. To this extent the quarry operator shall *inter alia* 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.[790]

It will appear that some quarry operators for myriad of reasons including economic and lackadaisical approach to environmental sustainability in the mining sector, are not in compliance with a lot of provisions enunciated herein particularly on the need to provide field workers with PPE. To corroborate this, recently about four hundred miners (present at Town Hall Meetings on

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polluter-pays- principle means that a company or person that causes pollution should pay for the cost of removing it or providecompensation to those who have been affected by it.

[786]*Ibid*, Regulation 3(2)
[787]*Ibid*, Regulation 3(3)
[788]*Ibid*, Regulation 3(4)
[789]*Ibid*, Regulation 3(8)
[790]*Ibid*, Regulation 11

artisanal mining held for Osun and Ekiti States of Nigeria organized by NESREA in 2012) were provided with PPE including helmets, overalls, boots, safety goggles, gloves and nose masks.[791]More recently, some of the challenges of the Agency were stated to include insufficient PPE for relevant staff.[792]

In order to protect the environment from air and noise pollution by the mining of solid minerals in Nigeria, the Regulation provided that Dust and Particulate Matters (PM) emitted from all operations in the quarry shall be abated and suppressed using the best available technologies;[793] while similarly noise pollution shall not exceed the maximum acceptable limit of 114 dB as set out in the National Environmental (Noise Standards and Control) Regulations.[794] The phrase "best available technology" is nebulous and lacks clarity; as it encourages non-compliance and undermines the capacity of enforcement officers to perform their roles. Consequently, the specification of the technology required should be clearly stated to aid compliance and enforcement.

The Regulations provides for the service of enforcement notice on operators, the circumstances under which an enforcement notice shall be served and the content of such notices. Earlier comments made in respect of this issue are adopted *mutatis mutandis.*It further entrenches the precept of fairness, transparency and justice when it stated that every facility shall be given equal treatment without preference as far as inspection and enforcement of relevant laws are concerned.[795] In the same vein earlier comments on this issue are adopted *mutatis mutandis*. Conclusively, the Regulations created offences for the violation of its provisions and specified

[791]Nesreanews (2012), vol 14, p.17
[792]Nesreanews (2015), vol 27 Jan-April, p.12
[793]Regulation 12, National Environmental (Quarrying and Blasting Operations) Regulations, 2013
[794]*Ibid*, Regulation 13
[795]*Ibid*, Regulation 40

the penalty of a fine of not less than N1,000,000.00 or imprisonment for a term not exceeding two years or to both such fine and imprisonment for individuals convicted of such offences and the penalty of a fine not less than N10,000,000.00 where the offender is a corporate body. Thislatter fine is far in excess of the highest sum of N2,000,000.00 stated in the principal Act and may create problems for enforcement.

4.2.16.4**National Environmental (Permitting and Licensing System) Regulations, 2009**The purpose of these Regulations is *inter alia*, to enable consistent application of Environmental Laws, Regulations and Standards in all sectors of the economy and geographical regions.[796]The Regulations is underpinned by the holistic concept of sustainable development and it has at its core the need to enhance transparency and the consistent application of environmental laws, regulations and standards for the overall protection of the environment. The Agency is charged with the administration of the permit system and the processing, issuance, renewal, amendment and suspension of permits. To this extent, the Agency is empowered to fix various fees for relevant services such as application fees, processing fees, permit fees, amendment fees, renewal fees, re-hearing fees and appeal fees.[797]The underlining cardinal principles behind this Regulations is that of prevention and mitigation taking into particular consideration the issue of environmental degradation inherent in the activities of the various sectors of the economy.

The Regulations gives NESREA the power to issue various permits to operators and industry players whose activities are likely to violate or breach set thresholds for various aspects of the environment e.g land, air and water subject to terms and conditions as deemed appropriate. Some of the permits required by operators and industry players as enunciated or specified in various

[796]Regulation 1, National Environmental Permitting and Licensing System) Regulations 2009
[797]*Ibid*, Regulation 4

Regulations relating to the subject matter of this thesis include Mine Emission Permit, Waste Management Permit, Effluent Permit, Hazardous Waste Permit, Blasting Permit, Air Quality Permit, Waste or Stagnant Water Permit.

The need for coordination as cardinal requirement for ensuring the protection and sustainability of the environment appear not to have been properly articulated by the Regulations; this is in the light of the fact that the Regulations failed to specify or list the permits that an interested person may require in his activities. To arrive at this, an interested person will need to wade through the provisions of all the Regulations issued by NESREA to ascertain relevant permits required by him.

4.2.16.5 **National Environmental (Sanitation and Wastes Control) Regulations, 2009**

The purpose of theNational Environmental (Sanitation and Wastes Control)Regulations (hereinafter referred to as "N.E(SWC)R") is the adoption of sustainable development and environment- friendly practices[798] in environmental sanitation and waste management to minimize pollution.[799] The thrust of the discussion here is the relevance of the N.E(SWC)R to the area of waste management and minimization of degradation particularly as it concerns the matter of the protection of the environment from the mining of solid minerals in Nigeria. The N.E(SWC)R 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 the safe and

[798]*Ibid*, Regulation 106(1), which states "sustainable environment friendly practices" means a waste management method that takes all practical steps to ensure that waste is managed in a manner that will protect human health and the environment against the adverse effects which may result from the waste with optimum utilization of resources.

[799]Regulation 2, National Environmental (Sanitation and Wastes Control) Regulations, 2009

environmental sound disposal of their wastes[800]; also generators and managers of wastes are to apply sustainable practices to minimize pollution.[801]

The points, media or areas of the environment that the N.E.(SWC)R seeks to protect as relevant to the subject of this thesis include water, hazardous wastes and its treatment. The Regulations therefore prohibits persons from viz: engaging in acts which directly or indirectly cause or may cause immediate or subsequent water pollution;[802]throwing or causing to flow into or near a water body any liquid, solid or gaseous substance;[803]the discharge or application of any poison, toxic, noxious or obstructing matter, radioactive waste or other pollutants or permitting any person to dump or discharge such matter into the natural environment;[804]engaging in any activity likely to generate any hazardous waste[805] without a permit issued by the Agency.[806] The N.E.(SWC)R further made provisions for treatment of hazardous waste, transit permit in case of export of the waste, Prior Informed Consent for wastes destined for other countries transiting through Nigeria and the requirement for an applicant for a permit to subscribe to an insurance policy covering the risks likely to arise out of the activity for which the licence is required.

The service of enforcement notice and the circumstances under which it could be issued are cardinal aspects of the Regulations. Therefore, comments and observations made earlier in this thesis on the issue of enforcement notice apply *mutatis mutandis*. The N.E.(SWC)R created offences and punishments to penalise those who contravene its provisions and to dissuade those

[800]*Ibid,* Regulation 14
[801]*Ibid,* Regulation 15
[802]*Ibid,* Regulation 36(1)
[803]*Ibid,* Regulation 36 (2)
[804]*Ibid,* Regulation 39(1)
[805]*Ibid,* Regulation 106, which defines hazardous waste as any waste or combination of wastes that exhibits ignitable, corrosive, reactive, or toxic characteristics and poses a substantial danger, now or in future to human, plant or animal life, and which therefore cannot be handled or disposed of without special precautions.
[806]*Ibid,* Regulation 44

who are likely to engage in similar acts of contravention. Punishment for offences range from a fine of N20,000.00 or imprisonment for six (6) months or to both such fine and imprisonment, to N5,000,000.00 or imprisonment for five (5) years or to both such fine and imprisonment. This latter fine is far in excess of the highest sum of N2,000,000.00 stated in the principal Act and therefore may be a clog to enforcement.

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

The National Environmental (Surface and Ground Water Quality Control) Regulations (hereinafter referred to as "N.E.(SGWQC)R" is divided into Parts A & B. The purpose of the N.E.(SGWQC)R in Part A 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 reduction and prevention of pollution and degradation of surface water sources and recognition of the preventive, precautionary and polluter-pays-principles.[807] The N.E.(SGWQC)R prohibit the discharge of pollutants into any waters of the nation or activities which the Agency determines will likely result in the violation of water quality.[808]

In the overriding interest of protection of the environment from degradation by the mining of solid minerals, the Regulations provides that "a person shall not discharge hazardous wastes or hazardous substances into the surface waters of the nation, except in compliance with the provisions of the N.E.(SGWQC)R or other applicable laws, in accordance with the terms and

[807]Regulation 1, National Environmental (Surface and Ground Water Quality Control) Regulations, 2011
[808]*Ibid,* Regulations 6-8

conditions of an approval issued by the Agency.[809]The N.E.(SGWQC)R recognises mining activities as one of human activities that degrades water quality through the release or dumping of substances in waters and therefore prohibits same.

Part B of the N.E.(SGWQC)R deals with Ground Water Quality Control; its purpose is to protect ground water sources by regulating the discharge and underground injection of hazardous wastes, fluids used for extraction of minerals, fossil fuels energy, any other substances having the potential to contaminate ground water.[810]The N.E.(SGWQC)R classifies wells into 5 categories however the one that is germane to this discourse is *inter alia* "wells used for extraction of minerals including mining of sulphur by Frasch process.[811]Mining of solid minerals inexorably degrades water quality. Abandoned wells pose safety and environmental problems because they act as direct paths for contaminants to reach ground water and such contaminants may percolate far into the aquifer with time and adversely deteriorate the quality of ground water within and outside the vicinity of the abandoned well.[812]The philosophy underlining the issuance of the N.E.(SGWQC)R from the foregoing discussion is the need to protect the nation's water bodies particularly, underground water from degradation by the adoption of the prevention, precautionary and remedial principles.

4.3**Mechanisms for Enforcement of Environmental Protection in Nigeria**

The provisions of laws, regulations and guidelines are meant to be obeyed or complied with. NESREA possesses broad enforcement powers for the purpose of enforcing the provisions of the Act,[813]other laws, regulations, standards and guidelines on the subject matter of this thesis.

[809]*Ibid*, Regulation 13(3)
[810]*Ibid*, Regulation 19
[811]*Ibid*, Regulation 20(1)(c)
[812]Regulation 30(2)(g), *ibid*
[813]Ladan, M.T. (2014).*Op cit*, p.279

Considered below are the enforcement mechanisms for the protection of the environment by mining of solid minerals in Nigeria:

i. **Search:**An officer of the Agency may enter and search with a warrant issued by a court, any premises including land, vehicle, tent, floating craft except Maritime Tankers, Barges or Floating Production, Storages, Offload (FPSO) and oil and gas facilities or any inland water and other structures, at all times, for the purpose of conducting, inspection, searching and taking samples for analysis which he reasonably believes, carries out activities or stores goods which contravene environmental standards or legislation.[814]The requirement of a search warrant brings the NESREA Act in conformity with the Criminal Procedure Code (CPC) and the Criminal Procedure Act (CPA) where a warrant is required for a search to be lawful.[815]The justification for this encouraging development is found in section 37 of the Constitution which guarantees the rights of citizens to privacy.It must however be explained that under the CPC,[816] CPA[817]and Administration of Criminal Justice Act (ACJA)[818]where a suspect is arrested by a police officer or private person, the officer making the arrest or to whom the private person hands over the suspect may search the suspect, using such force as may be reasonably necessary for the purpose[819] in order to aid enforcement of justice. This constitutes circumstance under which search may be conducted on a person without

[814]Section 30(1)(a), National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2007
[815]Ladan, M.T. (2014).*Op cit*, p.280
[816]Section 44(1), Criminal Procedure Code
[817]Section 6(1), Criminal Procedure Act, Cap.C41, Laws of the Federation of Nigeria, 2004
[818]Section 9(1)(a),Administration of Criminal Justice Act, 2015. This Act is applicable in the courts of the Federal Capital Territory and Other Federal Courts in Nigeria.
[819]*Ibid*

warrant. The provisions of the CPC and CPA are similar to that of the ACJA reproduced above.

ii. **Seizure, Detention and Confiscation:** The officers may seize and detain for such time as may be necessary for the purpose of the Act, any article by means of or in relation to which he reasonably believes any provision of the Act or its regulations has been contravened.[820]The Agency may seize, impound, confiscate or prohibit the use of any property, tool, machinery, or other instrument which is likely to, or has caused the emission of excessive noise, if, in the Agency's opinion the sanction would restore the permissible noise level in the area.[821]Similarly, the Federal Ministry of Mines and Steel Development through its departments, units and agencies may seize any tool, implement, equipment or vehicle used in committing an offence;[822]and also any mineral won illegally.[823]

iii. **Suspension of Activities or Sealing by Order of Court:** An officer may obtain an order of a court to suspend activities, seal and close down premises including land, vehicle, tent, vessel, floating craft or any inland water and other structure whatsoever.[824]However, under the Mining Regulations, the Federal Ministry of Mines and Steel Development shall through its departments, units and agencies 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

[820]Section 30(1)(f), National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2007
[821]Regulation 12(1), National Environmental (Noise Standards and Control) Regulations, 2009
[822]Regulation 6(1)(c)(ii), Nigerian Minerals and Mining Regulations, 2011
[823]Section 146(1)(b), Nigerian Minerals and Mining Act, No. 20, 2007
[824]Section 30(1)(g), National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2005

defective.[825]NESREA also has the powers to suspend or cancel a permit issued by it pursuant to extant Regulations.[826]

iv. **Investigation, Examination and Inspection:** An officer is empowered to examine any article found pursuant to a search exercise which he reasonably believes is capable of being used to the detriment of the environment;[827]take sample or specimen of any relevant article for examination;[828]open and examine any container or package which he reasonably believes may contain any information relevant to the enforcement of the Act or its regulations and submit such articles to analyst for analysis and examination and a report or certificate issued thereon.[829]The Federal Ministry of Mines and Steel Development through its departments, units and agencies have powers to authorize or carry out inspection over mining operations.[830]

v. **Power of Arrest:** An arrest could be by warrant or without warrant. In the discharge of its functions, the Federal Ministry of Mines and Steel Development, through officers of its departments, units and agencies may, arrest without warrant any person found committing or reasonably suspected to have committed an offence under the Nigerian Minerals and Mining Act or the Regulations.[831]The persons who may effect arrest without a warrant are Police Officers,[832] Magistrates or Judges[833]and Private persons.[834]

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[825]Regulation 6(1)(c)(iv), Nigerian Minerals and Mining Regulations, 2011
[826]Regulations 20 & 27, National Environmental (Permitting and Licensing System) Regulations, 2009
[827]Section 30(1)(b), National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2007
[828]*Ibid*, Section 30(1)(c)
[829]*Ibid*, section 30(4)
[830]Regulation 6(1)(b),Nigerian Minerals and Mining Regulations, 2011
[831]*Ibid*,Regulation 6(1)(c)(i)
[832]Section 24, Police Act, Cap. P19, Laws of the Federation of Nigeria, 2004; Section 10, Criminal Procedure Act, Cap. C41, Laws of the Federation of Nigeria, 2004 and Section 26, Criminal Procedure Code, Cap. 30, Laws of Northern Nigeria.
[833]Sections 15 & 16, Criminal Procedure Act, Cap. C41, Laws of the Federation of Nigeria, 2004 and Sections 29(1) &30(1), Criminal Procedure Code, Cap. 30, Laws of Northern Nigeria.
[834] Section 12, Criminal Procedure Act, Cap. C41, Laws of the Federation of Nigeria, 2004 and Section 28,

vi. **Power to issue Directives:** Regulation 155(a) obligates the Ministry through the Mines Environmental Compliance Department to issue directives and take such steps as may be necessary to enforce compliance with all laws and regulations relating to the protection, reclamation and rehabilitation and social issues of any mining environment.

vii. **Power to issue Improvement or Enforcement Notices:** This is one of the predominant methods for enforcing compliance with environmental laws, regulations and standards. The adoption of this method engrains better regulatory compliance and the protection of the environment from degradation by the mining of solid minerals. Where the Agency believes that any discharge(s) or activity(ies) is likely to violate the provisions of Regulations, the Agency may serve an improvement notice on that person ordering compliance with the Regulations.[835]An enforcement notice shall *inter alia* specify the steps that must be taken to remedy the contravention or to remedy the matters making it likely that the contravention will arise, as the case may be.[836]

viii. **Criminal Prosecution:** In deserving circumstances, the Federal Government of Nigeria through the office of the Attorney-General of the Federation may, commence criminal case against any person who has violated the provisions of any extant law and regulations relating to the degradation of the environment by the mining of solid minerals in Nigeria. Subject to the provision of section 174 of the Constitution of the Federal Republic of Nigeria, 1999 (as amended), an officer of the Agency may, with the

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Criminal Procedure Code, Cap.30, Laws of Northern Nigeria.

[835]Regulation 33(1), National Environmental (Surface and Groundwater Quality Control) Regulations, 2011; See alsoRegulation 11, National Environmental (Noise Standards and Control) Regulations, 2009; Regulation 36, National Environmental (Quarrying and Blasting Operations) Regulations, 2013

[836]Regulation 68(2)(b), National Environmental (Sanitation and Wastes Control) Regulations, 2009

consent of the Attorney-General of the Federation, conduct criminal proceedings in respect of offences under the NESREA Act or regulations made pursuant thereto.[837]

ix. **Civil Actions:** An aggrieved person whose rights have been violated by incidences or acts of degradation by mining of solid minerals e.g degradation of land, water and air resources where not compensated may commence civil action against the person(s) who caused the degradation and seek for declaration, injunctions, damages for acts of negligence, nuisance and trespass. Upon the authority of the case of*Adediran&ano.v.Interland& Transport Ltd*.[838]nuisance whether public or private is an injury which confers on the person affected a right of action, a private person can maintain an action in public nuisance provided he can prove that he suffered personal injury sufficient to ground the action.[839]Furthermore, under resolution of disputes by arbitration, a party who wins an award could apply to a court of competent jurisdiction for its enforcement through the court system.

x. **Mobile Courts:** The National Environmental Standards and Regulations Enforcement Agency (Establishment) Act[840]empowered the Agency to establish mobile courts in collaboration with relevant judicial authorities subject to the provisions of the Constitution to expeditiously dispense cases of violation of environmental regulations. These mobile courts are yet to be established and made functional; when established the mobile courts will no doubt assist in enforcing cases of violation of environmental regulations including those appertaining to mining of solid minerals and its deleterious

[837]Section 32(3), National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2007
[838](1991) 9 NWLR (pt. 214) 155
[839]Aigbokhaevbo, V.O. and Achi, D.T. (2014). An Assessment of the Efficacy of Private Remedies for Pollution Damage Under Nigerian Law. *Ahmadu Bello University, Journal of Private and Comparative Law, Vols. 6 & 7*, p.9
[840]Section 8(f), National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2007

effects. For clarity and effectiveness, and in order to bring the proposed mobile courts within the contemplation of the framework of administration of justice as provided by section 37 of the NESREA Act, the definition of "Courts" provided therein may have to be amended to include mobile courts in cases relating to the violation of environmental regulations. Alternatively, pending the proposed amendment, Judges of the Federal High Court could subject to Direction of the Hon. Chief Judge of the Federal High Court, sit as presiding Judges of such mobile courts and dispense cases.

