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- *Medical and Pharmaceutical Sciences*
- *Engineering*
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- *Humanities and Social Sciences*
- *Management Science & Entrepreneurship*

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ENVIRONMENTAL EFFECT OF ARTISANAL AND SMALL SCALE MINING ACTIVITIES ON WATER QUALITY IN GURARA LOCAL GOVERNMENT AREA, NIGER STATE, NIGERIA

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Abstract
Artisanal and Small Scale Mining (ASM) activities have been identified as a major economic activity in Gurara Local Government Area of Niger State, Nigeria. This study evaluated the environmental effect of ASM activities on the environment, of Gurara LGA. The study utilized data from the ASM sites especially the soil and water samples to ascertain physicochemical parameters and heavy metal in waters. The result obtained were compared to the WHO acceptable standards. The results indicated that most of the water samples were polluted with lead, Aluminum, Zinc, among others and thus, unsafe for domestic use and aquatic life. Also, the concentration of the Lead, Aluminum and Zinc in the water sample was found to be higher than that of the control sample especially during the wet season. It has, thus, been discovered that ASM activities have significant effects on the water quality of the study area, because the water in the area. Therefore, there is the need for urgent measures to monitor and regulate the mining activities in the area, in order to reduce the effects on environmental quality especially the water.

***Keywords:** Mining, environment, standards, physicochemical parameters.*

Introduction

Over the years, water has been considered a vital raw material of social development and organization (Sabhapandit et al., 2010).Water has much broader influences on health and wellbeing and issues such as the quantity and quality of the water are important in determining the health of individuals and whole communities (WHO, 2011). The inadequacy of water in both quality and quantity can be intensified through pollution by effluents from anthropogenic sources such as industrial, mining activities, domestic sewage, waste water

treatment plant and agricultural land which are directly or indirectly discharged into the aquatic environment, is a significant problem in some countries in the world (Manickum et al., 2014;Fosso-Kankeuet al., 2011).

Mining refers to the practice of extraction of mineral deposits from the surface of the earth or from beneath the surface (Ako et al., 2014). Though mining can only take place wherever minerals are present and economically feasible. The broad significance of the mining sector has been known to include foreign exchange, employment and economic development (Obaje et al., 2005). An artisanal and small-scale miner (ASM) is a subsistence miner who is not officially employed by a mining company, but works independently, mining various minerals or panning for gold using their own resources (Macdonald et al., 2014).

In Nigeria, most of the mining operations are carried out by artisanal and small scale miners which are usually surface mining carried out with little or no advanced technology to manage the ecological damages of the mining operations (Oladipo, 2006).

Artisanal and Small-Scale Mining is a means of livelihood adopted primarily in rural areas (Veiga, 2003). This is sometimes called informal sector, which is outside the legal and regulatory framework (Azubike, 2011). When not formalized, organized, planned and controlled, Artisanal and Small-Scale Mining can be viewed to be harmful by governments and environmentalists, because of its potential for environmental damage, social disruption and conflicts (Opafunso, 2010). Some of these menaces are; depletion of the environment such as land degradation, devegetation, loss of aquatic animals, water pollution and air pollution. Most artisanal and small scale miners work in difficult and often very hazardous conditions in the absence of the required safe mining regulations to safeguard the operations (Veiga, 2003).

Artisanal and Small Scale Mining operations continue to spread due to; rise in the demand for gold and unattractive nature of other means of livelihoods such as farming in the rural areas where the mineral is substantially available. Despite serious dangers posed by this activity, impact of small scale mining activities in Nigeria economy cannot be over exaggerated. Besides minning's direct contribution to Gross Domestic Product (GDP), its activities can attract land, capital and labour, all of which are indispensable for industrialisation and economic development, particularly in developing countries.

However noxious materials are released into the environment, posing large health risk to the miners, their families and surrounding communities (Azubike,

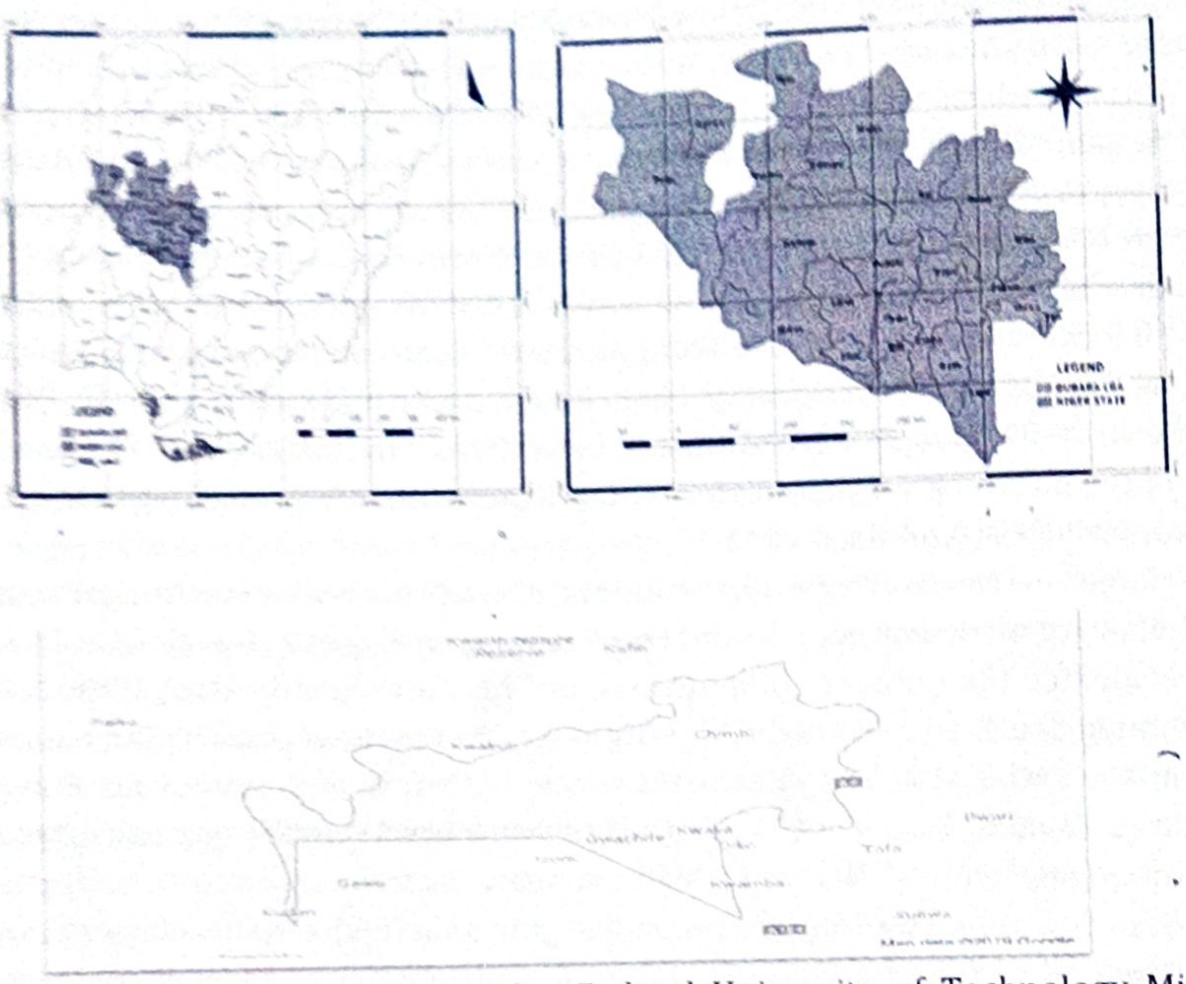
2011). Thus, gold mining operations are particularly dangerous, as they often use mercury amalgamation process to extract gold from ores (CDC, 2010). In March 2010, Medecins Sans Frontieres (MSF) discovered an epidemy of lead poisoning in Zamfara state in North–Western Nigeria particularly in Anka and Bukkuyum Local Government Areas of the state (MSF, 2010). Subsequent investigations by the Centre for Disease Control (CDC), the World Health Organization (WHO) and the Zamfara State Ministry of Health (ZMOH) 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 (WHO, 2011). At least 10,000 people were estimated to be affected overall (MSF, 2010).The source of the outbreak was associated with artisanal gold ore processing that occurs in the villages (Azubike, 2011).

Numerous research have been conducted locally to checkmate the environmental effect of Artisanal and Small Scale Mining in Nigeria, Nganje et al., (2010) evaluated the influence of mine drainage on water quality along River Nyaba in Enugu South-Eastern Nigeria, as drainage from underground coal mines, surface mines and coal refuse piles is the oldest industrial pollution in the Enugu coal area. Ahmed, Bashir and Okafo (2011) also looked into the impacts of local gold mining on drinking water quality in Zamfara State.

Gurara and its' environs is a major lead and gold field and therefore suffer in the hands of artisanal miners. There is no substantial and detailed research work available as it relates to water quality and ASM in Gurara Local Government. The present study therefore investigates the effect of artisanal small scale mining activities on water quality in Gurara Local Government, Niger State.

Study Area

Gurara is a Local Government Area in Niger State, Nigeria, adjoining the Federal Capital Territory. Its headquarters are in the town of Gawu. Major inhabitants are the Gwari people. Gurara is home to the famous tourist recreation center: Gurara Waterfalls, named after the Gurara River, on whose course the fall is situated. Gurara has an area of 954km2 and a population of 90,974 at the 2006 census with a coordinate of 9021'n 7005'E/ 7.3500N 7.0830E. It is known with Mineral Raw Materials: Marble, Dolomite, Silica sand, Clay, granite, Galena. (RMRDC, 2012).Gurara currently hosts a number of very active Artisanal precious and base metal mining activities.



(Source: Department of Geography, Federal University of Technology Minna Niger State)

Figure 1: The Study Area (Parts of Gurara Local Government Area, Niger State, Nigeria)

Literature Review

Hydrosphere consists of sea (97.2%) and freshwater (2.8%), including oceans, seas, rivers, lakes and underground waters (Sinha et. al., 2011). Quality of freshwaters, being small part of it is a global problem nowadays, because of thought that the water quality is a major factor affecting both humans and animals. When the parameters of water quality are enough and in tight amount, health of plants, animals and humans increase in parallel. Surface water quality of an area affects usually both natural events (such as climatic changes) and anthropogenic sources such as artisanal mining is stable pollutant sources (Wu and Wang, 2007).