In conclusion, it is clear from the foregoing discussion, that Nigeria has plethora of laws and regulations for the protection of the environment from degradation by mining of solid minerals. However, this legal regime may have been undermined to some extent by *inter alia*gaps in our laws, contradictions between and amongst legislations, nebulous and unclear provisions, and lack of implementation or enforcement of the provisions of these laws and regulations.[841]

[841]Akper, P.T. *Op cit*, p.190

CHAPTER FIVE

INSTITUTIONAL FRAMEWORK FOR REGULATING THE IMPACTS OFMINING OF MINERALS ON THE ENVIRONMENT IN NIGERIA.

5.1 Introduction

The environment is the natural habitat of mankind and containsGod-given resources which include solid mineral resources whose exploitation is necessary in order to advance human needs and development. However, the exploitation of these mineral resources has negative consequences for the environment.[842] It is therefore important to strike a balance between man's innate desire to conquer his environment for development and prosperity and the need to protect the environment from degradation by mining of solid minerals. These contending demands are both germane and must therefore be balanced to enable one generation (the present) satisfy its needs without jeopardising or compromising the desire or right of succeeding generations to meet their own needs. The need to establish institutions and agencies to manage and reconcile these contending interests through coordination and efficient and effective management of the environment becomes imperative.

Consequently, institutional frameworks are *sine qua non* to the execution or implementation of laws, regulations,guidelines and policies which by themselves are not auto or self-executing. According to Salu,[843] "the greatest obstacle however to the problem of protecting the environment through our laws, is that of enforcement."Laws, regulations,

[842]Akper, P.T. (2011). "Addressing Environmental Concerns in the Exploitation of Solid Minerals in Nigeria: Issues, Problems and Prospects." In: Fagbohun O. (ed.)*NIALS Journal of Environmental Law (2011) Vol. 1,* p.183

[843]Salu, A.O. (1998). "Can Laws Protect the Environment in Nigeria?",*Modern Practice Journal of Finance and Investment Law*, Vol. 2. No. 2, p.140

guidelines and policies by themselves without being diligently, efficiently and effectively implemented by appropriate institutions viz; Ministries, Parastatals, Agencies, Bodies and other such similar organizations, would continue to constitute impotent letters or provisions; until given life by their implementation in accordance with law and due process.

The purpose of the examination of the institutional framework that follows in thisChapter is to, amongst others, review the structure of the institutions, their compliance with the provisions of relevant laws, their efficiency and effectiveness in translating the letters of the law in the domain of implementation and execution, to protect the environment from degradation by the mining of solid minerals in Nigeria.

5.2 Institutional Framework

Adumbrated and examined hereunder are cardinal institutions which altogether constitute the body of institutional framework relating to this thesis. It is pertinent to reiterate that without relevant and appropriate institutions to define the vision and role for implementation of relevant laws and regulations in the realm of protection of the environment from degradation by mining of solid minerals, the environment will continuously remain degraded and humankind will be at a great loss.

5.2.1Federal Ministryof Minesand Steel Development

The Federal Ministry of Mines and Steel Development as it is now called, was established in June 1995 during the military regime as the "Federal Ministry of Solid Minerals Development" in order to "accelerate the development of the country's solid mineral

resources."[844]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 earnings; enhanced tax revenue; industrialization; poverty alleviation and job creation.[845]It should be noted that the foregoing enumerated matterscenter on those activities that yield revenue to the government and omits the important aspect of the protection of the environment by, prevention or mitigation of environmental degradation by mining of solid minerals which are expected outcomes of the exploitation of solid minerals. Consequently, the need to strike a good balance and maintain harmony between the quest for development through the mining of solid minerals and the protection of the environment from degradation by the same mining of solid minerals becomes a task of utmost importance and priority to all stakeholders including particularly the specific institutions set up to carry out this herculean task.

Prior to the establishment of the Ministry in June 1995, issues relating to mining of solid minerals were handled by departments or units in some other related Ministries over time such as the Federal Ministry of Works & Housing and Federal Ministry of Mines and Petroleum Resources. However, from June 1995 till date, issues relating to the mining of solid minerals have been handled and coordinated by a full-fledge Ministry in coordination with relevant Government agencies.Also, at a time in our annals, the responsibilities and functions appertaining to the protection of the environment from deleterious and harmful impacts (of the exploration and exploitation of solid minerals) resided with the Federal Environmental Protection Agency (FEPA) which was established in 1988 pursuant to the

[844]Mines & Steel Review, October-December 2012, Vol. 1 No. 3, p. 2
[845]Mines & Steel Review, December 2009, Vol. 1 No.1. p.6

provisions of Decree No. 58 1988. Currently, this role is shared between NESREA (the lead agency of government charged with the protection of the environment) and the Ministry.

The Federal Ministry of Mines and Steel Development has various departments, units and some agencies as provided for in the Nigerian Minerals and Mining Act. The Act also mandated the Minister to specifically establish departments when it provided that "for the purposes of carrying out his functions under the Act, the Minister shall establish in the Ministry-(a) a Mines Inspectorate Department;(b) a Mines Environmental Compliance Department; and(c) such other departments as he may consider expedient for the proper administration of the Act."[846]The key technical departments of the Ministry whose roles and responsibilities have bearing on the issue of protection of the environment from degradation by the mining of solid minerals in Nigeria, are considered hereunder:

5.2.1.1 **Mines Environmental Compliance Department**

This department isone of the technical and statutory departments in the Ministry and has its functions and responsibilities given by the N.M.M.A.[847]It functions includereviewing all plans, studies and reports required to be prepared by the Holders of Mineraltitle in respect of their environmental obligations under the N.M.M.A.;monitoring and enforcing compliance by holders of mineral title with all environmental requirements and obligations established pursuant to the Act, its regulations and by any other law in force; periodically audit the environmental requirements and obligations established pursuant tothe

[846]Section 16 (1), Nigerian Minerals and Mining Act, No. 20, 2007. In addition to the clear and omnibus provision of section 16 (l)(c) of the Act, section 4(p)ofthe Act also empowers the Hon. Minister of Mines and Steel Development to cause to be created, such departments and agencies as are necessary for the effective administration of the Act.
[847]*Ibid*, Section 18

N.M.M.A., its regulations and by any other law in force and make recommendations thereonto the Minister; and liaise with relevant agencies of Government with respect to the social and environmentissues involved in mining operations, Mine closure and reclamation of land.[848]

These functions give the Ministry through the MEC Department the power to *inter alia* coordinate and resolve matters relating to the protection of the environment from degradation by the mining of solid minerals in Nigeria. It is therefore the considered opinion of this scholar that the functions of the department as given by the N.M.M.A. are adequate for the purpose of ensuring the protection of the environment from degradation by the mining of solid minerals in Nigeria.From the foregoing, the duties of the department is interlaced or engrained with the preventive principle, remedial principle and the need to attain sustainable development in the industry in order to protect the environment from degradation by the mining of solid minerals.

In a bid to ensuring that leaseholders (in this instance includingartisanal and small scale miners) undertake the rehabilitation of mined out areas after mining activities pursuant to thegrant of mining lease, section 90 (2) stipulates that "All lease holders shall carry out effective rehabilitation of the mined out areas to the satisfaction of the Mines Environmental Compliance Department and also pay prescribed rehabilitation fee, proportionate to their profits as a way to defray further cost of rehabilitation and reclamation".

[848]*Ibid*

As has been severally mentioned, the provisions of some sections of the Act constitute clogs to their enforcement e.g, the provision of section 90(2) of the Act creates a problem of enforcement for the Mines Environmental Compliance Department as earlier articulated in this research work. It is an open fact that in Nigeria for the purpose of self-serving interests, usually 3 types of accounts are prepared by companies and businesses viz: one for the internal use of the company or business which reflects the real financial position of the company or business, the second for regulatory authorities and the third for the public/customers. With this intrigues, it will be difficult, if not almost impossible to verify and assess the actual dues from lease holders as proportionate parts of their profits when no percentage was specified by thesection. Assuming a percentage was even specified, the issue of trinity of accounts will obviously act as a clog to the determination of the due for rehabilitation and reclamation of mined out areas.

To ensure that the issue of rehabilitation and reclamation of mined out areas or fieldsby lease holders is given the desired attention and is raised to the pedestal of relevance so as to assist in the protection of the environment from degradation by the mining of solid minerals, it is important that in order to make the task of the MEC realizable, it is opined that section 90(2) of the N.M.M.A.may be amended to*inter alia* take care ofthe following identified gaps viz:

(a) To specify the proportionate percentage of profits of operators to be used for rehabilitation and reclamation of mined out areas or fields. To this extent, 2.5% of the profits of leaseholders is recommended. This will not only assist the MEC department in the discharge of its functions but the collection of these monies when deployed for

rehabilitation and reclamation of mined out areas, will go a long way in contributing to the protection of the environment from degradation by mining of solid minerals in Nigeria.

(b) The accounts of lease holders should be audited annually by selected reputable Audit firms in order to determine the actual or real profit positions of lease holders so as to calculate the percentage of proportionate profit to be set aside for the purpose of rehabilitation and reclamation of mined out areas or fields. Once this is done, the amounts realized should be judiciously utilized for the purpose of mine rehabilitation and reclamation.

(c) Other clear provisions for rehabilitation or reclamation of mined out areas should be made taking into consideration situations or years where or when operators do not make profits from their business of mining of solid minerals. The reason behind this suggestion is so as not to leave mined-out sites un-catered in years when profits are not made by leaseholders. For this purpose an intervention fund should be set up to be recouped from leaseholders in subsequent year(s) of profitability in their businesses. It is therefore recommended that in order to give legal basis for this opinion, and to strengthen the mandate of MEC Department in the quest for protection of the environment from degradation by the mining of solid minerals in Nigeria, it is opined that the N.M.M.A.may have to be amended by the creation of a new section 90(3) to read thus:

“A special fund is hereby created to be administered by the Ministry for environmental rehabilitation and reclamation of mined sites to carter for years when leaseholders do not make profits from their businesses; such intervention fund when utilized by MEC Department shall be a loan to such companies/persons who were unable to contribute the

prescribed percentage; owing to a declaration of loss in their operations provided however that it shall be a criminal offence punishable under sections 131(c) and 133 of the Act, with a penalty of N20million upon conviction for any company who makes false declaration or report." Consequently, the current section 90(3) of the Act should be re-numbered section 90(4).

The N.M.M.A.contains various provisions which empowers the Ministry particularly the MEC Department to ensure the protection and sustainability of the environment so that the effects of mining on the environment by way of degradation are avoided by imbibing the practice or principle of pre-caution which is a corner stone of environmental sustainability; and where this cannot be effectively achieved, by ensuring that the deleterious effects of mining on the environment are mitigated or cushioned.According to Akper,

> to ensure that the concerns clearly articulated and prioritized in the [National Minerals and] Mining Policy [of 2008] are implemented, the relevant technical departments were created. The technical department relevant to our discourse [according to the learned scholar] is the Mines Environmental Compliance (MEC) charged with the responsibility of enforcing global environmental best practices in mining. The department was created with the realization that the solid minerals industry must strive to maintain an acceptable environment standard within the sector. The MEC is thus charged with the responsibility to ensure that the mining industry operates in concert with the environment by adopting, operating and maintaining procedures that are environmentally friendly.[849]

The above submission by the scholar, relating to the technical departments created by theNational Minerals and Mining Policy (assuming without conceding that the said departments were truly and properly created by the policy) omitted to state clearly that the said technical departments were created by the Policy in the Federal Ministry of Mines and Steel Development. A curious and agitated mind particularly a scholar is left with a guess in finding out where these technical departments are domiciled. Consequently, it is

[849]Akper,P.T., *op cit*,pp.187&188

submitted with due respect that reference by Akper[850] and the citation of the functions of the MEC as encapsulated in the Policy when in fact the N.M.M.A is the extant law on the issue is an act of inadvertence or oversight. At this juncture, it is necessary to surmise that the MID and MEC Department were not created by the Policy but rather the two departments were clearly established by the provisions of the Act.[851] The correlative functions of these 2 departments were also aptly codified in the N.M.M.A.[852]

The roles and functions of the MEC department as provided by the Policy are virtually the same with the ones given by the N.M.M.A. However, some functions similar to those in the Act were specified viz: stipulation of procedures for the reclamation and restoration of mines land; andmaintaining regular environmental audits to ensure the adoption of environmentally sound practices in all mining operations.It is submitted that the said functions may have been intended to complement the provisions of the N.M.M.A. on the subject. But whether this is necessary and could be achieved through the policy is better left for examination.

This is because, the Mineral and Mining Policy is a guide to action just like most policies and therefore their provisions cannot be enforced. The better means of ensuring that the text of the additions become useful in order to contribute to protecting the environment from degradation by the mining of solid minerals is for those provisions to be included in the N.M.M.A.via an amendment or alternatively, the Minister should make the provisions part of an extant Regulations on the subject matter. This is more so that the Policy was issued in 2008 while the N.M.M.A. was enacted in 2007.

[850]*Ibid*, p.187
[851]Section 16 (1), Nigerian Minerals and Mining Act, No. 20, 2007
[852]*Ibid*, Sections 17 & 18

This researcher holds the respectful view that the further functions of the MEC Department considered above do not posit a conflict regime between the said provisions and those of the N.M.M.A. It is nevertheless established that where there is a conflict between the provisions of an N.M.M.A. and that of a Policy, the provisions in the former supersedes the latter.For example, one of the Policy Goals contained in the National Policy on the Environment 1989 was to "secure for all Nigerians a quality of environment adequate for their health and well being". Paragraph 6 of the Policy, made provisions for legal arrangements to ensure the implementation of the policy and provided that action shall be taken to "make it a constitutional duty of governments-Federal, States and Local to safeguard the environment and aspire to have a safe and healthy nation"[853]According to Bello,

> This provision contained in the National Policy appears to be one of the motivations behind the provision of section 20 of the Nigerian Constitution 1999. It is significant indeed to note that the provisions of paragraph 6(c), was deleted in the updated version of the National Policy on the Environment published by the Federal Environmental Protection Agency in 1999. The provision became unnecessary because of the inclusion of section 20 in the 1999 Constitution.[854]

One of the cardinal responsibilities of MEC Department is stipulating procedures for the reclamation and restoration of mines land. It is however important to mention that a lot of mine sites are unfortunately still left substantially un-reclaimed or un-restored; which gives a clear indication or suggestion that the Ministry through its relevant technical departments is yet to ensure compliance with particular and germane provisions of sections 17 (a) (f) and 18 (d) of the N.M.M.A. as they relate to reclamation and restoration of mine sites. Examples of such include the Jos tin mine sites, the Enugu coal mine sites and the Okaba

[853]Bello, A. (2006)."Environmental Rights In Nigeria: Issues, Problems and Prospects", *Igbinedion University Law Journal, Vol. 4*, January 2006, p.70
[854]*Ibid*

coal mine sites. The details of the environmental ravage by the mining of solid minerals in those areas are already adumbrated and discussed in chapter one of this thesis.

The Ministry through the MEC Department therefore needs to up its ante if the task of protecting the environment from degradation by the mining of solid minerals in Nigeria is to receive the necessary boost. It is howeveradmitted that the financial lay-out for remediation or restoration of such mine sites are usually huge.[855]Special and adequate budgetary provisions spread over time should be made to ensure the protection of the environment from degradation by the mining of solid minerals.

As a first step in this direction, a significant highlight of the activities of the MEC Department in the year 2009 was the creation of an inventory of abandoned mines, with an appropriate action plan for their reclamation. So far, about 1,263 abandoned mine sites were identified and ranked for prioritization.[856]The Ministry through its MEC Department must however do more than the identification and prioritization of this abandoned mine sites and proceed to immediately do the needful in the circumstances. According to Akper,

> It is obvious from the mandate of MEC and the specific objectives of government in the mining sector that attempt have been made to make generous provisions for the protection of the environment. Given our past history, these provisions are revolutionary in the overall objective of protecting the environment from the harmful effects associated with mineral exploitation and development. As is the case in other sectors of the economy, Nigeria's problem has never been the inadequacy of legislation, but its faithful implementation.[857]

In the light of the capital intensive nature of rehabilitating, restoring, resuscitating, remediating mined out areas, it is imperative that special budgetary allocation should be

[855] The amount spent by the Federal Government of Nigeria in remediation of the BagegaVillages in Zamfara State of
Nigeria is a clear testimony.
[856]Mines and SteelReview, Vol. 1. No. 1 December, 2009 p.13
[857]Akper, P.T., *op cit*, p.190

made for this purpose while modern and environment-friendly equipment to mitigate the deleterious effects of mining on the environment are deployed. An equally important element in attaining this lofty objective is the training and retraining of staff of the Ministry in order for them to be abreast with modern and environment-friendly methods of actualizing its responsibilities.