Retaining water for agricultural or other purposes; increasing organic materials together with urbanizing (Mutlu, et al., 2016) and especially over increasing of phosphorus and other nutrients with use of fertilizers in agriculture causes water pollution (Easton et al., 2007). This leads to negative effects on fish sources, mortality in communities of benthic organisms, decreasing in species number and microbial growth with decrease in oxygen supply due to increase in nutrients and impaired water quality (Treseder, 2008).

The general desire to protect fresh water fisheries has led to an expansion of research into their habitat requirements, in terms of their physicochemical parameters such PH, temperature, dissolve oxygen, transparency, total alkalinity, total hardness, electrical conductivity, total dissolved solid, Biological Oxygen Demand e.t.c. The physical and chemical properties of water immensely influenced its uses, distribution and productivity of the biota (Unanam and Akpan, 2006).

Metal released from processing, dewatering or acid rock drainage can further degrade river water quality. Particularly concerning in ASGM is the widespread use of mercury amalgamation techniques in processing, although cyanide processing is increasingly being used in reprocessing of tailings (de Andrade Lima et al., 2008; Velásquez-López et al. 2011). Mercury processing emits toxic vapours, with predicted global mercury emission by ASGM to be 727 tonnes:35% of the total world anthropogenic emission of mercury (UNEP 2013). The toxicity of mercury derived from ASGM operations to people and, to a lesser extent, the environment, has been well studied (Bose-O'Reilly et al. 2010). However, the impact of AGSM operations on the broader water quality of these river and streams has been largely overlooked.

Hydrological changes in rivers can alter available hydrological habitat for aquatic biota (Blanchette and Pearson 2013), and increased turbidity may lead to smothering of aquatic plants, habitats, and biota. To protect fresh water fisheries has led to an expansion of research into their water in terms of their physicochemical parameters such as total alkalinity, total hardness, electrical conductivity, and serve as a basis for the richness or otherwise biological productivity of the environment.

The chloride is found to be most predominating. The groundwater in Balochistan has high concentrations of fluoride, iron and nitrate in many districts. The pH part of the Durov diagram reveals that groundwater in study area is alkaline and

electrical conductivity of most of samples lies in the range of drinking water standards adapted (Prabaharan et al., 2010).

From the SAR and conductivity plot it was found that most of groundwater cannot be used on soil without restricted drainage and special requirement of Management for salinity control. Comparison of data with WHO(2011) standards for drinking water indicate that the groundwater in the most of study area are suitable for drinking purpose except some few places. The ground water recorded a wide range in TDS.

A joint CDC and WHO investigation on the outbreak of acute lead poisoning in Zamfara State reported illness and deaths among children mostly under 5 years old in some communities in Bukkuyum and Anka LGAs (CDC, 2010). Based on the findings of this report and consultations with UNICEF and Zamfara State Ministry of Water Resources, the National Water Resources Institute (NWRI) deployed a technical team to carryout comprehensive assessment of the situation consisting of four (4) key components that included: (i) socio-economic assessment, (ii) water quality assessment (both physico-chemical and microbiological), (iii) sanitary inspection and hygiene practices assessment, and (iv) geochemical assessment of the processed rock and inspection of mines. This paper highlights the findings of the drinking water quality assessment. Detailed results of all the components of the assessment are given elsewhere (NWRI, 2010).

Ako et *al.,*(2014), the evaluation of environmental impact of artisanal gold mining was carried out in Luku, North Central Nigeria. During the field work, observations of the whole mining site were made so as to evaluate the physical impact of mining and representative soil samples were randomly collected from the surface from mined and un-mined areas within the mining sites. Results from the laboratory analyses show that soils are contaminated with elements such as Pb, Cu, Zn etc. These elements in the soil get accumulated in plants and animals, and are passed on to human through the food chain. Also, these elements can find their way to surface and ground water making the water unsuitable for human consumption. It may cause slow growth rate in plants and respiratory problem, liver and kidney damage in man.

Joseph et *al.,* (2013), in his study specifically, looks into how mining activities affect water resources and therefore water access in the mining communities of Konongo and Odumasi based on the perception, opinions and practices of selected households. Through the use of the fish bowl probability sampling, a

total of 107 households were selected from the mining communities of Konongo and Odumasi to respond to interviews.