5.2.1.2 **Mines Inspectorate Department**

The Mines Inspectorate Department, being one of the technical departments specifically set up by the N.M.M.A.[858] also plays a pivotal role in the protection of the environment from degradation by the mining of solid minerals through its inspectorate functions particularly as represented in the provisions of section 17 (a) (b) (f) & (h) of the N.M.M.A. The foregoing subsections by themselves individually or by their combined effect empowers the department to also take measures or steps to protect the environment from degradation by mining of solid minerals.

The Department is *inter- alia* responsible for exercising general supervision over allreconnaissance, exploration and mining operations to ensure their compliance with the N.M.M.A.;[859]supervising and enforcing compliance by mineral title holders with all mine health and safety regulations prescribed under the N.M.M.A. and any other law in force;[860] carrying out investigations andinspections necessary to ensure that all conditions relating to mineral titles and requirements ofthe N.M.M.A. are complied with;[861] and

[858]Section 17, Nigerian Minerals and Mining Act, No. 20, 2007
[859]*Ibid*, Section 17(a)
[860]*Ibid*, Section I7(b)
[861]*Ibid*, Section 17(f)

reviewing and recommending to the Minister, programmes for controlling mining operations.[862]

Generally speaking, the department is responsible for the enforcement of laws and regulations governing minerals exploitation, exploration, use and exportation and also carries outsurveillance and monitoring of mining and quarrying activities.[863]From the foregoing, the duties of the department is interlaced or engrained with the preventive principle, remedial principle and the need to attain sustainable development in the industry in order to protect the environment from degradation by the mining of solid minerals.

Some of the responsibilities, functions and specific objectives of the Department as conferred by the Policy includes general supervision of mining, quarrying and explosive matters to ensure safe mining operation and enhance high production of minerals and revenue generation; proper mine designs and development in accordance with best practices; supervision and enforcement of compliance by mineral title holders in all work programmes and safety regulations prescribed under the N.M.M.A. and any other law in force.[864]Earlier comments made in respect of the place of the provisions of the Policy and those of the N.M.M.A. apply *mutatis mutandis*.

The dire need to re-create a functional Mines Police to assist the department in the discharge of its duties is important. This is more so that the Nigerian Minerals and Mining Regulation[865]empowers an inspector of mines to request the assistance of the Nigerian Police Force, or any other persons to provide him or her with necessary security and

[862]*Ibid*, Section 17(h)
[863]Mines and Steel Review (December, 2009), Vol. 1. No. 1 p. 14
[864]Paragraph 7.1, National Minerals and Metals Policy, 2008
[865]Regulation 122(2)(i), Nigerian Minerals and Mining Regulations, 2011

protection or otherwise needed for the lawful discharge of his powers, duties or functions under the N.M.M.A. or N.M.M.R.According to Akper,

> The Mines field Police who are charged with the responsibility of patrolling mine sites, and apprehending those involved in illegal mining activities or whose operations contravene the Mining Act and applicable regulations has been largely comatose. To rid the sector of disorderly mining operations and protect the environment, there is the need to re-invigorate the Mines Field Police to work in concert with the Mines Inspectorate Department to supervise the mine fields and ensure that mining is being carried out in accordance with the dictates of the law. Although, voluntary compliance measures such as tax rebates on environmental protection measures adopted by industry operators is been advocated, provision must be made for those who fail, refuse or neglect to voluntarily comply with the requirements of the law.[866]

The foregoing submission by Akper, further underscores the relevance and utility value of the Mines Police within the framework of enforcing compliance with the investigation and inspectorate duties of the department. This practice if re-imbibed will enhance the gains of protection of the environment from degradation by the mining of solid minerals.

5.2.1.3 **Artisanal and Small Scale Mining Department**

The Artisanal and Small Scale Mining Department (ASMD) monitors and oversees small scale mining activities in the Country.[867]The ASMD which featured as a department of the Ministry in the Policy did not get a specific mention as a Department in section 16 (1) of the N.M.M.A. A consideration of the provisions of the Nigerian Minerals and Mining Act[868] would reveal that this department was not specifically mentioned as one of departments in the Ministry of Mines and Steel Development. It must be reiterated that the Honourable Minister, Ministry of Mines and Steel Development was granted the omnibus power to establish other departments for the proper administration of the N.M.M.A.[869]This lacunae or situation of the non-mention of the ASMD as a department of the Ministry in

[866]Akper, P.T., *op cit*, pp.195-196
[867]Mines and Steel Review (December, 2009), Vol. 1. No. 1 p.12
[868]Section 16(1), Nigerian Minerals and Mining Act, No. 20, 2007
[869]*Ibid*, Section 16(1)(c)

section 16 (1) of the N.M.M.A. was however assuaged by a later provision of the Act[870] which states that the Small Scale and Artisanal Mining Department shall ensure that mining activities are restricted to the established zones of mineralization.

This provision by itself is obscure and inelegantly drafted it neither state that the department should be listed in addition to the departments mentioned in section 16 (1) of the N.M.M.A. nor did it categorically and unambiguously mention in section 90 (3) that the ASMD which it created by that section and assigned functions, is a Department under the Ministry of Mines and Steel Development or better still the Ministry in charge of Solid Minerals Development. The implication of this, it is humbly submitted is that though, the ASMD was not mentioned in the N.M.M.A. as a Department under the Ministry, it may be deductible that the ASMD is a department under the Ministry by virtue of the core mandate relating to mining assigned to it by section 90 (3) of the Act.

It is further opined that the Minister of Mines and Steel Development must have exercised his powers pursuant to section 4 (p) & (t) of the N.M.M.A. and vide the Policy[871] issued in January, 2008 to specifically bring the ASMD established by section 90 (3) of the N.M.M.A. under the fold of the Ministry. To this extent, thisresearcher submits that there is no incongruence between the provisions of section 16(1) of the N.M.M.A. and paragraph 7.0 of the Policy as it relates to the issue of setting up the ASMD. It must be noted that section 90 (3) of the N.M.M.A. which created the ASMD did not specify its functions and responsibilities. It is humble opined that this gap was appropriately filled by paragraph 7.3

[870] *Ibid*, Section 90(3)
[871] Minerals and Metal Policy, 2008

of the Policy. However, the better option is to amend the Act and specify the said functions therein or state them in an extant Regulation, issued pursuant to the N.M.M.A.

The requirements to be fulfilled by miners before they are recognized and formalized as small scale miners are stated in Section 49 of the N.M.M.A. The section provides thus:

> A qualified applicant for a Small Scale Mining Lease is-
>
> (a) a citizen of Nigeria with legal capacity and who has not been convicted of a criminal offence; or
>
> (b) a Mining Co-operative; or
>
> (e) a body corporate duly incorporated under the Companies and Allied Matters Act; or
>
> (d) the holder of an Exploration Licence granted in respect of the area subject to the application, provided that the applicant has fulfilled all conditions attached to the Exploration Licence."

The foregoing qualification requirements as specified by the N.M.M.A. are deemed liberal, as they accept large segment of interested applicants who meet pre-conditions to be licensed as ASM. To this extent individuals who meet the requirements would be so registered.[872] Albeit, the provision of Regulation 230 of the Nigerian Minerals and Mining Regulations seemed to have placed unnecessary emphasis on cooperative societies being the only eligible entity for registration as ASM. This is far from the truth in the light of the provisions of section 49 of the Act above.

The name- ASMD may have been derived from thefusion or nexus established between the key words "Artisanal" and "Small Scale" which could be found ascomponents of the definition of the phrase "Small Scale Mining" adopted by the N.M.M.A.[873]The N.M.M.A. defined the phrase “small scale mining” as meaning “Artisanal, Alluvial and other forms of

[872]

[873]Section 164, Nigerian Minerals and Mining Act, No. 20, 2007

Mining Operations involving the use of low level technology or application of methods not requiring substantial expenditure for the conduct of Mining Operations within a Small Scale."

Currently, Artisanal and Small Scale Mining represents a large percentage of mining operations in Nigeria. Over 90% of the nation's [solid] mineral production is currently carried out by Artisanal and Small-Scale Miners (ASM).[874] As was stated in Chapter two of this thesis, the activities of this group of miners contribute significantly to pollution and environmental degradation by the mining of solid minerals in Nigeria. No wonder a department was created to coordinate their operations in order to protect the environment from degradation by the mining of solid minerals. A former Minister of Mines and Steel Development[875] aptly recalled that "the past neglect of Artisanal and Small Scale Miners results in illegal mining activities, the consequences of which include; environmental degradation, life and health endangerment of the miners, loss of tax revenue to the government, poaching on titled claims, etc.[876]Akper, while alluding to the same issue posited thus:

> Small-Scale Miners who have been responsible for disorderly mining activities leading to the degradation of the environment have also been effectively regulated by the 2007 Act. It provides that holders of small scale mining lease shall carry out effective rehabilitation of the mined out areas to the satisfaction of the Mines Environmental Compliance Department and also pay prescribed rehabilitation fee, proportionate to their profits as a way to defray further cost of rehabilitation and reclamation.[877]

[874]Mines & Steel Review (2009), Vol.1 No.1 Dec., p.12
[875]Mrs. Alison-Madueke
[876]Mines & Steel Review (2009), Vol.1 No.1Dec., pp.20-21
[877]Akper, P.T., *op cit*, p.192

It has been reported, that Nigeria losses an average of about N8trillion every two years from the activities of illegal miners.[878]In 2009 alone, the federal government lost about S100 million (One hundred million United States dollars) in revenue to illegal mining.[879]The reason for the assertion that small scale miners and/or illegal miners are responsible for a large percentage of issues of degradation of the environment that emanate from the mining of solid minerals in Nigeria, is not far-fetched; and this includes the fact that this category of miners, deploy the most crude implements or low technology for mining activities and do not have any formal technical training, education or preparation for the enterprise. Their mining activities are carried on without due planning and exploratory or geological surveys. All of these combine to degrade the environment from mining of solid minerals.

Artisanal and Small Scale Mining involves low-key or low profile mining activities scattered in virtually all states of the federation where solid minerals are found and explored. A thin but fundamental line appears to exist between artisanal and small scale mining and illegal mining in Nigeria. While the former group of miners are duly registered with the Ministry, recognized under the law, their activities regulated and guided by relevant provisions of laws/regulations and supervised by the Ministry, the activities of the latter group of miners are illegal being contrary to the law and therefore without legal backing. The word "illegal" was defined “as an act that is not authorized by law; the state

[878]NTA Network News @ 9.00p.m, Channel 251 DSTV, 3rd September, 2015
[879]Ladan, M.T. (2014).*Natural Resources and Environmental Law and Policies for Sustainable Development in Nigeria*, Ahmadu Bello University Press Limited, Zaria, p.355

of not being legally authorized; the state or condition of being unlawful."[880] The term also means "forbidden by law; unlawful."[881]

The functions of the Artisanal and Small Scale Mining Department of the Ministry could be deciphered from the support work it is expected to give or grant the operators as provided or stated in paragraph 7.3 of the Policy andare reproduced viz:organizing, supporting and assisting small scale mining activities;providing extension services to ASM operators on exploration, mineral processing,entrepreneurial training, environmental management, health and safety issues etc;improving sustainable livelihood in ASM communities;facilitating healthy relationship between ASM miners and the community;registration and administration of ASM operators and mineral buying centres; andpreparing and rendering of records, reports and returns on ASM as required by the Minister or as prescribed by the Mining Regulations.

It is not in doubt therefore, that all of these functions are provided to ensure that the department plays active role in the protection of the environment from degradation by the mining activities of artisanal and small scale miners in the Country. The activities of this group of miners is increasingly becoming more organized as the Ministry has encouraged them to be formed into groups of cooperatives for sustainable engagement between the Ministry and this miners.

[880] Garner, B.A. (2004). *Black's Law Dictionary* Deluxe Eight Edition, West, USA, p.763

[881]Garner, B.A. (2009), *Black's Law Dictionary,* Ninth Edition, West, United States of America, p.815

From the totality of the foregoing, it is clear that one of the crucial factors affecting the efficient and effective discharge of the duties of the ASM department is the humungous body or number of ASMs in Nigeria spread all over the country. The share large number and dispersal nature of these miners make their activities more difficult to control. Recently, the Ministry reached the finding that unsafe practices relating to the mining of gold and processing methods was the major cause of the lead poisoning that resulted from the mining of lead in areas of Zamfara State of Nigeria.[882]The panacea will include the engagement of capable and adequate staff with the requisite skills, education and enlightenment, continuous training and retraining of ASMon the strategies for preventing or mitigating environmental degradation by the mining of solid minerals, the use of appropriate technology for mining and possibly for tracking such that, the activities of ASM do not condescend to unsafe mining practices deleterious to the environment.These will translate to better monitoring, coordination and discharge of the duties of this department.

Finally, in the light of the importance of this department in the structure of the Ministry as it relates particularly to protection of the environment from degradation by the mining of solid minerals in Nigeria, it is recommended that section16(1) of the Act should be amended with a view to clearly engraining or making the department as one of the statutory departments of the Ministry;because under the current legal regime it may be easierto abolish the department than, if and when, it is provided for in the N.M.M.A. The functions of the department should also be spelt out when this amendment is undertaken. These recommendationsif and when implemented will contribute to the protection of the

[882]Mines & Steel Review (Oct-Dec. 2012), Vol. 1 No. 3, p. 16

environment from degradation by the mining of solid minerals;and consolidate the gains being made in this area.

The yardstick to be used in determining or arriving at what constitutes small scale mining in Nigeria, would be found in the N.M.M.A., when it provided that the area covered by a small scale mining lease shall not be less than 5 acres and shall not exceed 3 square kilometers.[883] The N.M.M.A.further provides that the Small Scale and Artisanal Mining Department shall ensure that miningactivities are restricted to the established zones of mineralization.[884]As much as this gives a guide as to what constitutes "small scale or artisanal mining" in Nigeria, the guide or specification constitutes an unnecessary restriction on the lower most limit of the coverage area that could be mined when it put the lower most band or area at 5 acres.

The implication of this is that any mining activity that is carried on within an area of less than 5 acres is not small scale or artisanal mining and therefore not within the purview of the duties of the ASM department. One is therefore likely to assume that any mining activity no matter how well and environment-friendly carried out within an area of less than 5 acres, is not small scale and artisanal mining but illegal mining. Regrettably, the focus is on area coverage of land or land space alone rather than on activity or a combination of both. The other tacit implications of this band or parameter specification which consequently may not contribute positively to the protection of the environment from degradation by the mining of solid minerals are the following:

[883]Section 90(1), Nigerian Minerals andMining Act, No. 20, 2007
[884]*Ibid,* Section 90(3)

(i) Individuals and/or registered cooperatives, willing to explore such mineral resources are unable to do so on, account of this prescription with the resultant effect that solid mineral resources buried by nature in such mineral-endowed areas are left untapped.

(ii) Those interested in otherwise willy-nilly tapping or exploiting such mineral resources must do so within the purview of exploiting them illegally with the implication that since such dimensioned areas are not within the monitoring and enforcement activities of the ASM department, the degradation of the environment emanating from the mining of minerals of those several pockets of areas are mostly likely to remain un-reclaimed, un-restored and un-resuscitated for a long time.

In the light of all the foregoing reasons, it is opined that the band restriction of "small scale mining" provided in section 90 (1) of the N.M.M.A. be amended by removing the lower most land coverage of 5 acres in order to ensure better regulatory attainment, legislative certainty, practicability of enforcement and removal of the identified lacuna so as to betterprotect the environment from degradation by mining of solid minerals

A better definition of the concept or phrase "Artisanal Mining" which accords with the character of activities and the nature of artisanal mining rather than the landscape coverage as provided in section 90(1) of the N.M.M.A., reads thus: Artisanal Mining is defined as 'informal mining activities undertaken by individuals or groups, which rely heavily on manual labour, using simple implements and methods without prior exploration activities.[885]

[885]Mines and SteelReview (Dec. 2009), Vol. 1 No. 1, p.12

It must however be pointed out that there has been a very aggressive and calculated effort to assist the artisanal and small scale miners to be registered as groups of cooperatives and therefore recognized as formalized groups of mining cooperatives for ease of supervision by the ASM department; and for the purpose of effective utilization of grants and training programmes availed such category of miners. The benefits of such formalization are numerous but the most sanguine appears to be the rub-off on efforts being made to protect the environment from degradation by the mining of solid minerals.

On the issue of the increasing formalization of the activities of artisanal miners, the Minister [of Mines and Steel Development] disclosed that "the operations of the Artisanal and Small Scale Mining (ASM), which hitherto were informal in nature, is now being formally coordinated, ASM cooperatives or associations are being established with training programmes for miners being put in place."[886] With this comment and the passage of time, it seems in the near future the mark of informality of the operations of artisanal miners may no longer be a feature or an aspect of the definition of 'Artisanal Mining'. The implication of this observation is that the said definition may no longer stand the test of time.

A measure engrained in the N.M.M.A. towards ensuring capacity building and utilization in the mining of solid minerals sector in Nigeria particularly, by artisanal and small scale miners is the creation of the Sustainable Management of Mineral Resources Project (SMMRP).[887] The Federal Government of Nigeria established the SMMRP with the main objective of increasing the Government's technical capacity to manage Nigeria's mineral

[886] *Ibid*, p.25
[887] Mines and SteelReview (Dec. 2009), Vol. 1 No. 1, p.27

resources with a view to providing the enabling environment for large scale development of the sector by local and foreign investors.

The project is also to establish a basis for poverty reduction and rural economic renewal through the development of non-farm income generating opportunities, mainly by promoting artisanaland small scale mining. The project also intervenes by conducting short courses for artisanal miners and mining communities in Nigeria. Similarly, a handbook containing a comprehensive tool kit, to guide operators on exploration and beneficiation techniques, is currently being produced.[888]It could therefore be deduced that the aim of the Project is geared towards enhancing the capacity of artisanal and small scale miners to acquire sustainable mining practices with the resultant effect ofcontributing to the protection of the environment from degradation by the mining of solid minerals in the country.

5.2.1.4**Challenges of the Ministry and Panaceas**

On the whole, it is observed that efforts are being made by the Ministry in this instance through its departments and other relevant Agencies of Government to ensure that the degradation of the environment as a consequence of the mining of solid minerals, is where possible, prevented or mitigated by the enforcement of relevant laws, regulations, policies and established practices. However,over the years, it will appear that the departments and agencies of the Ministry have been plagued by myriad of problems ranging from

[888]*Ibid,* pp.16-17

inadequate funding, poor logistical support, [lack of/inappropriate] training to inadequate manpower with attendant negative consequences on staff morale and efficiency.[889]

Some of the other challenges of the Ministry as articulated in a recent publication which relate to the subject of this thesis[890]include lack of mine site infrastructure, lack of adequate skilledmanpower, lack of adequate mines special purpose surveillance vehicles for field work and revenue collection monitoring, leakages in revenue generation/collection, interference in solid minerals matters by other tiers of Government, illegal mining activities and smuggling of minerals.[891]In a more recent publication, the challenges of the Ministry though similar, were adumbrated as inadequate funding of the sector, low level of geosciences information for investment, inadequate mine site infrastructure to facilitate mineral resource development, inadequate skilled manpower, lack of adequate mines special purpose surveillance equipment for field work and revenue collection/monitoring, lack of legal and regulatory framework for the steel sector, insecurity in the mines field and infiltration by illegal aliens; and illegal mining activities and smuggling of minerals.[892]

The problem of illegal mining activities needs to be efficiently and effectively tackled in the interest of the long term sustainable development of the solid minerals sector and the protection of the environment from degradation by the mining of solid minerals in Nigeria.

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[889]Akper, P.T., *op cit*, p. 195

[890]A Presentation at the Ministerial Platform on the Achievements and Accomplishment of the Ministry of Mines and Steel Development, May 29lh 2011 to May, 2012 by Arc, Musa Mohammed Sada, fnia, former Minister of Mines & Steel Development

[891]*Ibid*, p.29

[892]Ministerial Presentation by the former Minister of Mines and Steel Development, Arc. Musa Mohammed Sada at the 2014 Ministerial Platform, Monday 22nd December, 2014; p.45

A practical effect of illegal mining activities in degrading the environment could be seen from the sordid and unfortunate experience of lead poisoning in Zamfara State of Nigeria; where not less than 400 children died from illegal mining activity. Symptoms exhibited due to lead ingestion ranged from abdominal pain, lethargy, headache, seizures, coma and death.[893]It was recently reported that out of N850 million released by the Federal Government as intervention to Zamfara [State], almost N180 million was earmarked for the Federal Ministry of Mines and Steel to ensure proper enlightenment campaigns on safe mining practices in all the affected communities in Zamfara.[894]

If the Federal Ministry of Mines and Steel Development, NESREA and other regulatory agencies were up and alive to their responsibilities and duties such illegal mining sites and locations which are spread over the Country would have been discovered and at least closed. NESREA and indeed the Mines Environmental Compliance Department of the Federal Ministry of Mines and Steel Development will need to be more proactive in their monitoring and compliance activities, if similar developments with deleterious effects are to be nipped in the bud, prevented, remedied or mitigated.

Other problems worthy of mention, include clogs posed in implementing some of the provisions of the laws by relevant departments, such as…… ; the large number of artisanal and small scale miners spread all over the country which makes their operations difficult to monitor, lack of presence or representation of staff of NESREA and Federal Ministry of Mines and Steel at the various local governments of the country to make monitoring, supervision and implementation of remedial measures easy and quick.

[893]Aigbokhaevbo V. (2012). "Environmental Abuses in Nigeria:Sectoral Implications for Reproductive Health Care",*NIALS Journal of Health Law and Policy*,pp.165-166
[894]Daily Trust Newspaper, Saturday, April 13, 2013, Page50.

In resolving some of these problems, it is opined that the provisions of sections 131 and 133 of the Nigerian Minerals and Mining Act should be amended to clearly provide sanction regime for illegal mining thus giving the relevant agencies the capacity to enforce the law; the relevant departments of government should be peopled by skilled and adequate staff; adequate budgetary provision, environment-friendly technology and infrastructure should be deployed to monitor the activities of miners; finally staff should be posted to local government areas of the Country to aid enforcement.

5.3 Mineral Resourcesand Environmental Management Committee

The N.M.M.A.established the "Mineral Resources and Environmental Management Committee" (hereinafter called “MIREMCO”) for each state of the Federal Republic of Nigeria.[895] The composition of this all important committee is broad-based and its functions are geared towards ensuring attaining environmental sustainability in the solid minerals sector of the Nigerian economy throughthe protection of the environment from degradation by the mining of solid minerals.In appraising the functions of the Ministry and the powers of the Honourable Minister of Mines and Steel Development as dotted all over the N.M.M.A. particularly as stated in section 4 (a) (1) (p) & (t) of the N.M.M.A. mention must be made of the strategic position and role of MIREMCO.[896]

MIREMCO is peopled by persons from departments and agencies of Government who play key roles in the matter of mining of solid minerals in Nigeria. MIREMCO is comprised of representatives of departments, agencies and organs of government stretching through the tiers of Government in Nigeria i.e Federal, State and Local

[895]Section 19(1), Nigerian Minerals and Mining Act, No. 20, 2007
[896]*Ibid,* Section 19(3)

Governments.Specifically, membership of the MIREMCO is drawn from the Mines Environmental Compliance Department in the Federal Ministry of Mines and Steel Development (the representative shall be the Chairman), the Ministry responsible for land matters or mineral related matters in the State, the Mines Officer responsible for the State, the Ministry of Agriculture or Forestry in the State, Office of the Surveyor-General of the State, the Local Government Council (when matters affecting the said Local Government Area are being considered by the Committee), the State Environmental Department or Agency and the Federal Ministry of Environment in the State.[897]

The mitigation of the impacts of the mining of solid minerals and the implementation of social and environmental protection measures are crucial in the Committee's mandate.[898] Also, part of MIREMCO's functions include the need to ensure and advice theMinister[899] on focused and sustainable mining operations, activities and practices and particularly in respect of matters connected with the implementation of the Act.

Therefore, the functions of MIREMCO as it pertains to the issue relevant to the mining of solid minerals and environmental degradation in Nigeria are specified in section 19 (3) (b) (c) (d) (e) & (f) of the N.M.M.A. which are respectively reproduced viz:consider issues affecting compensation and make necessary recommendations to the Minister;discuss, consider and advise the Minister on matters affecting pollution anddegradation of any land on which any mineral is being extracted;consider such other matters relating to mineral resources development within the State as the Minister may, from time to time, refer to the Committee;advise the Departments established in accordance with the provisions of this

[897]*Ibid,* Section 19(2)
[898]*Ibid,* Section 19(3)(e)
[899]*Ibid,* Section 19(3)(i)

Act for the supervision of mineral exploitation and the implementation of social and environmentalprotection measures;advise the Local Government Area and communities on the implementation programmesforenvironmental protection and sustainable management of Mineral resources.

It could be asserted that in the composition and the ascription of functions of MIREMCO, the N.M.M.A. was no doubt forward-looking by integrating the cardinals of sustainable mining of solid minerals in Nigeria. The above recited provisions allude to this submission. It is hoped that MIREMCO in all the States of the Federation will perform creditably well as far as giving the Minister valuable advice (in the light of the fact that by the provision of Section 19 (6),MIREMCO shall forward its report to the Minister after each meeting) as it relates more particularly to the issues of protection of the environment from degradation by the mining of solidminerals inNigeria in the States of the Country.

However, the foregoing provisions of the N.M.M.A as well articulated as they may appear, fall short of some basic expectations viz; (i) the N.M.M.A. expressly created this very important committee for the states of the Federation without mentioning the Federal Capital Territory of Nigeria. It is obvious that some form of mining of solid minerals take place within the Federal Capital with a lot of quarry sites in the territory. In practical terms, is MIREMCO functional in the Federal Capital Territory, Abuja? and if it is, what is the legal basis for such? The non-mention of the Federal Capital Territory may have been as a result of omission on the part of the legislature or the draftsman (ii) IsMIREMCO actually and practically in place at the various states of the Federation? If yes, what is the value adding capacity of such committees in the face of existing and recent cases of

environmental degradation arising from mining activities such as could be found in the wasting plains of the Jos-Plateau, the Bagega lead poisoning accident,the Okaba mine andLuku-Minna mine sites degradation.

In the light of the foregoing, if MIREMCO is actually functional all over the nation, should the current flagrant cases resulting in environmental degradation and loss of human lives not have been reduced to a reasonable limit or bear minimal level? There appears to be more questions than answers on the efficiency and effectiveness of MIREMCO. Therefore, a charge is made to the Ministry of Mines and Steel Development to re-invigorate the activities of this committee for better service in the industry with a view to *inter alia* taking necessary steps towards protecting the environment from degradation by the mining of solid minerals in Nigeria.

On the whole, the philosophy behind the legislation of MIREMCO seem to have at its kernel, the desire to adopt at all States of the Federation aggregated-preventive, mitigating and remedial measures for tackling issues of environmental degradation resulting from the mining of solid minerals as opposed to the hitherto archaic, reactionary, non-focused and non-result oriented approach of curative measures in resolving this imminent and pervasive challenge.

5.4 MiningCadastre Office

The establishment of the Mining Cadastre Office (MCO)[900] which is charged with the primary responsibility for the administration of Mineral titles and maintenance of the cadastre registers is novel in Nigeria. As could be gathered from the explanatory

[900]Section 5(1), Nigerian Minerals and Mining Act, No. 20,2007

memorandum to the N.M.M.A. and by the provisions of sections 5(1) and 15 of the N.M.M.A., the conceptualization of the Cadastre Office is for it tobe an independent and specialized body or organ that will take charge of titling for the efficient and effective exploitation of mineral resources thus avoiding Government intervention and influence in the granting of mineral titles. This therefore imbuesand guarantees great independence in the area of the grant of mineral titles in Nigeria which development accords with international best practice on the granting of mineral titles.The overall objective of the establishment of the MCO is to guarantee the protection of the environment from degradation by the 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 Mining Cadastre Office is incorporated by virtue of the provision of theN.M.M.A as a body corporate with perpetual succession and a common seal[901] and may sue and be sued in its corporate name;[902] it may also acquire, hold and dispose of property whether movable or immovable.[903]In order to efficiently and effectively discharge its functions under the Act, the Mining CadastreOffice operates as the sole agency responsible for the administration of mineral titles.[904] Its other functions as articulated by the Act are the following:

(a) Consider applications for mineral titles and permits, issue, suspend and upon the written approval of the Minister, revoke any mineral title;

(b) Receive and dispose of applications for the transfer, renewal, modification, relinquishment of mineral titles or extension of areas;

[901]*Ibid,* Section 5(2)(a)
[902]*Ibid,* Section 5(2)(b)
[903]*Ibid,* Section 5(2)(c)
[904]*Ibid,* Section 5(4)

(c) Maintain a chronological record of all applications for mineral title in:

(i) a priority book which is to be specifically used to ascertain the priority and registration of applications for exclusive rights on vacant areas;

(ii) a General Registry Book which is to be used for all other types of applications whereregistration of priority is not required.

(d) undertake such other activities as reasonably necessary for the purpose of carrying out its duties and responsibilities under the provisions of the Act.[905]

The MCO has contributed to the efforts of enthroning the culture ofsustainable mining of solid minerals in Nigeria. An adjunct to this is the fact that the duties andresponsibilities of this very important office if well implemented will contribute in no smallmeasure to protecting the environment from degradation by the mining of solid minerals particularly, bypreventing, avoiding or mitigating the deleterious impact of the mining of solid minerals on theenvironment in Nigeria.This objective could be attained *inter alia* by incorporating basic and vital terms and conditions in mininglicences, leases and permits granted operators in the industry. These terms and conditions inaddition to those contained in the Act will provide basic foundation building blocks in the area of protecting the environment from degradation by mining of solid minerals in Nigeria.

From the foregoing provisions, it could be seen that a bold step was taken by the legislature to create a sustainable regulatory regime for the issuance of mineral titles and permits. The said office is also empowered to suspend such titles and permits. Though, no clear modalities or conditions appear to have been expressly articulated by this provision

[905] *Ibid*, Section 5(5)

for suspending the grant of title of a grantee, it is opined that such conditions warranting the suspension of the title of a grantee may include non-compliance with sustainable mining practices or regime resulting in environmental degradation. Lending credence to this assertion is the general provisions of section 5(5)(d) of the N.M.MA.whichempowers the MCO to undertake such other activities reasonably necessary for the purpose of carrying out its duties and responsibilities under the provisions of the N.M.M.A.

To clearly underscore the necessity and desirability of the independence of the MCO from the Minister, the N.M.M.A. provides that"In the execution of his functions and relationshipwith the Mining Cadastre Office, the Minister shall, at all times ensure the independence of theMining Cadastre Office in regard to the discharge of its functions and operations under the Act."[906]

The foregoing provision appears to insulate the Mining Cadastre Office from any unorthodox, shenanigan or over-bearing influence, directives, interference or activities of the Minister in the MCO's bid to carrying out its licensing duties in order to protect the environment from degradation by mining of solid minerals in Nigeria. In practical terms, this insulation may come under test in the light of the fact that an occupier of the office of the Director General of the Mining Cadastre Office could trade off this insulation for selfish or parochial considerations since in certain instances the culture of sycophancy and "hero worship" in public service may be gaining ground; and if this happens, the entire industry is worse-off for it and most affected will be the quest to protect the environment from degradation by mining of solid minerals through efficient titling regime.The cardinal

[906] *Ibid,* Section 15

duty to protect the environment from degradation by mining of solid minerals through this medium might therefore become a mirage.

In this researcher's opinion, a problem that the industry may be confronted with in the foreseeable future is the fact that the qualification of the holder of the office of the Director General of the MCO is not stated in the N.M.M.A.In the scheme of things, it is highly compelling that the qualifications and requirement of a fit and proper person with cognate experience should be clearly specified in the Act in order to avoid ambiguity as to the requirements or qualification and experience of the holder of that office. The fear however with Nigeria, is that a Government could appoint politicians to fill such technical positions to the detriment of the entire nation and the particular goal of the protection of the environment from degradation by the mining of solid minerals, which task commences from granting titles to befitting persons and entities.

In thecircumstances, the appointment of an unfit, inexperienced and unqualified person to that officewill no doubt *inter alia* create challenges of capacity under-utilization, loss of confidence in the system, lack of impetus to enforce or implement the provisions of the Act, licence terms andconditions which should ordinarily compliment the efforts of stakeholders, in the march towards the protection of theenvironment from degradation by the mining of solid minerals in thecountry.

As soon as the opportunity presents itself, the N.M.M.A. should be amended stating the qualification requirements for the position of the Director-General, MCO in the light of the central place that office occupies in ensuring sustainable mining of solid minerals in Nigeria and consequently, the important matter of the prevention, avoidance or

mitigation/reduction of environmental degradation by mining of solid minerals in Nigeria.It is also imperative that the Act specifies the tenure of the Director-General MCO (as four year term renewable for an additional term) and the appointing authority (the President of the Federal Republic of Nigeria on the recommendation of the Minister of Mines and Steel Development) for purposes of ensuring regulatory certainty which is a major plank of international best practices for Government institutions.

This concern is exacerbated by the fact of the numerous sites that reflect the very gory state of the impact of mining activities by way of environmental degradation which remain un-remediated or un-restored as could be found for example, in the Jos-Plateau mining plains, Luku-Minna mine sites, Enuguand the Okaba mining sites, respectively amongst so many other degraded mining sites in Nigeria. The previous degraded mining sites may have no doubt been exacerbated by the poorly managed licensing and permit regime under previous Acts regulating the mining of solid minerals in Nigeria. There is the need to avoid a repeat hence the specification of leadership requirements and tenure is imperative in attaining the overall objective of this sector as it relates to the protection of the environment from degradation by mining of solid minerals in Nigeria.

A provision that should be reviewed or discussed in this segment of this thesis is that of section 11 of the N.M.M.A. which provides that a mineral title shall become liable to revocation by the MCO where the holder thereof has failed to pay the prescribed fees. In as much as this provision is deemed desirable, on the whole, it appears that the provision has placed much premium on financial considerations and revenue generation while the corollary duty to ensure that other matters/issues that will necessitate the revocation of

licences such as mining activities resulting in unjustified/unreasonable degradation of the environment and non-compliance with terms andconditions of grant of licence, appear to have been totally neglected or relegated to the background.

The aforementioned matters no doubt attract or occupy cardinal positions in the scheme of things to warrant their being specifically mentioned in the section as other reasons for the revocation of mining licences rather than giving premium to financial considerations alone as the basis of revocation of mining licences/grants as provided by the section. This observation becomes more worrisome when the provision of section 12 of the Act is in the same vein; that is, placing emphasis on financial considerations to the detriment of other equally germane issues as earlier mentioned above.

However, it is necessary to state that the lacuna observed in sections 11 & 12 of the N.M.M.A., appear to have been mitigated but not totally alleviated by the provision of the Act[907]relating to the powers of the Minister to revoke licences subject to certain conditions.[908]The revocation of mineral titles in deserving circumstances is necessary to instill regulatory compliance and institute measures for the protection of the environment from degradation by the mining of solid minerals in Nigeria. It is recommended that other circumstances under which licences could be revoked through the medium of the MCO should be spelt out to ensure proper utilization of available institutional capacity.

[907]Section 151, Nigerian Minerals and Mining Act, No. 20, 2007

[908] Such conditions include the conviction of a holder of mineral title by any competent court for an offence under the Act or its Regulations; effluxion of time allowed for appeal or dismissal of the appeal or where the suit is withdrawn or struck out for want of prosecution; breach of the provisions of the Act, Regulationsorany terms and conditions express or implied; surrender of title before its expiration; insolvency, bankruptcyand liquidation etc

It will appear that by a community reading of the provisions of the N.M.M.A. particularly, when the above mentioned sections are read together with section 5(5)(a) of the Act, the Minister approves the revocation of licenses. This position is corroborated by subsequent provision of the N.M.M.A.[909]This power residing in the Minister will ensure fair and reasonable exercise of same; likely arbitrariness and overzealousness by the MCO may have been checkmated. This procedure for checks and balances, affords better protection of the environment from degradation by the mining of solid minerals in Nigeria.