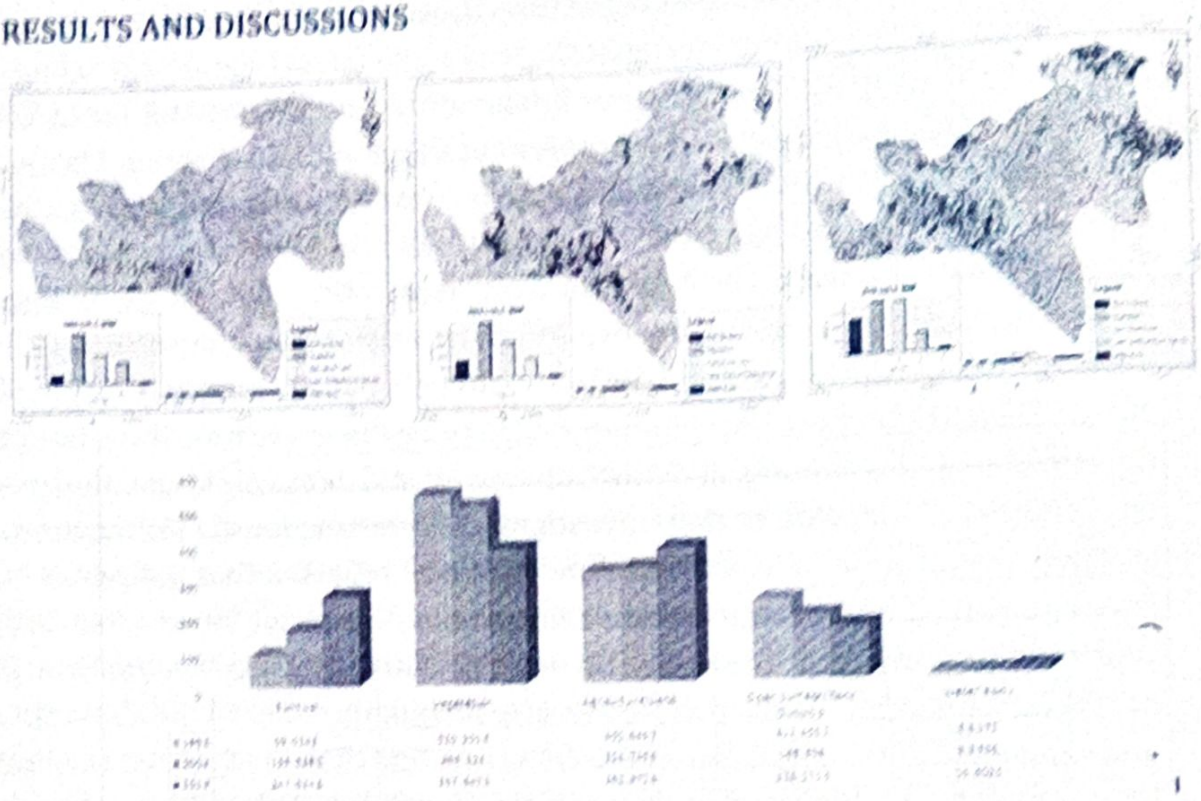
Ibrahim et al., (2013) also study the impact of Lead mining activities in Tunga Tsauni, Gurara Local Government Area of Niger State, Nigeria. The major materials used in this work include samples of water and crop plants obtained from the study site and its vicinity. The study site is a lead mining site located at Tunga Tsauni in Gurara Local Government Area (LGA) of Niger State, Nigeria. Major chemicals used during the experimental work include nitric acid (HNO3- 96% purity), hydrochloric acid (HCl- 95% purity) and lead nitrate (PbNO3- 95 % purity. From the analysis samples taken at varying distances from the mining site, the effects of the mining activities on water and crop plant sat the mining environs was conducted in their investigation by testing for the presence as well as the concentration of lead. Furthermore, it was reported that the values of the lead concentrations obtained were compared with the set limits (standard) of World Health Organization. It was discovered from the results obtained that most of the water samples were polluted with lead and, thus, unsafe for domestic use and aquatic life. Also, discovered the concentration of the lead in the crop plants was found to be higher than that of the control sample. It has, thus, been discovered that the mining activities of lead have significant effects on the crop plants and the water in the mining area (Tunga Tsauni) of Niger State because the soil and the water in the area were found to be contaminated with lead, which is toxic and dangerous. Therefore, there is the need for urgent and serious measures to regulate the mining activities at the site in order to significantly reduce the effects of this poisonous substance (lead) on the crop plants and the water of the area.

Materials and Methods

Since the target of this study is to investigate the Environmental Effect of Artisanal and Small Scale Mining Activities On Water Quality. Collection and handling of samples was polypropylene (PP) plastic bottles at five different stations along Gurara River. Sample collection was done twice a month, for about eight months (four (4) months of Wet Season and four (4) months of dry season)and subjected to laboratory analysis.

Observations method and questionnaire were administered to the target population of the study, to obtain the required information to achieve the objectives of the study. As well as Landsat image (Landsat ETM 1998, Landsat ETM 2008, Landsat ETM 2018) of the study location was utilised, to determine the trend of the land use and land cover in the study area.

RESULTS AND DISCUSSIONS



(Source: Research Compilation, 2019)

Figure 2 show the Land use Land cover change of the study area in 1998, 2008 and 2018.

Figure 2 shows the Land use Land cover change of the study area in 1998. It reveals that vegetation is the dominant land cover features covering about 520.2018 square kilometer (45.94%) of the area. This can be found on every section of the study area but more concentration is at the central part. This is followed by farmland which covers an area of 300.8493 square kilometer (26.57%) of the total land mass of the area. Most of the farmland lands were located majorly in the northern and southern fringes of the study area. Also, open surface/rock crop accounted for 213.4512 square kilometer (18.85%) were typical found across the north western, north eastern, and south western section of the study area. In addition, built up areas cover an area of 89.0343 square kilometer (7.86%). This is found majorly in the southern part of the map and in small patches at other section of the area, this land use indicates that in 1998 they were only few settlements in the study. Finally, water body covers a total land area of 8.8173 square kilometer (0.78%) and these rivers start flowing from the northern to southern section of the study area. The total land area of the study area is 1132.354 square kilometer.

The LULC of the study area in 2008 which indicates that built up areas has increased within the ten – years (10) time period from 89.0343 square kilometer (7.86%) in 1998 and now accounted for about 155.5362 (Km2) (13.74%) this increase can be attributed to influx of people to the area as well as increase in population due to the presence of large markets where agricultural products are sold at a very reduced price. vegetation on the other hand decreased from 520.2018 square kilometer (45.94%) to 486.324 (Km2) (42.96 %) which indicates that expansion in built up and other developmental activities has reduced vegetation cover. In addition, farmland increase from of 300.8493 square kilometer (26.57%) in 1998 to 311.7456 (Km2) (27.54 %). This increase can be attributed to increase demand for food. In addition, open surface/ rock out crop decreased from 213.4512 square kilometer (18.85%) in 1998 to 169.596 (Km2) (14.98%) in 2008. Finally, water body remains relatively stable at 8.8956 (Km2) (0.79%). The analysis of 2018 satellite image of the study areas reveals that there was continuous expansion of built up area in the study area. The expansion encroached on other land use category mostly towards eastern and southern section of the area. Figure 4.3 reveals that in 2018 Settlement areas covered a total of 247.8348 (Km2) (21.89%) of the total area which is made up both residential, commercial, and other land use areas. There was an increase of built up areas by 92.2986 (Km2) (8.06%) in the ten years' period.
Similarly, vegetation land also decreases from 486.324 (Km2) (42.96 %) in 2008 to 367.6473 (Km2) (32.47%) in 2018 which may be attribute to the influx of people leading to increased deforestation activities as well as pressure on other available vegetation resources. Agricultural land on the other hand has increased further to 362.8728 (Km2) (32.05%), in 2018 from 311.7456 (Km2) (27.54 %) in 2008, which can be attribute to the conversion of vegetation, open surface as well as other land uses to agricultural land to meet the increase demand for food supply in the area as well as other people coming to the area, also with the present government encouragement to farming. Furthermore, open surface/ rock outcrop covers an area of 138.2715 (Km2) (12.21%) in 2018 while Water body increase from 8.8956 (Km2) (0.79%) in 2008 to 15.5025 (Km2) (1.37%) due to various mining activities going in the study area.

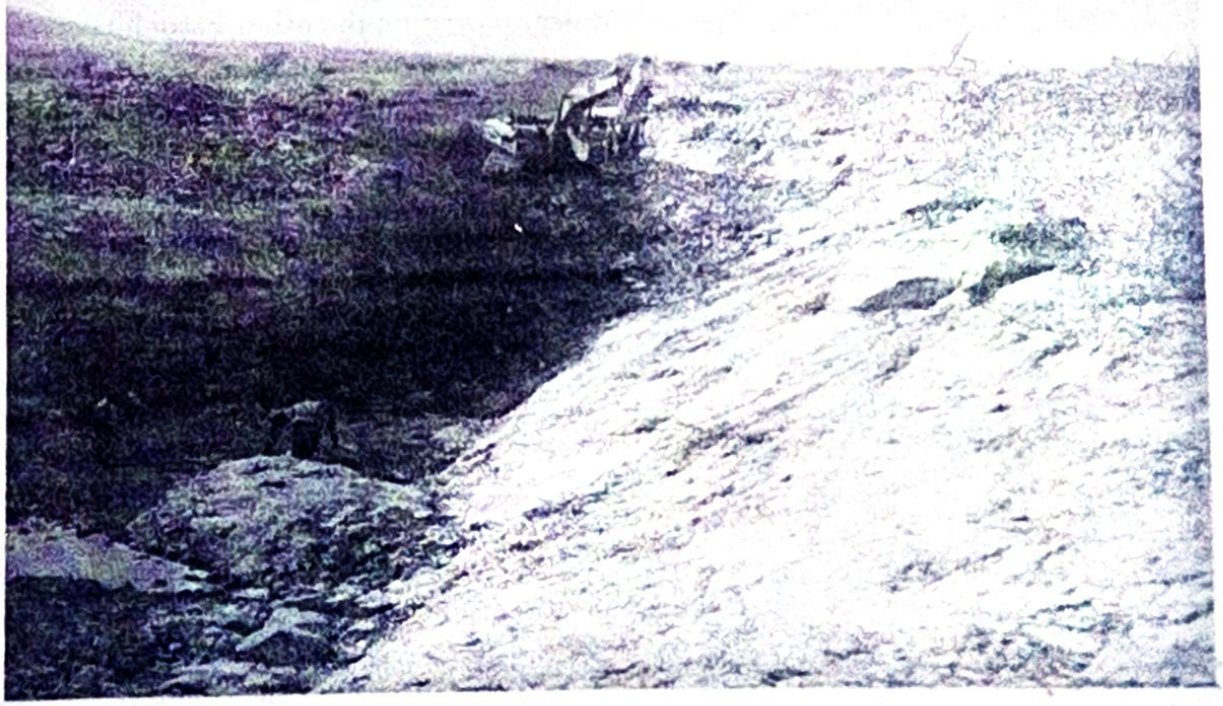
Table 1: Effects of mining Activities on the Study Area