5.5 State Ministriesof Solid Mineral Resources

By virtue of the provisions of the Constitution of the Federal Republic of Nigeria, 1999 (as amended)[910]and the Nigerian Minerals and Mining Act, 2007[911]all mineral resources are vested in the Federal Government of Nigeria. In spite of the foregoing,some States of the Federation blessed with the deposit of solid minerals have created Ministries of Solid Mineral Resources or Ministries with similar names or nomenclature to promote the exploitation of these resources within their States. Some of these States include Nasarawa, Kogi and Plateau States. The creation of such Ministries is in line with the general powers given a Governor of a State by the Constitution to appoint Commissioners[912] and invariably to establish or create Ministries. It will appear that where necessary, these State Ministries responsible for Solid Mineral Resources are to collaborate with the Federal

[909]Section 151, Nigerian Minerals and Mining Act, No.20, 2007
[910]Section 44(3), Constitution of the Federal Republic of Nigeria, 1999 (as amended), Cap. C23, Laws of the Federation of Nigeria, 2004
[911] Section 1, Nigerian Minerals and Mining Act, No. 20, 2004
[912]Section 19(2)(b), Constitution of the Federal Republic of Nigeria, 1999(as amended), Cap. C23, Laws of the Federation of Nigeria, 2004

Ministry of Mines and Steel Development and other relevant agencies set up by the Federal Government and charged with the exploitation of theseresources.

The roles of these State Ministries in protecting the environment from degradation by mining of solid minerals within their territorial boundaries if any, is obscure. This is in the light of the obvious fact that relevant Federal Government Ministries and agencies charged with such cardinal responsibilities have been clearly specified in extant laws and regulations of the Federal Republic of Nigeria. A radical initiative which may be adopted is that the various State Ministries in their quest to ensure better environment for the inhabitants of their various States could *inter alia* embark on the identification and listing of all such issues of environmental degradation by the mining of solid minerals observed in their various States and drawing the attention of the relevant Federal Government Ministries or agencies to such matters for mitigation or resolution. This could be by way of reclamation, restoration, rehabilitation, remediation, resuscitation and compensation or where necessary, litigation.

Furthermore, relevant advice could also be articulated as precautionary or preventive measures of ensuring the protection of the environment from degradation by the mining of solid minerals. The proper modality for handling these issues within the institutional framework established by law on the subject of this thesis may well be that the State Ministries of Solid Minerals Development will channel their concerns through their representatives to the State Mineral Resources and Environmental Management Committee for their respective States.

In more particular terms, the N.M.M.A.[913]in setting up or establishing for each State of the Federation a committee to be known as MIREMCO, recognized the fact that a State may create or establish a Ministry responsible for minerals-related matters. Hence, a representative of the Ministry responsible for land matters or mineral related matters in the State is a member of MIREMCO.[914]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 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.

It is however clear that the Minister may only be able to legally and validly delegate any of his functions (except the function to make Regulations) to any department or officer of his Ministry subject to such conditions and restrictions as may be prescribed in a notification.[915] This obviously excludes the power of the Minister to delegate his functions to any State Ministry responsible for mineral related matters in the State. It is trite that Nigeria is a federation with three tiers of government-federal, state and local governments and therefore such purported delegation is not within the ambit of law. What is however deducible from the establishment of the State Mineral Resources and Environmental Management Committee is the objective for stakeholders of the mining industry to work in

[913]Section 19(2)(b), Nigerian Minerals and Mining Act, No. 20, 2007
[914]*Ibid*
[915]*Ibid,* Section20(1)

harmony and in concert to *inter alia*address issues of environmental pollution and degradation by the mining of solid minerals in Nigeria at the lower and practical levels.

It is opined that issues of confirmation of the conduct of Environmental Impact Assessment by mining companies and operators before commencing their mining operations should attract the attention of MIREMCO. This is however not losing sight of the fact that NESREA is charged with this responsibility in concert with the Ministry of Environment. MIREMCO could follow up on this issue while working in concert with relevant agencies to allow for proper coordination and result-orientation.

This observation is made against the backdrop of the fact that in some States of the Federation, it has become the practice that some companies commence mining operations without the requisite E.I.A being conducted. Thenegative impact of this on the environment by way of degradation resulting from mining activities will no doubt be humungous.An over bearing pursuit of the perceived role articulated in this thesis for the said solid minerals bearing states could create a conflict regime between the said states and Federal Ministries and agencies in the industry. The panacea therefore lay in proper and sincere coordination by all stakeholders. This is necessary because in articulating the challenges of the Federal Ministry of Mines and Steel development, interference in solid minerals matters by other tiers of Government, was highlighted as one of such.[916]

5.6Federal Ministryof Environment

[916]Ministry of Mines and steel Development, Presentation at the Ministerial Platform on the Achievements and Accomplishment of the Ministry of Mines and Steel Development By Arch. Musa Muhammed Sada, Fnia, former Minister of Mines and Steel Development, May 2012, p.29

The Federal Ministry of Environment hereinafter referred to as "the Ministry", is the Ministry charged with generally superintending over issues relating to the Nigerian environment with overall responsibility for an ecologically balanced and healthful environment; and for general protection of the environment.The Ministry like any other Ministry in the Government of the Federation was created pursuant to the powers conferred on the President of the Federal Republic of Nigeria by virtue of the provisions of the Constitution of the Federal Republic of Nigeria, 1999 (as amended).[917]

The Ministry is structured into 4 Service Departments, 5 Technical departments, 6 units, Zonal/Field Offices in the 6 geo-political zones of the country as well as field offices in all the 36 States of the Federation and the Federal Capital Territory.[918]The 5 Technical Departments are Forestry Development and Natural Resources Conservation; Pollution Control & Environmental Health; Environmental Assessment; Drought and Desertification Amelioration; and Erosion, Flood Control & Coastal Zone Management.[919]

Though, the functions and responsibilities of these Technical Departments were not stated in the source document herein referred, it will appear that the Technical Departments that have direct bearing on protecting the environment from degradation by the deleterious effects of mining of solid minerals are the first 3 Technical Departments mentionedearlier. It is therefore clear that the Ministry occupies a central place in all issues and matters relating to the environment.

[917]Sections 147 & 148, Constitution of the Federal Republic of Nigeria, 1999 (as amended), Cap. C23, Laws of the Federation of Nigeria, 2004.
[918]Unpublished Literature obtained from Planning Department of the Federal Ministry of Environment on 22nd October,
2014.
[919]*Ibid*

The concern to protect the environment gave rise to the creation of the Federal Ministry of Environment in 1999 to ensure the effective coordination of all environmental matters, which were hitherto fragmented and resident in different line Ministries. With the rationalization of the Federal Ministries at the end of 2006, Environment and Housing & Urban Development Ministries were merged which gave rise to the Federal Ministry of Environment, Housing & Urban Development. This was to ensure the effective integration and coordination of all environmental matters, housing and land use for urban development.[920]

Since its establishment, the Ministry has impacted on raising the consciousness of Nigerians on the issue of environmentalprotection as well as ensuring improved interface and adoption of global environmental best practices. It has focused on evolving innovative strategies that emphasize the use of environmental reengineering as a veritable tool for poverty eradication, ensuring food security, encouraging sustainable economic development and the general improvement in the livelihood of the Nigerian populace.[921]Towards achieving its goal, the Ministry is to ensure the effective integration and co-ordination of all environmental matters, and to formulate policies and programmes on environmental protection and natural resources conservation for sustainable development in Nigeria.[922]

Specifically, the mandate of the Ministry entails the protection of the natural environment against pollution and degradation as well as conservation of Natural Resources for sustainable development in Nigeria. These are pursued through *inter alia* promoting

[920]*Ibid*
[921]*Ibid*
[922]Nigeria National State of the Environment Report, Abuja, 2008 p.lxx

sustainable use of natural resources and cooperating with relevant Ministries/Departments/Agencies, the private sector, NGOs, and international organizations on environmental matters.[923]

In the area of environmental degradation by mining of solid minerals in Nigeria, it is evident that from the foregoing, the Ministry of Environment needs to be involved in collaborative works with the Ministry of Mines and Steel Development and other government Agencies like NESREA in order to holistically tackle the challenge of environmental degradation by mining of solid minerals in Nigeria. This position is further collaborated 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 Nigerian Minerals and Mining Act and the NESREA Act respectively.

On a very candid note, it appears that the current voids and gaps noticeable in the challenge of protecting the environment from degradation by the mining of solid minerals in the country is partly as a result of lack of proper coordination between and amongst relevant Ministries, Departments and Agencies of government. The time has come for concerted efforts by all stakeholders with a view to adopting a forward-looking approach for sustainable partnership to be institutionalized in containing and mitigating the negative and deleterious effects of mining of solid minerals on the Nigerian environment.

Some of the factors mitigating against the efficient and effective discharge of the roles, functions and responsibilities of the Ministry, include inadequate skilled manpower to

[923] *Ibid*, p.525

populate the Technical departments of the Ministry, financial constraint[924] arising from inadequate appropriation to cater for the needs of the Ministry in carrying out its core functions, the non-coordination of strategies and articulation of common vision for tackling all issues related to environmental pollution and degradation in Nigeria including those arising by the mining of solid minerals. This fact isclearly attested by the inadequate coverage and reference to issues of environmental degradation by the mining of solid minerals in Nigeria even in a critical and key source document as the Nigerian National State of the Environment Report which is a principal document stating the vicissitudes and sector-analysis of the impact of human activities on the environment in our Country.

The non-appreciation of environmental challenges emanating from the mining of solid minerals in Nigeria in the said crucial Report may not be unrelated to the assumption that there is a full-fledged Ministry of Mines and Steel Development in the Country. This assumption may, however not be an exculpating factor in the light of the fact that the same document considered in better details issues of environmental degradation in Nigeria by mining of Petroleum or Liquid Mineral Resources in spite of the fact that there is a full-fledged Ministry of Petroleum Resources in Nigeria. The foregoing explains the lack of coordination between and amongst relevant Ministries, Departments and Agencies charged with managing our environment particularly as it relates to protecting the environment from degradation by mining of solid minerals in Nigeria.

In the light of the observed lapses, lacuna and issues of policy and institutional overlaps recounted in this thesis as it concerns the place and role of the Federal Ministry of

[924]Akper, P.T., *op cit*, p. 195

Environment, particularly matters of environmental degradation by the mining of solid minerals in Nigeria, the generalization by Nkem as captured hereunder, can therefore not stand. According to the scholar, "the Ministry with its parastatals is comprehensive enough to deal with all environmental degradation on LAND, WATER, and ATMOSPHERE AND VEGETATION."[925]This is because the Ministry lacks the capacity, technical know-how to accommodate and deal with the humungous and deleterious effects of mining of solid minerals on the environment let alone in other sectors of the economy and the environment as a whole. Also, the lack of coordination between the Ministry and other relevant ministries and agencies of government may have made the absolute submission of Nkem doubtful.

5.7National Environmental Standardsand Regulations EnforcementAgency

The lead agency charged with the role of protecting the environment from degradation by the mining of solid minerals in Nigeria is the National Environmental Standards and Regulations Enforcement Agency (NESREA) established pursuant to the provision of section 1(1) of the NESREA (Establishment) Act.

5.7.1Composition and Structure of NESREA

The Director Generalwho serves as both the Chief Executive and Chief Accounting Officer, heads NESREA. A Chairman heads the Governing Council which is the supreme organ of NESREA[926]and he is appointed by the President on the recommendation of the

[925]Ononiwu, N. (2007). *Environmental Challenges in Nigeria: Strategies for Tackling them.* Being Paper Presented at
Judicial Training Workshop on Environmental Law in Nigeria, held at Merit House, Maitama, Abuja between 5-9,
February, 2007, p.10
[926]Fagbongbe M. (2012). "Criminal penalties for Environmental Protection in Nigeria: A Review of Recent

Minister.[927]The other members of the Council are the Permanent Secretary of the Federal Ministry of Environment or his representative, a representative each not below the rank of Director from the Federal Ministry of Solid Minerals Development, Federal Ministry of Agriculture and Natural Resources, Federal Ministry of Water Resources, Federal Ministry of Science and Technology, a representative of the Standards Organization of Nigeria, a representative of the Manufacturers' Association of Nigeria, a representative of the Oil Exploratory and Production Companies in Nigeria, the Director-General of the Agency; and three other persons to represent public interest, to be appointed by the Minister of Environment.[928]

In this researcher's view, the inclusion of a representative of the oil sector is unnecessary for the efficient and effective discharge of its functions, roles and responsibilities. This is because the NESREA Act expressly provides that the domain or role of the Agency shall not extend to the oil and gas industry.

For the efficient and effective performance of NESREA's functions, NESREA is structured into five Directorates viz: Administration and Finance, Planning and Policy Analysis, Inspection and Enforcement, Environmental Quality Control; and Legal Services.[929]NESREA and its Directorates shall have adequate numbers of units and divisions as may be required in the discharge of the functions of the Agency.[930]NESREA

Regulations Introduced By NESREA."In: Fagbohun O. (ed.) *NIALS Journal of Environmental Law,* Vol. No. 2 p.156

[927] Section 3, National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25, 2007

[928]*Ibid*

[929]*Ibid,* Section 10(1)

[930]*Ibid,* Section 10(4)

shall also have zonal offices in the six (6) geopolitical zones of the country.[931] By creating zonal offices of NESREA there is an indication thatthe Federal Government wishes to decentralize environmental matters which is a welcome development.[932]NESREA may create such other departments, units or offices in any part ofthe Federation as may be required for the proper performance of the functions of NESREA.[933]In spite of this, NESREA has no offices at Local Government levels to assist in carrying out its mandate.

A lacunae evident in the NESREA Act which will impede NESREA from more efficiently and effectively discharging its duties, is the fact that unlike the N.M.M.A, NESREA Act did not set out the functions and responsibilities of technical Directorates such as the Inspection and Enforcement, and Environmental Quality Control Directorates established by NESREA Act. In environmental issues relating to the protection of the environment from degradation by mining of solid minerals in Nigeria, it is necessary for the purposes of regulatory certainty and the more efficient and effective performance of the core responsibilities of NESREA, for functions of the technical Directorates to be specified.

The implication of the non-specification of functions for technical Directorates in NESREA Act for NESREA is far reaching. This is because of the usual high rate of turnover in the leadership of most Nigerian governmental organizations/institutions, where every new leader comes on board with his own ideas of functions for the core Directorates. This practice will not augur well for the institutionalization, effective and efficient

[931]*Ibid*, Section 10(5)
[932]Akeredolu, A. (2011)."NESREA vis-a-vis FEPA: An Old Wine in a New Bottle."*NIALS Journal of Environmental*
Law, Vol. 1,p.322
[933] Section 10(6), National Environmental Standards and Regulations Enforcement Agency(Establishment) Act, No. 25, 2007

performance of the functions assigned the various core Directorates which could change as the leadership or even the mode of the leader changes. Therefore, with the current state of the Act, these functions may vary as the visions and experience and purpose of leadership of those in the saddle differ or change. This uncertainty or lack of specification of functions, will not aid the protection of the environment from degradation by the mining of solid minerals.

The fact that there will be continued overlap of functions between and amongst such core Directorates of NESREAcannot be ruled out. It must be noted that over time the bane of the performance of most Nigerian institutions such as NESREA is the issue of duplication of functions within Directorates/Departments of the same institutions or institutional/sector overlap of functions between and amongst similar or sister institutions. In the light of the foregoing, it is pertinent that the Act be amended by spelling out the functions of the core Directorates of NESREA with latitude for omnibus provision of functions for such Directorates in order to accommodate subsequent germane duties not clearly spelt out. This will aid the noble cause of the protection of the environment from degradation by mining of solid minerals in Nigeria.

Another modality of achieving the objective of ascribing functions for the core Directorates of NESREA may be through specifying such functions in Regulations issued by the Minister charged with the responsibility for the environment pursuant to the provisions of section 34 (c) of NESREA Act. Also,section 37 empowers the Minister to make regulations generally for the purposes of carrying out or giving full effects to the functions of NESREA under the NESREA Act.This will assist in filling the legislative gap

identified in respect of the non-specification of functions for technical departments. This method appears to be easier and will serve as an immediate panacea towards resolving the lacunae compared to the earlier method of amending the Act which process has to be through legislative machinery of the National Assembly.This will take a longer process and will involve higher financial outlay from the national treasury.

In a manner of looking forward, the powers of the Minister of Environment to make regulations as given by sections 34 & 37 of the NESREA Act may come in direct conflict with the powers of the Minister responsible for Solid Minerals Development as defined inNESREA Act[934] to make regulations pursuant to the provisions of the Nigerian Minerals and Mining Act.[935] The powers of both Ministers to make regulations as given separately under the Nigerian Minerals and Mining Act and the NESREA Act, are wide. The need for constant liaison between the two Ministers and their respective ministries in order to avoid cases of regulatory conflicts and overlap is therefore important in the task of protecting the environment from degradation by mining of solid minerals in particular and the overall gain of environmental sustainability in general.

5.7.2Functions and Powers of NESREA

NESREA has the responsibility 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 ofenvironmental

[934] Section 164, Nigerian Minerals and Mining Act, No. 20, 2007
[935]*Ibid,* Section 21

standards, regulations, rules, laws, policies and guidelines.[936]The Agency'sfunctions and powers do not however extend or pertain to the oil and gas sector, as the Act in sections 7 (k) and 8 (s) exclude the oil industry fromits activities.[937]

NESREA's functions articulated in NESREA Act which relate directly or indirectly to the issue of mining of solid minerals and its effects in environmental degradation could be found in section 7 (a), (b), (c), (d), (e), (g), (h), (j), (k) of NESREA Act which relate to 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 on enforcement; ensure environmental control measures through registration, licensing and permitting systems other than in the oil and gas sector and to establish data bank on regulatory and enforcement mechanisms of environmental standards other than in the oil and gas sector.

The other powers of NESREA relevant to this segment include: to prohibit the processes and use of equipment or technology that undermine environmental quality;[938] conduct field follow-up of compliance with set standards and take procedures prescribed by law against any violator;[939] conduct public investigations on pollution and the degradation of natural

[936]Section 2, National Environmental Standards and Regulations Enforcement Agency(Establishment) Act, No. 25, 2007
[937]Adedayo, M.A. (2011). "Environmental Risk and Decommissioning of Offshore Oil Platforms in Nigeria."*NIALS Journal of Environmental Law*, Nigerian Institute of Advanced Legal Studies,Lagos,Vol. 1, p.13
[938]Section 8(d), National Environmental Standards and Regulations Enforcement Agency(Establishment) Act, No. 25,
2007
[939]*Ibid,* Section 8(e)

resources, except investigations on oil spillage;[940] 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;[941]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 ofthe nation's environment and natural resources etc.[942]

From the foregoing, it is clear that the powers and responsibilities of NESREA are very wide in the area of enforcement of environmental laws, policies, regulations and standards. These wide powers circumscribe also the issue of protection of the environment from degradation by the mining of solid minerals in Nigeria.Despite the wide powers, functions and roles articulated for NESREA in NESREA Act and relevant Regulations issued pursuant to the NESREA Act for the purpose of ensuring the protection of the environment from degradation by mining of solid minerals, cases of environmental degradation 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 environmental challenge and the Zamfara lead poisoning calamity.

For example in Jos Plateau, tin and columbite mining in and around Bukuru resulted in mine tailings, neglected excavations and unfilled sample pits which constituted indelible

[940]*Ibid,* Section 8(g)
[941]*Ibid,* Section 8(k)
[942]*Ibid,* Section 8(o)

disfiguration of a once rich and beautiful region. Mining pits have become death traps whereby the pits collapse and kill as many as 5 to 10 miners inside, coupled with the hazards associated with such acts.[943] Furthermore, between May 2011 and May, 2012 -a span of one year, only a single highrisk, critically abandoned mine site was reclaimed in the Barkin-Ladi area of Plateau State of Nigeria.[944]

The mandate of NESREA which includes the protection of the environment from degradation by the mining of solid minerals cannot be achieved without the use of appropriate technology in the mining of solid minerals in Nigeria. The current state of degradation of the environment by the mining of solid minerals in Nigeria is partly attributable to the use of inappropriate technology in the solid minerals sector over time and up till now. However, this effect may no longer be as serious as compared to the carnage created in the early periods of mining up till 2007 when NESREA was established.

The awareness and sensitization embarked upon by the FederalGovernment through its relevant Ministries, Agencies and Parastatals seem to be gradually achieving the desired effect. However, it must be mentioned that a lot of grounds and milestones remained uncovered.A crucial aspect of the uncovered ground include the identification and type approval of equipment that meet the yarning of the sector while at the same time ensuring sustainable development of the Nigerian mining industry in particular and the Country at large. NESREA Act emphatically prohibits processes and use of equipment or technology

[943]*Tin Mining and Ecological Insecurity in Plateau State, Nigeria*.http://westafricaninsight.org Accessed on 20th July, 2015

[944]Ministerial Presentation by the former Minister of Mines and Steel Development, Arc. Musa Mohammed Sada at the Ministerial Platform on the Achievements and Accomplishment of the Ministry of Mines and Steel Development, May 29th 2011 to May, 2012; p.19

that undermine environmental quality.[945] In this wise, NESREA may have to bring on board a Type Approval Regulations prescribing the types, specifications and categories ofequipment/machines to be used in the mining sector in liaison with other stakeholders of the mining industry; including in this instance, the Standards Organization of Nigeria (SON).

In conclusion, the various ministries, agencies, departments and bodies that constitute the institutional framework for regulating the impacts of mining on the environment in Nigeria, examined in this chapter, are considered appropriate for attaining set objectives. However, there are instances of duplicity of roles which could be streamlined through proper coordination of the activities of relevant agencies. Also, these institutions need to holistically enforce the powers given to them in the interest of protection of the environment from degradation by mining of solid minerals in Nigeria.

[945]Section 8 (d), National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, No. 25,
2007

CHAPTER SIX

DATAAND ANALYSIS

6.1Introduction

The adoption of empirical method of research is becoming widely accepted even in areas of studies that are not pure sciences. In addition to being imbibed by researchers in social sciences and the humanities, it contributes to the robustness of a research work. The aim of this chapter therefore, is to afford first-hand information on critical matters underpinning this thesis, as obtained from field study through questionnaires administered.

The choice of the Plateau, Zamfara, Kogi and Niger States for the administration of the questionnaires was informed by pertinent considerations. Plateau State for the long history of mining in Nigeria and the vast impact of mining on the local, Zamfara State for the recent developments relating to the negative impact of mining of lead in Bagega ant the effects of mining on other communities, Kogi State for the previous long standing history of Coal mining in Okaba-Odagbo axis that resulted in abandonment of mining communities without any reprieve and finally Niger State for its recent mining activities in Lukku-Minna axis and its implication for the environment and community living. Over all, choice of these States was informed by the need to have better coordination and manageable costs of executing the research; hence all of the States (except Zamfara State) where questionnaires were administered, are in the same geo-political zone of North-Central Nigeria. To aid appreciation of the issues, data collected were represented by series of tables; while necessary interpretation and analysis followed thus:

6.2 **Analysis of Data Collected Pursuant to Questionnaires Administered on Host Mining Communities**

Table 1: Sex of Respondents

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Male	287	67.4	67.4	67.4
Female	139	32.6	32.6	100.0
Total	426	100.0	100.0	

The Table above presents the gender distribution of the respondents. A significant portion of the respondents were male (67.4%), while female constitute (32.6%). This implies that male respondents are in a high majority. This is not unexpected; as in these parts of Nigeria, cultural and religious considerations may have acted as barriers to having many more women being administered the questionnaires.

Table 2: Marital Status of Respondents

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Single	92	21.6	21.6	21.6
Married	302	70.9	70.9	92.5
Widow	32	7.5	7.5	100.0
Total	426	100.0	100.0	

This parameter allows for evaluation or analysis of data premised on the marital status of the participants. The total respondents when viewed against their marital status indicate that married persons were in the majority occupying 70.9% followed by single persons with 21.6%. Widowers are 32 representing 7.5% of the total respondents.

Table 3: State of Respondents

Variables	Frequency	Percent	Valid Percent	Cumulative Percent

Niger	38	8.92	8.92	8.92
Plateau	158	37.08	37.08	46.0
Zamfara	133	31.2	31.2	77.2
Kogi	97	22.8	22.8	100.0
Total	426	100.0	100.0	

Table 3 shows 38 respondents from Niger, representing 8.92%, 158 respondents from Plateau, representing 37.08%, Zamfara has highest number of respondents of 133 representing 31.2% while Kogi has 97 respondents representing 22.8%.

Table 4: Age Bracket of Respondents

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
16-20	55	12.9	12.9	12.9
21-30	175	41.1	41.1	54.0
31-40	131	30.8	30.8	84.7
41above	65	15.3	15.3	100.0
Total	426	100.0	100.0	

From Table 4, 55 respondents representing 12.9% of the respondents are between the ages of 16-20. It can also be deduced from the table that most of the sampled respondents of this study, are either between the ages of 21-30 and ages 31-40, with 41.1% and 30.8% respectively. While 15.3% of the total respondents,are above 41years.

Table 5: Educational Qualification of Respondents

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
None	165	38.7	38.7	38.7
Primary	157	36.9	36.9	75.6
Secondary	69	16.2	16.2	91.8
Tertiary	35	8.2	8.2	100.0
Total	426	100.0	100.0	

Table 5 shows that, respondents with no formal education are 165 occupying 38.7% of the total number of respondents. Those who attended primary, secondary and tertiary institutions were 157, 69, 35 respondents, representing 36.9%, 16.2% and 8.2% of the total aggregate respectively.

SECTION B: Impact of mining on the environment

Table 6: Have you ever experienced degradation of your surrounding environment?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	391	91.8	91.8	91.8
No	35	8.2	8.2	100.0
Total	426	100.0	100.0	

A very high number of respondents representing 91.8% choose the "yes" variable to signify that their communities are affected by environmental degradation by mining of solid minerals. This goes to show that a lot of mining communities crave for sustainable mining practices.

Table 7: If your answer to the preceding question is yes, how many times?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Once	14	3.29	3.29	3.29
Twice	71	16.67	16.67	19.96
Three times	103	24.17	24.17	44.13
Morethan three times	203	47.65	47.65	91.78
Not applicable	35	8.22	8.22	100.0

Total	426	100.0	100.0	

From the foregoing, 203 respondents representing 47.65% responded that degradation activities occurred more than three times giving an indication that environmental degradation by mining of solid minerals is a common feature in their areas.

Table 8: Where did the degradation affect?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
House	49	11.5	11.5	11.5
River	173	40.6	40.6	52.1
Farmland	171	40.1	40.1	92.3
School	33	7.7	7.7	100.0
Total	426	100.0	100.0	

Table 8 Indicates that degradation affected houses of 49 (11.5%) of the respondents. 173 (40.6%) and 171 (40.1%) respondents stated that it affected river and farmland respectively. While only 33 (7.7%) of the respondents indicated “school” as where degradation affected.

Table 9: What happened to the affected areas/environment after degradation?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Made good	55	12.9	12.9	12.9
Not good	371	87.1	87.1	100.0
Total	426	100.0	100.0	

In this respect, a majority of respondents (371) representing 87.1% responded that the degraded or damaged areas or environment were not made good; while 55 respondents representing 12.9% said the environment was made good. This means that the efforts at rehabilitation, restoration, remediation, reclamation of mined out areas is still not encouraging. The need to return the environment to its pre-mining state, after mining activities, would have to be vigorously pursued if sustainable development is to be anchored.

Table 10: If your answer to the preceding question is that the environment was made good, who made the environment good?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Community	2	0.47	0.47	0.47
Government	39	9.15	9.15	9.62
Company	11	2.58	2.58	12.20
NGO	3	0.70	0.70	12.90
Not applicable	371	87.09	87.09	100.0
Total	426	100.0	100.0	

From the above Table, 371 (87.09%) of the total respondents give not applicable as option of who made the environment good; while 2 (0.47%) of the respondents choose “community”, 39 respondents representing 9.15% choose government. Also, 11 and 3 respondents representing 2.58% and 0.7% selected “company” and “NGO” respectively.

Table 11: How long did it take to make the environment good?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Immediately	9	2.11	2.11	2.11
One week	17	4.0	4.0	6.10
One month	29	6.81	6.81	12.91
Not at all	371	87.09	87.09	100.0
Total	426	100.0	100.0	

Majority of the respondents (371 of them) on this issue responded "not at all" representing 87.09%. That is to say that the damaged mining sites/areas are yet to be made good. All hands must therefore be on deck to make the environment in the light of what a degraded environment portend for human health, development and sustainable development.

Table 12: As a result of the damage to the environment, what happened to fish, reptiles, crops, animals, human beings, drinking water etc.?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Not affected	93	21.8	21.8	21.8
Affected	333	78.2	78.2	100.0
Total	426	100.0	100.0	

From the above, a clear majority of the respondents representing 78.2% responded that animals and human beings including their drinking water were affected. This shows that the impact of degradation is pervasive. However, 93 respondents representing 21.8% reacted that they were noted affected

Table 13: After the environment was made good, did the farmers return to their farms?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	87	20.4	20.4	20.4
No	339	79.6	79.6	100.0
Total	426	100.0	100.0	

On this matter, 87 persons representing 20.4% replied that the farmers returned to their farmlands while339 respondents representing 79.6% of the respondents answered that farmers did not return to their farm lands; thus leaving them with the option of joining other trades and vocations including illegal mining. The additional implication of this is that environmental degradation results in movement from one area to the other in search of a better environment for fulfillment and satisfaction of their human needs and development. This poses security challenges for the nation and degenerate to civil strife or struggle for space culminating in unrest and other social vices.

Table 14: What is the productive capacity of the farm after the environment was made good?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Very low	334	78.4	78.4	78.4
Average	79	18.5	18.5	96.9
Very high	13	3.1	3.1	100.0
Total	426	100.0	100.0	

A high number of respondents representing 78.4% answered that the yields of farmlands were very low owing to the impact of degradation on the outputs and quality of produce from farmlands affected by mining activities. Another 79 persons representing 18.5% answered that the yield was average while 13 respondents representing 3.1% posited that the yield was high. The conclusion that could be arrived at on this issue, is that mining devastates agricultural farming land and poses threat to livelihoods.

Table 15: What was the cause of the environmental degradation?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Operations	234	54.9	54.9	54.9
Chemical	65	15.3	15.3	70.2
Afforestation	96	22.5	22.5	92.7
Dust	8	1.9	1.9	94.6
Explosives	23	5.4	5.4	100.0
Total	426	100.0	100.0	

A very large number of respondents (234) stated the cause of degradation to be from mining operations, 65 respondents constituting 15.3% attributed it to chemical deposition. 96 respondents representing 22.5% said it was afforestation that caused degradation. While 1.9% and 5.4% of the total Respondents state‘dust’ and ‘explosion’ as the cause of the environmental degradation.

Table 16: Has any Government Official visited your place after the degradation?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	87	20.4	20.4	20.4
No	339	79.6	79.6	100.0
Total	426	100.0	100.0	

From Table 16, 20.4%% of respondents responded that government official visited their place after degradation. While, 339 persons representing 79.6% responded that nogovernment official visited their place after degradation.

Table 17: Has any measures being taken to prevent further degradation?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	71	16.7	16.7	16.7
No	306	71.8	71.8	88.5
I don't know	49	11.5	11.5	100.0
Total	426	100.0	100.0	

On the question whether anything has been done to prevent further degradation, 71 respondents (16.7%) said “yes”, 306 respondents (71.8%) of respondents said “no” while 49 respondents (11.5%) answered they do not know.

Table 18: If your answer to the preceding question, is ‘yes’ what has been done to prevent further degradation?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Remediation	25	5.86	5.86	5.86
Stop work	15	3.52	3.52	9.38
Enlightenment	31	7.28	7.28	16.66
Not applicable	355	83.33	83.33	100.0
Total	426	100.0	100.0	

From the above Table, 355 (83.33%) of the total respondents give not applicable as option of what has been done to prevent further degradation; while 25 respondents representing 5.86% choose remediation, 15 (3.52%) of the respondents choose "stop work", 31 respondents representing 7.28% choose enlightenment respectively.

Table 19: Did you receive any compensation for the degradation?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	50	11.7	11.7	11.7
No	376	88.3	88.3	100.0
Total	426	100.0	100.0	

From the Table 19 a high number of respondents representing 88.3% responded that they did not receive any compensation. Fifty (50) persons representing 11.7% answered in the affirmative. This underscores the assertion in previous works that many host mining communities were not compensated for the devastation caused their environments as a result of the impacts of mining. Compensation is important in protecting the environment and ensuring sustainable development. The compensation regime articulated and discussed in a previous chapter of this work needs to

implemented in the interest of the environment, other stakeholders and, particularly host mining communities.

Table 20: If your answer to the preceding question is, 'yes' how many times?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Every time	9	2.11	2.11	2.11
Once	19	4.46	4.46	6.57
Twice	22	5.16	5.16	11.73
Not applicable	376	88.26	88.26	100.0
Total	426	100.0	100.0	

Of the total respondents who answered in the affirmative, 9 of them representing 2.11% responded that they received compensation every time there is degradation; once; 19 respondents representing 4.46% stated once while 22 respondents representing 5.16% indicated twice. Even at this, it connotes that compensation regime adopted is not responsive and comprehensive in terms of catering for the yarning of members of host mining communities.

Table 21: What do you want the person who caused the degradation to do for you?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Money	48	11.3	11.3	11.3
Clean	129	30.3	30.3	41.5
Both of the above	222	52.1	52.1	93.7
Others	27	6.3	6.3	100.0

Total	426	100.0	100.0	

An analysis of the data contained in the above Table revealed that 11.3% of the respondents being 48 in number wanted the person that caused the degradation to pay them. 129 respondents representing 30.3% want them to make their environment clean and good. 52.1% of respondents want both monetary compensation and cleaning their environment. The remaining 27 respondents representing 6.3% stated other condition. This revealed that the integrated approach of monetary compensation and making the environment good is the best of the three options in providing succour for mankind and the environment.

Table 22: What do you want the Government to do for you?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Stop degradation	364	85.4	85.4	85.4
Assistance	57	13.4	13.4	98.8
Nothing	5	1.2	1.2	100.0
Total	426	100.0	100.0	

A majority of the respondents being 364 in number and constituting 85.4% want the Government to tell mining companies to stop degradation.A total of 57 respondents being 13.4% want the government to assist them while 5 respondents being 1.2% of the total aggregate of respondents elected option C, i.e “nothing”.

Table 23: Where did the degradation take place?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Not far	417	97.9	97.9	97.9
Very far	9	2.1	2.1	100.0
Total	426	100.0	100.0	

Pertaining to the data captured in the above Table, 417 respondents representing 97.9% of the total respondents responded that environmental degradation by mining of solid minerals took place not too far from their places while the remaining 2.1% answered, it occurred very far from their places.This indicates that in the light of the close proximity of impacts of mining on the environment, more members of host mining communities are most likely to be affected by these impacts.

Table 24: Where do you dry your clothes after washing?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Outside	305	71.6	95.1	95.1
Inside	121	28.4	4.9	100.0
Total	426	100.0	100.0	

The data contained in the above Table was derived following answers to questionnaire on the issue. 305 respondents representing 71.6% responded that they spread their clothes outside; while 121 respondents representing 28.4% responded that they spread their clothes inside their houses. Clothes and fabrics are receptors of dust, smoke and other forms of pollutants from land, water and air.