Purpose	Strongly Agree		Agree		Don't know		Disagree		Strongly Disagree	
	Frq.	(%)	Frq.	(%)	Frq.	(%)	Frq.	(%)	Frq.	(%)
Source of drinking water	25	41.67	30	50	1	1.67	1	1.67	3	5
Sedimentation of water	28	46.67	22	36.67	2	3.33	2	3.33	1	1.67
Pollution of water	32		53.33		18		30		5	

Waterborne diseases	17	28.33	25	41.67	15
Land degradation	23	38.33	32	53.33	2

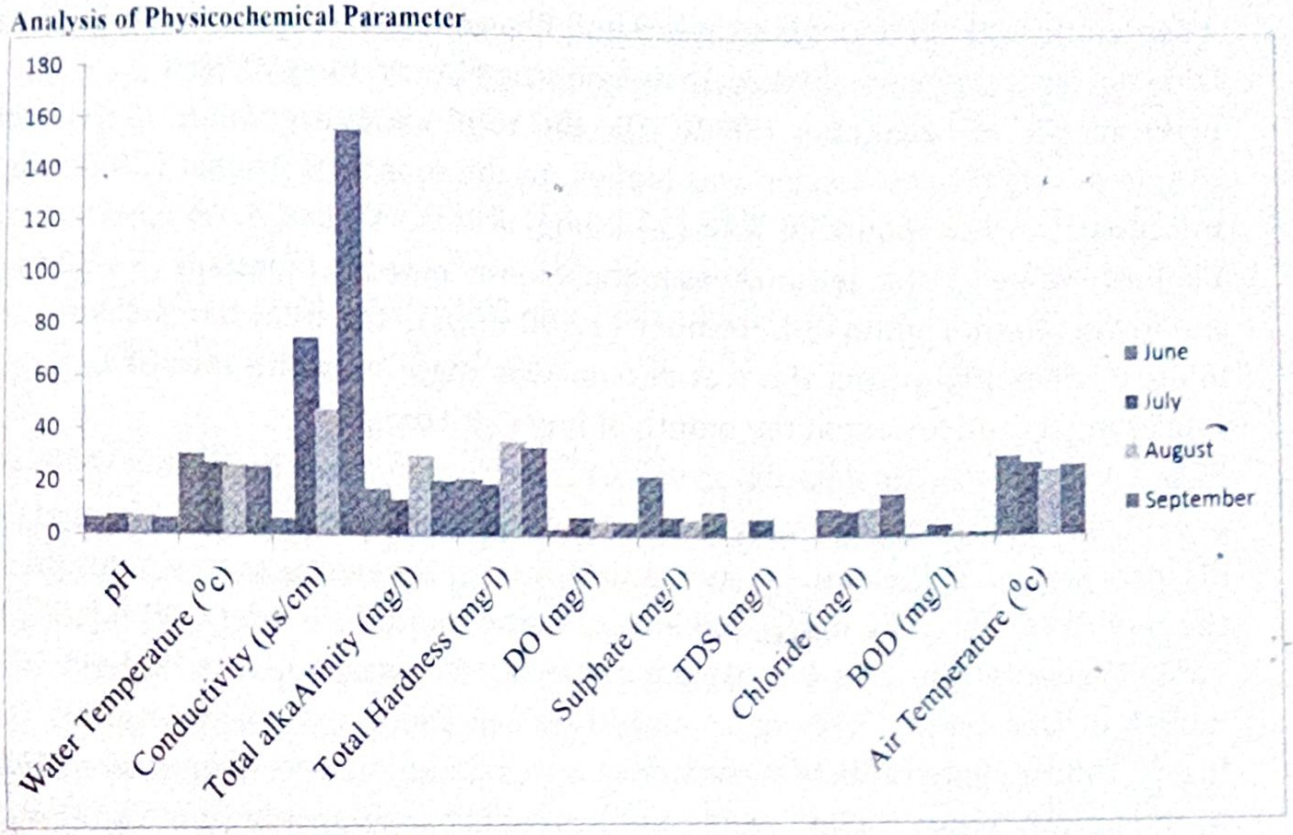
Table 4.3 shows that 50% of the participants agree that mining activities affect their various source of water majorly at the downstream while 5% strongly disagree to the same effect on source of drinking water. On the other hand, 28 (46.67%) strongly agree that mining result to sedimentation of the river while 2(3.33%) disagree to the presence of sedimentation Furthermore, 32 (53.33%) strongly agree that mining in the area result to pollution of the water in the area by contaminating the water and making it unsafe for domestic consumption while 3(5%) disagree.

In addition, 25 (41.67%) agree that there is emergence water related diseases such as malaria because of the waterlog resulting to breeding place of mosquitoes while 2(3.33%) disagree. Finally, 32 (53.33%) agree that there is problem of land degradation on the area and 2 (3.33%) disagree. Plate I shows pictures of land degradation on the study area.