Table 25: Do you notice anything when you dry your cloth outside or overnight?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	394	92.5	92.5	92.5
No	32	7.5	7.5	100.0
Total	426	100.0	100.0	

From Table 25, majority of respondents (92.5%) notice something when they dry their cloth outside overnight. While only few of them (7.5%) %) said, they don't notice anything when they dry their cloth outside overnight.

Table 26: If your answer to the preceding question is 'yes', what do you notice?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Stain/Dust	417	97.9	97.9	97.9
Nothing	9	2.1	2.1	100.0
Total	426	100.0	100.0	

From the above Table, large proportion of respondent (97.8%) notice stain/dust when they dry your cloth outside or overnight.

Table 27: What colour was your Zink when you roofed your house?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Silver	404	94.8	94.8	94.8

	Brown	13	3.1	3.1	97.9
	None	9	2.1	2.1	100.0
	Total	426	100.0	100.0	

The above Table revealed that 98% of respondents used Silver Zink to roof their houses while 3.1% used Brown Zink. Just 2.1% of respondents used neither Silver nor Brown for their roofing.

Table 28: What colour is it now?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Brown	265	62.2	62.2	62.2
White	96	22.5	22.5	84.7
Black	48	11.27	11.27	96
None	17	4.0	4.0	100.0
Total	426	100.0	100.0	

Table 28 shows that the roof of majority of the respondents (62.2%) in the affected communities are now Brown while 22.5% White roof accounted for 22.5%. Black Zink accounted for 11.27% and 17% are none of the options provided. This can be deduced that mining in the host communities has done damages to 96% of houses roof in the areas.

Table 29: What is the name of your place/community?

S/N	Variables	Frequency	Valid Percentage	Cumulative Percentage
a.	Bukuru	50	11.73	11.73
b.	Barkin-Ladi	58	13.62	25.35

c.	Wase	29	6.81	32.16
d.	Kapani	21	4.92	37.09
e.	Odagbo	31	7.27	44.37
f.	Jakura	34	7.98	52.35
g.	Obajana	32	7.51	59.86
h.	Bagega	38	8.92	68.78
i.	Bukkuyum	34	7.98	76.76
j.	Maradun	32	7.51	84.27
k.	Anka	29	6.80	91.07
l.	Luku	38	8.92	100
Total	N/A	426	100%	

The above Table states the various places/communities of the respondents and their percentage spread across the mentioned communities in Plateau (communities "a-d" above), Zamfara (communities "h-k" above), Kogi (communities "e-g" above) and Niger States (community "l" above). The total respondents from communities "a-d" were 158 representing 37.08%, while the total respondents from communities "e-g" and "h-k" were 97 and 133 connoting 22.8% and 31.2% respectively. Community "l", had 38 Respondent, at 8.92%.

6.3 Analysis of Data Collected Pursuant to Questionnaire Administered at NESREA and FMM& SD

The above sub-head relates to the analysis of data obtained from questionnaire administered on staff of the Federal Ministry of Mines and Steel Development and National Environmental Standards Regulations Enforcement Agency, which follows below:

SECTION A: Bio Data

Table 1: Sex of Respondents

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Male	79	77.5	77.5	77.5
Female	23	22.5	2.2.5	100.0
Total	102	100.0	100.0	

The categorization of respondents on gender basis is to particularly elicit the percentage of gender participation; as the involvement of both sexes allows for gender integrated expression of views. It also allows for a basis of determining the number of or percentage of male to female that participated in the exercise. Consequently, from the foregoing Table, 79 male respondents responded to the questionnaire while female respondents were 23 representing 77.5% and 22.5% respectively of the total respondents.

Table 2: Educational Qualification of Respondents

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Primary	0	0	0	0
Secondary	10	9.8	9.8	9.8
Tertiary	70	68.6	68.6	78.4
Others	22	21.6	21.6	100.0
Total	102	100.0	100.0	

The essence of this particular categorization is to determine the educational qualifications of respondents in order to analyse or appreciate their ability and capacity to assimilate information, receive sensitization and contribute to the mitigation or prevention of factors that could exacerbate the impacts of mining on the environment in Nigeria, viewed from institutional engagement perspectives.

The basic analysis of the data presented above shows that, there were no respondents without formal education. Out of the total respondents, 70 (68.6%) were educated up to the tertiary level, 10 (9.8%) had secondary education while 22 (21.6%) were classified under "others". This information gives a virile basis that more than90% of the respondents were literate enough to understand issues of the impact of mining on the environment, particularly of host mining communities in Nigeria and the roles institutions could play in ameliorating these impacts.

SECTION B: Impact of mining on the environment

Table 3: Do illegal miners contribute to the degradation of the environment?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	98	96.1	96.1	96.1
No	4	3.9	3.9	100.0
Total	102	100.0	100.0	

A very high number of respondents (98) representing 96.1% choose "yes" signifying that the activities of illegal miners contribute to environmental degradation by mining of solid minerals. While 4 respondents representing 3.9% answered in the negative.

Table 4: If your answer under Table 3 above is yes, why has their activities not been stopped?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Inadequate Laws	12	11.8	11.8	11.8
Lack of enforcement	25	24.5	24.5	36.3
Lack of funds	11	10.8	10.8	47.1
All of the above	54	52.9	52.9	100.0
Total	102	100.0	100.0	

From the foregoing, 54 respondents representing 52.9% selected the option of "all the above" indicating that all the previous options listed were responsible for why the activities of illegal miners have not been stopped. Particularly, 12 respondents representing 11.8% put the blame on inadequate provisions in laws, 25 respondents (24.5%) said lack of enforcement was responsible, and 11 respondents (10.8%) choose lack of funds, technology and manpower. The response of aggregating the causes i.e option d, situate the matter better.

Table 5: What solutions will you proffer?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Amend Laws	18	17.7	17.7	17.7
Enforce enforcement	19	18.6	18.6	36.3
Provision of funds	20	19.6	19.6	59.9
All of the above	45	44.1	44.1	100.0
Total	102	100.0	100.0	

From the above Table 45 respondents (44.1%) answered “all the above”, 20 respondents (19.6%) want funds, technology and manpower to be provided for MDAs, 19 respondents (18.6%) want MDAs to enforce laws while 18 respondents (17.7%) signified amendment of laws. Again, option d which is “all the above” would better assuage or mitigate the problem because of its composite-based solution to the challenge.

Table 6: Are there mining sites that have remained un-reclaimed and un-restored?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	94	92.2	92.2	92.2
No	0	0	0	92.2
I don't know	8	7.8	7.8	100.0
Total	102	100.0	100.0	

On the question raised, answers are represented in data in the above Table, 94 (92.2% of) respondents responded that there are mining sites that have remained un-reclaimed and un-restored, no respondent answered in the negative but 8 respondents (7.8%) responded they do not know. Therefore, the realistic conclusion that could be arrived at is that this challenge gargantuan as the answer from the questionnaire issued to host mining communities on this is the same with the respondents within these government institutions.

Table 7: Who is taking steps to restore them?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Community, Village or Ind.	0	0	0	0
Govt Agency	55	53.92	53.92	53.92

	Companies	25	24.51	24.51	78.43
	Not applicable	22	21.57	21.57	100.0
	Total	102	100.0	100.0	

On this poser, it is shown by respondents that communities did not restore the sites whereas 55 respondents (53.92%) responded that it is governments, 25 respondents (24.51%) responded that such sites were restored by mining companies. 22 respondents (21.57%) respondents answered "not applicable". This particular answer is instructive in the light of the fact that majority of respondents earlier indicated that mining sites were not restored. The need to embark on restoration efforts by relevant stakeholders is therefore desirable and obligatory.

Table 8: What is responsible for the non-restoration of mined out areas?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Inadequacy of Funds	25	24.5	24.5	24.5
Lack of enforcement	77	75.5	75.5	100
I don't know	0	o	0	100.0
Total	102	100.0	100.0	

On the question raised, answers were represented in data in the above Table. 77 respondents (75.5%) responded that non-restoration of mined out sites is as a result of lack of enforcement of licence terms and conditions. 25 respondents (24.5%) attributed this to inadequate funds for MDAs for that purpose. Non-enforcement of laws either as a result of laxed/non-compliance

with licence terms and conditions or as result of inadequate funds constitute bane to the prevention mitigation module of the impact of mining activities on the environment.

Table 9: Do you know whether relevant Government officials visit communities affected by degradation by mining of solid minerals in the Country?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	62	60.8	60.8	60.8
No	15	14.7	14.7	75.5
I don't know	25	24.5	24.5	100.0
Total	102	100.0	100.0	

From the foregoing Table, 62 respondents (60.8%) responded that government officials visit communities affected by such degradation, 15 respondents (14.7%) answered in the negative while 25 respondents (24.5%) said they do not know.

Table 10: Has anything been done to prevent further degradation?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	46	45.1	45.1	45.1
No	32	31.4	31.4	76.5
I don't know	24	23.5	23.5	100.0
Total	102	100.0	100.0	

On the question whether anything has been done to prevent further degradation, 46 respondents (45.1%) said “yes”; 32 respondents (31.4%) said “no” while 24 respondents (23.5%) answered they do not know.

Table 11: If your answer to the preceding question, is ‘yes’ what has been done?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Awareness, Enlightment, Education	33	32.3	32.3	32.3
Environmental protection	7	6.9	6.9	39.2
Relevant Regulation	6	5.9	5.9	59.9
Not applicable	56	54.9	54.9	100.0
Total	102	100.0	100.0	

The Table above shows the distribution of 46 (45.1%) respondents who responded that measures were taken to stop further environmental degradation; and the particular measures that they said were taken. 56 (54.9%) persons were not applicable for the question.

Table 12: Do you know whether mining communities are paid any compensation for the degradation of their environment?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	15	14.7	14.7	14.7
No	12	11.8	11.8	26.5
I don't know	75	73.5	73.5	100.0

Total	102	100.0	100.0	

From the Table a high number of respondents (75) representing 73.5% responded that they do not know. 15 respondents (14.7%) answered “yes” while 12 respondents (11.8%) answered in the negative. It would appear from this that the precept and obligation of compensating members of host mining communities for the impact of mining on their environment is still on the lower wrung. Compensation is important in protecting the environment from degradation by mining of solid minerals and for ensuring sustainable development.

Table 13: If your response to the above is ‘yes’, who paid?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Government	13	12.7	12.7	12.7
Companies	2	2	2	2
Not applicable	87	85.3	85.3	100.0
Total	102	100.0	100.0	

From the Table above, 13 respondents representing (12.7%) said the Government paid compensation while 2 of them representing (2%) indicated that compensation was paid by mining companies. 87 respondents representing (85.3%) did not respond to the question because it was not applicable to them and therefore selected N/A.

Table 14: If your answer is that compensation is paid, how many times?

Variables	Frequency	Percent	Valid Percent	Cumulative Percent

Every time	3	2.9	2.9	2.9
Only once	6	5.9	5.9	7.9
Specify	6	5.9	5.9	13.8
I do not know	87	85.3	85.3	100.0
Total	102	100.0	100.0	

Of the total 15 respondents who answered in the affirmative, 6 (5.9%) indicated compensation is paid periodically, another 6 (5.9%) stated once; while the remaining 3 (2.9%) answered “every time there is degradation”.

Some of the findings or corroborative positions taken from the field study include the fact that mining of minerals impact negatively on the environment and host mining communities are worse hit. Also, lack of enforcement of provisions of relevant laws, licence terms and conditions constitute bane to the degradation of the environment by mining; most often, compensation is not paid to members of host mining communities or the communities themselves thus exacerbating the challenge; illegal and unregulated mining activities contribute to the degradation of the environment and finally, numerous mining sites are not restores or rehabilitated after mining activities thus endangering the environment and the livelihoods of the inhabitants of those mining communities.

During the course of the field study, numerous challenges were encountered and some of them include the apathy of some respondents to questionnaires based on their perception that they achieve nothing by obliging; there is also the problem of finance for sponsoring adhoc staff engaged to handle the distribution and collection of the questionnaires, this factor limited the capacity of the researcher to conduct field study in other parts of the country where mining of

minerals have or may have impacted on the environment. These challenges were surmounted by persuasion and enlightenment of those who were initially apathetic. The inadequate finance that was available for the field study was deployed to administering questionnaires in the aforementioned States and particular communities mentioned in this chapter.

In conclusion, the data presented and analyzed in this chapter represented the responses of two vital stakeholders on this issue i.e, host mining communities on the one hand and key government ministry and agency charged with managing and enforcing the issue of environmental degradation by mining of solid minerals in Nigeria, on the other. It is hoped that more efforts will be put by stakeholders particularly, relevant government ministry and agency considered herein in this chapter, on the need to mitigate the impacts of mining on the environment through *inter alia* the restoration of mined out areas and, enforcement of relevant laws and regulations in order to better engender the precept of sustainable development of mining in Nigeria.

CHAPTER SEVEN

SUMMARY AND CONCLUSION

7.1 Summary

The thesis discussed the background to the study capturing the historical developments of the subject matter. Conceptual clarification of key terms was considered thus giving impetus to the understanding of the terrain of the thesis. It is evident from the issues discussed that Nigeria has a fairly articulated legal frameworkand institutional framework containing sanctions regime for protection ofthe environment fromthe impacts of mining of solid minerals.

In spite of this legal framework, issues of environmental degradation by mining of solid minerals still pervade because *inter alia*, the provisions of some of the laws contain lacuna and this allow miners to fester on thus contributing to the negative impacts of mining on the environment.This is the case with the provisions of sections 131(a) & (d) and 133 of the N. M.M.A which relates to the issue of lack of sanction or penalty regime for illegal miners. While institutions have also been established to translate the letters of laws and regulations into benefits for the Country, challenges of non-enforcement or weak enforcement by these institutions pervade leaving our environment still degraded as a result ofmining of solid minerals.

These institutions need to improve their enforcement capacities and holistically apply the enforcement mechanisms elaborated for protecting the environment from the impacts of mining of solid minerals in Nigeria. An analysis of some matters and practices pertaining to this thesis and their challenges were stated and appreciated.

7.2 Findings

Consequent upon all the foregoing, the following are the findings of this research:

(i)**Lacuna in Law:**The provisions of the N.M.M.A underpinning this thesis contain lacuna;and this has the effect of undermining efforts being madeto protect the environment from degradation by mining of solid minerals in Nigeria. By the provision of section 90(2) of the Nigerian Minerals and Mining Act, all leaseholders shall carry out effective rehabilitation of mined out areas to the satisfaction of the Mines Environmental Compliance Department and also pay prescribed rehabilitation fee, proportionate to their profits as a way to defray further cost of rehabilitation and reclamation. The phrase "proportionate to their profits" is ambiguous and nebulous; as it may also be difficult to verify underlying records officially. The implementation of this provision whose purport is to protect the environment from degradation by the mining of solid minerals could be abused by staff of the Mines Environmental Compliance Department since no verifiable, realistic and enforceable yardstick is set for achieving the dictates of the provision as articulated therein.

Also, section 131 of the N.M.M.A created the offence of illegal mining amongst others; there is no penal regime in the N.M.M.A for the offence. Rather the punishment specified in section 133 of the N.M.M.A relates to a mineral title holder who is guilty of an offence under section 131 of the Act and no more. The pervasive activities of illegal miners in Nigeria, is *inter alia*, not unrelated to the lack of a sanction regime in the N.M.M.A for their illegal activities. This therefore, does not encourage deterrence of those who may want to join the band wagon.

(ii) **Contradictions in Sanctions Regime in Legislations:**There are apparent contradictions in relevant legislations and regulations in the sanctions specified for breaches and infractions of their provisions. An example is the different sanctions for the deposit or dealing in harmful wastes or hazardous substances stated inthe Harmful Waste (Special Criminal Provisions, etc.) Act on the one hand and the NESREA Act on the other; for the same or almost similar offences

under the said Acts. Under the NESREA Act, the penalty for such criminal acts in certain cases ranged from a fine not exceeding N 1,000,000.00 or imprisonment for a term not exceeding 5 years. Whereas, under the Harmful Wastes (Special Criminal Procedure etc.) Act, the penalty for most of the offences upon conviction is lifeimprisonment.

There is urgent need for reconciliation and amendment of these laws as deemed appropriate in the circumstances; since the current regime of conflict of provisions does not allow for a harmonized enforcement focus contributing to the ravage of environmental degradation by the mining of solid minerals in Nigeria. Furthermore, the sanction regime set out in section 16(1) of the NEITI Act of N30,000,000.00 for giving false information or report or statement of account to the Federal Government or its agency which results in underpayment or non-payment of accruable revenue to the Federal Government contradicts the provisions of section 133 of the Nigerian Minerals and Mining Act which specified a sanction of N20,000,000.00 for a similar offence set out in section 131(c) of the same Act.

(iii) **Poor Enforcement of Laws and Regulations and Constraintsto Enforcement:** The problem or challenge with the Country is not much of the inadequacies or lack of relevant laws for protection of the environment from degradation by mining of solid minerals but mainly as a result of lack of enforcement of laws and regulations. For example in certain cases, projects or mining activities have been commenced without the requisite conduct of the mandatory environmental impact assessment as prescribed by the provisions of extant laws of the Country. This undermines the herculean task of protection of the environment from degradation by mining of solid minerals.The issue of non-enforcement of some of the provisions of laws and regulations examined in this thesisis also portrayed by the litany of un-remedied, un-reclaimed and un-restored mining sites. Non-enforcement of laws results in the waste of tax payers fund and man-

hours,it diminishes critical societal values, encourages and breeds corruption and translates inthe continued under-development of the Country.

The powers given to relevant institutions particularly NESREA for the protection of the environment by the mining of solid minerals are wide. However, the exercise of these powers have been clogged by the constraint of inadequate budgetary allocation,[946] lack of standard laboratories, insufficient Personal Protection Equipment (PPE),[947] use of inappropriate technology for enforcing compliance and the lack of trained manpower in critical numbers. This results in inadequate or improperenforcement of regulatory laws.Also, the lack of inertia and ineptitude of relevant regulatory authorities and agencies of government saddled with the responsibility of enlightenment and enforcement of relevant laws, are constraints to enforcement.

In addition, unclear provisions of some laws and regulations have constituted clogs and bane to the enforcement of their provisions. Some of the examples of these provisions include but are not limited to the provisions of sections 46(2), 131, 133 of the N.M.M.A in relation to the vexed issue of illegal mining and lack of sanctions regime thereof, the provision of the Explosives Act and the use of the ambiguous appellation "Minister responsible for explosives".

(iv)**Overlap of Powers and InadequateCoordination and Collaboration between and amongst Stakeholders:**The powers of the Minister of Mines and Steel Development and that of the Minister of Environment on the crucial matter of the protection of the environment from degradation by mining of solid minerals overlap; there is the need for proper liaison and coordination between these Ministers. While the NESREA Act empowers the Minister of Environment to make Regulations in relation to matters concerning the environment (including

[946]Nesreanews (2015), vol 27 Jan-Apr, p.8
[947]*Ibid*, p.12

mining of solid minerals), the NMMA also gave powers to the Minister of Mines and Steel Development to make relevant Regulations too.

The powers conferred by both the NESREA Act and the NMMA are wide. In the exercise of these powers, these Ministers have separately issued relevant Regulations which in certain instances almost cover the same issues. The need for constant liaison between the two Ministers and their respective ministries in order to avoid cases of regulatory conflicts and overlap is therefore important in the task of protecting the environment from degradation by mining of solid minerals in particular and the overall gain of environmental sustainability in general.

The collaboration between and amongst government ministries and agencies set up to attain the protection of the environment from degradation by the mining of solid minerals in Nigeria is at its lower wrung and therefore does not aid the protection of the environment from degradation by mining of solid minerals. Collaborationneeds to be encouraged and improved upon. The need for inter-agency cooperation and collaboration between particularly the Federal Ministry of Environment and the Federal Ministry of Mines and Steel Development in order to sufficiently harness the benefits of the provision of section 8(o) of the NESREA Act is therefore desirable. This is also true of the collaborative effort between the Federal Ministry of Environment, Housing & Urban Development and the Federal Ministry of Mines and Steel Development; which already have an existing Memorandum of Understanding covering the issues of the procedure and process for environmental impact assessment in the solid minerals sector.

(v)**Clogs to Access to Justice:**The CFRN, 1999 (as amended) did not make specific provisions for the protection of the environment from degradation by the mining of solid minerals. Though, the provisions of sections 17(2)(d) and 20 of the CFRN,1999 (as amended) attempt to provide a

general framework within which the environment could be protected from all forms of degradation including those arising from the mining of solid minerals in Nigeria. It is however noted that, environmental matters are treated or provided in the CFRN, 1999 (as amended) under Chapter 11 (Fundamental Objectives and Directive Principles of State Policy) which make those matters non-justiciable; which by that dint constitutes clog to access to justice by the citizens.

(vi) **Restricted Scope of Funding for Environmental Protection by Mining of Solid Minerals:**The ecological fund was set up by the Federal government as a policy where 1% of the total federally collected revenue is allocated for addressing the nation's problem of environmental degradation;[948]and therefore, to fund environmental protection, and degradation prevention, reduction and restoration projects and strategies in Nigeria.Though the federal government has been implementing this financial policy on environment, it is yet to become a statutory obligation under the CFRN, 1999 (as amended) or some other statutory instrument.[949]The lack of legislation engraining this policy as part of the nation's laws may constitute a clog to the protection of the environment from degradation including those arising by the mining of solid minerals; and may even create veritable platform for policy summersault.

TheNEITI Act made provisions for the payment by extractive industries to the Federal Government of Nigeria but unfortunately, the NEITI Act failed to take cognitive value of the well-known effects of the impacts of mining of solid minerals on the environment and therefore set aside funds for proffering remedies (including compensation) for ameliorating the negative impacts of mining on the environment. This category of proposed funding if legislated into law

[948]Usman, A.K (2012). *Environmental Protection Law and Practice*, Ababa Press Ltd, Ibadan, p.239
[949]*Ibid*

will increase the funding base available for protection of the environment from degradation by mining of solid minerals in Nigeria.

(vii) Poor Culture of Mines Restoration and Compensation Regimes: Many mines sites are left un-restored after mining activities thus compounding the efforts being made to mitigate the impacts of mining on the environment; only very few mines out of thousands abandoned are restored. Also the compensation regime for mitigating the effects or impacts of mining on the environment of particularly host mining communities is poor; thus resulting in the continued degradation of the environment of host mining communities.

7.3 Recommendations

Against the backdrop of the foregoing findings, the following recommendations are made:

(i)**Bridging of Lacuna in Law:** The lacuna and gaps identified and observed in our laws and Regulations should be bridged or closed through the process of the amendment of identified relevant laws and regulations in other to afford greater protection to the environment from degradation by mining of sold minerals in Nigeria. For example, the phrase "proportionate to their profits" in section 90(2) of the N.M.M.A should be replaced with the phrase "2.5% of their profits after tax" to ensure legislative and regulatory certainty. This will ensure that a determinate percentage or amount is employed towards the rehabilitation and reclamation of mined out areas for the purpose of protecting the environment from degradation by mining of solid minerals. Also, section 133of the N.M.M.A, should be amended to provide for a clear penalty of N500,000.00 or imprisonment not exceeding a term of 3 years or to both such fine and imprisonment as punishment for illegal minersand a fine of N20,000,000.00 for corporate bodies in order to make for a better and certain sanctions regime.

(ii) **Coherent and Streamlined Sanctions Regime of Legislations:**The penal regimes for depositing hazardous wastes under the Harmful Waste Act and the NESREA Act should be reconciled in the light of the relevant part of recommendation (ii) herein above. Furthermore, the sanction regime set out in section 16(1) of the NEITI Act of N30,000,000.00 for giving false information or report or statement of account to the Federal Government or its agency which results in underpayment or non-payment of accruable revenue to the Federal Government should be reduced to N20,000,000.00 to align with the provisions of section 133 of the NMMA which specified a penal regime of N20,000,000.00 for a similar offence set out in section 131(c) of the same Act. Or else the regime under the NEITI Act should be amended by categorization of industries based on their yield or profitability whereby the sanction relating to the solid minerals sector should be left at N20,000,000.00.

(iii) **Improved Culture of Enforcement of Laws and Regulations:**The provisions of all relevant laws and regulations on this thesis should be holistically, efficiently and effectively enforced to guarantee the protection of the environment from degradation by mining of solid minerals; while constraining factors to enforcement should be addressed by for example ensuring adequate budgetary provision, use of appropriate technology and trained manpower should be engaged and deployed towards the task of the protection of the environment by mining of solid minerals.

(iv) **ImprovedCoordination and Collaborationbetween and amongst Stakeholders:**In the light of the overlapping powers and functions of the Minister of Mines and Steel Development and that of the Minister of Environment on the crucial matter of the protection of the environment from degradation by mining of solid minerals and also in the functions/roles of their ministries, proper and constant liaison and coordination between these Ministers and staff of their ministries

is of utmost importance and must be encouraged in order to avoid cases of regulatory conflicts and to protect the environment from degradation by mining of solid minerals in particular, and the overall gain of environmental sustainability in general.

Collaborative efforts between and amongst stakeholders should be improved and sustained for better protection of the environment from degradation by mining of solid minerals in Nigeria. Inter-agency cooperation and collaboration between particularly the Federal Ministry of Environment and the Federal Ministry of Mines and Steel Development in order to sufficiently harness the benefits of the provision of section 8(o) of the NESREA Act is therefore desirable. Further, the scope of the already existing Memorandum of Understanding between the Federal Ministry of Environment, Housing & Urban Development and the Federal Ministry of Mines and Steel Development which now mainly covers the issue of the procedure and process for environmental impact assessment in the solid minerals sector should be expanded to include issues of collaboration on all matters that concern the environment and the mining of solid mineral resources in Nigeria.

(v) **Removal of Clogs to Access to Justice:**The provisions of sections 17(2)(d) and 20 of the Constitution of the Federal Republic of Nigeria, 1999 (as amended) should be removed from Chapter 11 (Fundamental Objectives and Directive Principles of State Policy) which make those matters non-justiciable and escalated to full-fledged constitutional right in order to confer improved rights of access to justice by citizens and contribute to the protection of the environment from degradation by mining of solid minerals in Nigeria.

(vi) **Expanding the Scope of Funding for Environmental Protection by Mining of Solid Minerals:**The policy where 1% of the total revenue collected by the federal government is

allocated for addressing the nation's problem of environmental degradation[950]and therefore to fund environmental protection, should be enacted into law so as to place statutory obligation on the federal government and in order to avoid policy summersault.This will guarantee this source as continued source of funding for protecting the environment from degradation by mining of solid minerals. However, it is recommended that while giving the fund the required statutory backing, the current 1% of federally collected revenue should be increased to 2% out of which 0.5% should be earmarked for issues of protection of the environment from degradation by mining of solid minerals in Nigeria.

TheNEITI Actshould be amended to take cognitive value of the well-known effects of mining of solid minerals on the environment and therefore setting aside funds under the provisions of the Act for proffering (including compensation) for ameliorating the negative impacts of mining on the environment. This category of proposed funding if legislated into law will increase the funding base available for protection of the environment from degradation by mining of solid minerals in Nigeria.

(vii) Improved Culture of Mines Restoration and Compensation Regimes: The current practice in respect of mines restoration and compensation of members of host mining communities is undesirable and therefore appropriate measures of mines restoration should be taken by concerned stakeholders- mining companies, licensees and the government to restore mine sites and also ensure compensation of members of host mining communities. These will translate to contributing towards sustainable and improved mine sites and environment of host mining communities.

[950]Usman, A.K,*op cit*, p.239

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APPENDIX A

DEPARTMENT OF PUBLIC LAW,FACULTY OF LAW, AHMADU BELLO UNIVERSITY, ZARIA

Dear Respondent,

RESEARCH ON APPRAISAL OF THE LEGAL AND INSTITUTIONAL FRAMEWORK FOR REGULATING THE IMPACTS OF MINING OF MINERALS ON THE ENVIRONMENT IN NIGERIA

I am a postgraduate student of the Faculty of Law, Ahmed Bello University, Zaria and this research is in partial fulfilment of the requirements for the award of a Doctoral Degree in Law.

The purpose of these questionnaires includes:

(a) To enable this researcher ascertain whether or not there is negative impacts of mining of solid minerals on the environment in your locality;
(b) The effects of such impacts of mining of solid minerals on the environment in your locality;
(c) The impacts of mining on health and human development;
(d) The response of the appropriate authorities to the degradation or impacts of mining on the environment.

Kindly be assured that information supplied in this questionnaire will be treated with utmost confidentiality and will only be used for research purpose. I will appreciate if your answers are candid and accurate. Please answer all questions as unanswered questionnaires will create problem in the analysis of data.

To ensure confidentiality, do not sign or write your name in any part of the questionnaire.

Thank you for your attention and cooperation.

Yours faithfully,

Adamu Sani Isakoto, Esq.

QUESTIONNAIRE "A"

SECTION "A" BIO DATA

1. Indicate your Sex
   a. Male [ ]
   b. Female [ ]

2. What is your marital status?
   a. Single [ ]
   b. Married [ ]
   c. Widow/Widower [ ]

3. What is your State of origin? ……

4. Indicate your age bracket
   a. 11 – 15yrs [ ]
   b. 16 - 20yrs [ ]
   c. 21 – 30yrs [ ]
   d. 31 - 40yrs [ ]
   e. 41 – and above [ ]

5. Educational Qualification
   a. No formal education [ ]
   b. Primary Education [ ]
   c. Secondary School [ ]
   d. Tertiary [ ]
   e. Others- specify …….

SECTION "B" The Impact of mining of solid minerals on your environment

6. Has your surrounding environment ever been affected by degradation by mining of solid minerals?
   a. Yes [ ]
   b. No [ ]

7. If your answer in 7 above is yes, how many times?
   a. Once [ ]
   b. Twice [ ]
   c. Three times [ ]

d. More than three times [ ]
e. Not Applicable [ ]

8. Where did the degradation or impact affect?
a. Your house? [ ]
b. Your river? [ ]
c. Your farmland? [ ]
d. Your school? [ ]

9. What happened to the affected areas?
a. It was made good [ ]
b. It was not made good [ ]

10. If your answer in the precedingquestion is that the environment was made good, who made good the environment?
a. Community, village, or Individuals [ ]
b. Government Agency [ ]
c. Mining Company [ ]
d. None Governmental Organization (NGO) [ ]
e. Not Applicable [ ]

11. How long did it take to make the environment good?

a. Immediately when the degradation occurred [ ]
b. One week [ ]
c. One month [ ]
d. Not at all [ ]

12. As a result of this degradation what happened to fishes, reptiles, crops, Animals, Human beings, pets, Drinking water etc.?

a. Not affected [ ]
b. Affected [ ]

13. After the environment was made good, did the farmers returned to their farm?
a. Yes they did [ ]
b. No they did not [ ]

14. What is the productive capacity of the farm after the area was made good?
a. Very low [ ]

b. Average [ ]
c. Very High [ ]

15. What was the cause of the degradation?

a. From mining operations [ ]
b. From deposit of tailings and chemicals into water [ ]
c. From degradation of soil and cutting down of trees [ ]
d. Transportation and dust [ ]
e. Blasting of explosives and earth moving equipment [ ]

16. Has any Government Official visited your place after the degradation?

a. Yes [ ]
b. No [ ]

17. Has anything being done to prevent further degradation or negative impacts?

a. Yes [ ]
b. No [ ]
c. I don't know [ ]

18. If your answer to the preceding question is 'yes' what hasbeen done to prevent further degradation or negative impacts?

a. Remediation [ ]
b. Stop work [ ]
c. Enlightenment [ ]
d. Not Applicable [ ]

19. Have you ever received any compensation for the degradation or negative impacts?

a. Yes [ ] b. No [ ]

20. If your answer is yes, how many times?

a. Every time there is degradation [ ]
b. Only once [ ]
c. Twice [ ]
d. Not Applicable [ ]

21. What would you want the person who caused the degradation to do for you?

a. To give me money [ ]
b. To clean the environment [ ]
c. Money and clean the environment [ ]

d. Others [ ]

22. What do you want the government to do for you?

a. To tell the mining company or person to stop the degradation [ ]
b. To come to your assistance [ ]
c. Others [ ]

23. Where did the degradation take place?

a. Not too far from my place [ ] (Name of your place……)
b. Very far from my place [ ]

24. Where do you dry your cloth after washing?

a. Outside the house [ ]
b. Inside the house [ ]

25. Do you notice anything when you dry your cloth outside or over night?

a. Yes [ ]
b. No [ ]

26. If your answer in the preceding question is 'yes', what do you notice?

a. The cloth becomes stained with dust [ ]
b. Nothing happens to the cloth [ ]

27. What colour was your Zink when you roofed your house?

a. Silver (White) [ ]
b. Brown [ ]
c. None of the above [ ]

28. What colour is it now?

a. Brown [ ]
b. White [ ]
c. Black [ ]
d. None of the above [ ]

29. What is the name of your place/community

a. Bukuru [ ]
b. Barkin-Ladi [ ]
c. Wase [ ]
d. Kapani [ ]
e. Odagbo [ ]
f. Jakura [ ]
g. Obajana [ ]

h. Bagega [ ]
i. Bukkuyum [ ]
j. Maradun [ ]
k. Anka [ ]
l. Luku [ ]

Thank you

QUESTIONNAIRE "B"

SECTION "A" BIO DATA

1. Sex
a. Male [ ]
b. Female [ ]

2. Educational Qualification
a. Primary Education [ ]
b. Secondary School [ ]
c. Tertiary [ ]
d. Others- specify …….

SECTION "B" The Impact of mining of solid minerals on the environment

3. Do illegal miners contribute to the negative impacts of mining on the environment?
   a. Yes [ ] b. No [ ]

4. If your answer tothe above is 'yes', why has their activities not been stopped or controlled?
a. Inadequate provisions in our laws to penalize them [ ]
b. Lack of enforcement of the provisions of relevant laws [ ]
c. Lack of funds, technology and manpower [ ]
d. All of the above [ ]

5. What solutions would you proffer?
a. Amend our laws to provide appropriate sanctions [ ]
b. Encourage relevant MDAs to enforce the provisions of laws [ ]
c. Relevant MDAs should be provided with funds, technology and manpower [ ]
d. All of the above [ ]

6. Are there mining sites that have remained un-reclaimed and un-restored?
   a. Yes [ ] b. No [ ] c. I do not know [ ]

7. If your answer to the above is 'yes', who is taking steps to restore them?
a. Community, village, or Individuals [ ]
b. Government Agencies [ ]
c. Mining Companies [ ]
d. Not Applicable [ ]

8. What is responsible for the non-restoration of mined out areas?

a. Inadequate funds for MDAs for that purpose [ ]
b. Lack of enforcement of licence terms and conditions [ ]
c. I do not know [ ]

9. Do you know whether relevantGovernment Officials visit communities affected by degradation arising from mining of solid minerals in the Country?
   a. Yes [ ] b. No [ ] c. I do not know [ ]

10. Has anything been done to prevent further negative impacts or degradation?
    a. Yes [ ] b. No [ ] c. I don't know [ ]

11. If your answer is 'yes' what has been done to prevent further negative impacts or degradation?
    a. Awareness, Enlightenment, Education [ ]
    b. Environmental protection [ ]
    c. Enactment of Laws/Regulations [ ]
    d. Not Applicable [ ]

12. Do you know whether mining communitiesare paid any compensation for the negative impacts or degradation of their communities?
    a. Yes [ ] b. No [ ] c. I do not know [ ]

13. If your response to the above is 'yes', who paid?
    a. Government Agencies [ ] b. Mining Companies [ ] c. Not Applicable [ ]

14. If your answer in 14 is yes, how many times?

a. Every time there is degradation [ ]
b. Only once [ ]
c. Others specify……
d. I do not know

Thank you