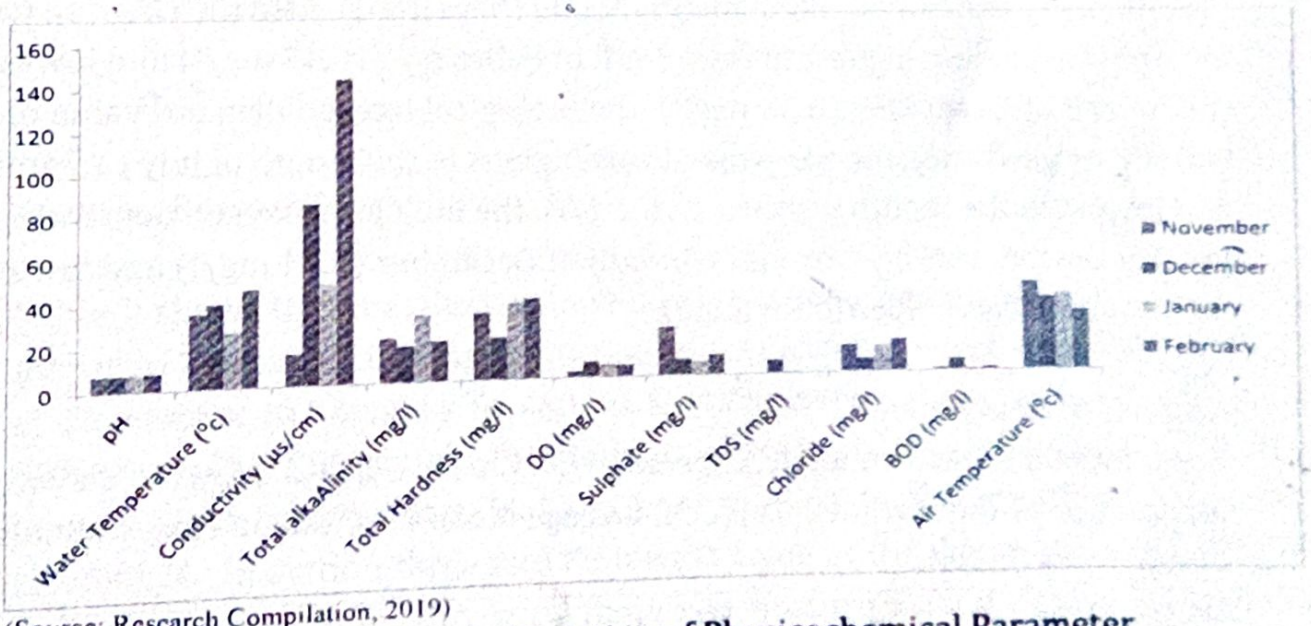
(Source: Research Compilation, 2019)

Plate I: Land degradation in the Study Area due to ASM activities



(Source: Research Compilation, 2019)

Figure 3: Wet Season Monthly Variation of Physicochemical Parameter



(Source: Research Compilation, 2019)

Figure 4: Dry Season Monthly Variation of Physicochemical Parameter

Figure 3 shows that the water temperature value of the water sample during the wet season was highest in the month of June (30.60°C) and lowest in the month

of September (25.90 °C)). Also Table 3 and Figure reveals the water temperature value for Dry season, was highest in the month of December (39.20 °C) and lowest in the month of November (35.20°C)), the total alkalinity value of the water sample during the wet season was highest in the month of August (30.80 mg/l) and lowest in the month of July (14.00mg/l). Also Figure 4 reveals the total alkalinity value for Dry season, was highest in the month of January (31.80 mg/l) and lowest in the month of December (17.00 mg/l), the total hardness value of the water sample during the wet season was highest in the month of August (36.50 mg/l) and lowest in the month of July (20.10mg/l).

Figure 4 reveals the total hardness value for Dry season, was highest in the month of February (38.40 mg/l) and lowest in the month of December (20.10 mg/l), the dissolve oxygen value of the water sample during the wet season was highest in the month of July (7.70 mg/l) and lowest in the month of June (3.00 mg/l). Also Table 2 reveals the dissolve oxygen value for Dry season, was highest in the month of December (7.70 mg/l) and lowest in the month of November (3.00 mg/l), the sulphate value of the water sample during the wet season was highest in the month of June (23.35 mg/l) and lowest in the month of June (6.69 mg/l). The sulphate value for Dry season, was highest in the month of November (23.35 mg/l) and lowest in the month of January (6.69 mg/l), the chloride value of the water sample during the wet season was highest in the month of September (16.59 mg/l) and lowest in the month of July (9.95 mg/l). Also the chloride value for Dry season, was highest in the month of February (15.47 mg/l) and lowest in the month of December (6.33 mg/l), the biological oxygen demand value of the water sample during the wet season was highest in the month of July (4.74mg/l) and lowest in the month of June (1.46 mg/l). the biological oxygen demand value for Dry season, was highest in the month of December (5.74 mg/l) and lowest in the month of November (1.36 mg/l).

Analysis of Heavy Metal

The contents of heavy metals, especially Cu, Zn, Ni, Cd, and Co, were elevated in this section of the stations. **Table 2: Average Mean Variation of Heavy Metals For Wet and Dry Season**

Station /year	Sampling Month	Al mg/l	Cu mg/l	Fe mg/l	Mn mg/l	Zn mg/l	Pb mg/l	Cd mg/l	Co mg/l	Cr mg/l	Mo	Ni
1	Nov	0.2	1.85	0.02	0.048	2.49	0.42	0.005	1.8	0.05	0.08	0.02

	Dec	0.2	1.50	0.04	0.267	2.61	0.32	0.006	1.7	0.043	0.06	0.02
	Jan	0.19	2.62	0.04	0.332	2.42	0.02	0.015	1.9	0.07	0.07	0.02
	Feb	0.3	2.5	0.01	0.54	2.76	0.00	0.010	2.0	0.08	0.07	0.02
2												
	Nov	0.3	1.5	0.47	0.198	3.13	0.21	0.005	1.0	0.02	0.07	0.03
	Dec	0.32	2.01	0.23	0.229	3.89	0.25	0.005	2.0	0.07	0.09	0.02
	Jan	0.2	0.95	0.38	0.249	12.9	0.22	0.009	1.0	0.04	0.05	0.04
	Feb	1.26	2.00	0.06	0.2	5.41	0.00	0.005	3.0	0.05	0.06	0.02
3												
	Nov	0.18	2.96	0.6	0.681	7.43	0.39	0.005	1.0	0.07	0.08	0.02
	Dec	0.41	1.30	0.2	1.239	5.27	0.44	0.002	2.0	0.01	0.04	0.02
	Jan	0.51	1.50	0.17	0.340	2.24	0.70	0.005	2.1	0.08	0.05	0.02
	Feb	0.19	1.25	0.35	0.2	3.51	1.25	0.005	2.3	0.08	0.05	0.02
4												
	Nov	0.02	2.02	0.04	0.54	3.00	0.00	0.005	2.3	0.16	0.05	0.03
	Dec	0.03	2.03	0.22	0.373	3.01	0.67	0.007	2.7	0.04	0.07	0.02
	Jan	0.2	0.26	0.04	0.608	2.96	0.21	0.005	2.1	0.05	0.07	0.02
	Feb	0.15	2.1	0.04	0.227	2.8	0.01	0.005	2.1	0.06	0.05	0.03
5	Nov	0.16	1.93	0.06	0.62	3.1	0.01	0.005	2.1	0.08	0.07	0.02
	Dec	0.02	2.04	0.04	0.159	3.3	0.03	0.004	2.1	0.15	0.07	0.03
	Jan	0.19	1.1	0.04	0.104	3.1	0.05	0.008	2.2	0.05	0.05	0.02
	Feb	0.20	1.99	0.02	0.209	2.9	0.01	0.005	2.1	0.15	0.07	0.03

(Source: Research Compilation, 2019)

Table 2 shows that the Aluminum level in the water had its highest value in the month of February (1.26mg/L) in station two and its lowest value in the month of November (0.02mg/L) in station four. However, there was no significant differences ($p>0.05$) among the stations except in station three, Copper (Cu), the Copper level in the water had its highest value in the month of November (2.96mg/L) in station three and its lowest value in the month of (0.26mg/L) in January in station four. However, there was no significant differences ($p>0.05$) among the stations and months (Table 4.8, the Iron level in the water had its highest value in the month of November (0.47mg/L) in station two and its lowest value in the month of February (0.01mg/L) in station one. However, there was no significant differences ($p>0.05$) among the stations and months, the water

had its highest value in the month of November (0.681mg/L) in station three and its lowest value in the month of November (0.048mg/L) in station one. However, there was no significant differences ($p>0.05$) among the stations and months, the water had its highest value in the month of February (5.41mg/L) in station two and its lowest value in the month of January (2.24mg/L) in station three. However, there was no significant differences ($p>0.05$) among the stations and months, Lead level in the water had its highest value in the month of February (1.25mg/L) in station three and its lowest value in the month of November (0.00mg/L) in station four. However, there was no significant differences ($p>0.05$) among the stations and months, the water had its highest value in the month of January (0.015mg/L) in station one and its lowest value in the month of December (0.002mg/L) in station three. However, there was no significant differences ($p>0.05$) among the stations, the Cobalt level in the water had its highest value in the month of December (2.7mg/L) in station four and its lowest value in the month of November and January (1.0mg/L) in station two and three respectively. However, there was no significant differences ($p>0.05$) among the stations and months, the Chromium level in the water had its highest value in the month of November (0.16mg/L) in station four and its lowest value in the month of December (0.01mg/L) in station three. However, there was no significant differences ($p>0.05$) among the stations and months, the Molybdenum level in the water had its highest value in the month of December (0.09mg/L) in station two and its lowest value in the month of December (0.04mg/L) in station three, the water had its highest value in the month of January (0.04mg/L) in station two and its lowest value (0.02mg/L) in all the stations.

Comparison of water quality from Artisanal and Small Scale Mining areas to the acceptable National Standard for drinking, water quality

Table 3 Comparison between the Physicochemical Parameters of Recommended

Statement of the Problem

May it be established that the security situation in the country between 1999 to date has taken a sophisticated dimension with violent crimes spreading to every region of the country, with activities of movement for the emancipation of Niger Delta (MEND) crippling the economic activities of such period thereby leading to declining oil revenue and kidnapping, ritual killings, ethnic conflicts and recently insurgency/ terrorism grinding the economy of the northern region to a halt as investors are *running* away from the once prosperous and business conducive north to other part of the country and even away from Nigeria to other peaceful African countries.

The high level of terrorism and violence in Nigeria by the fundamentalist group (boko haram and shite) has heightened fear among the populist and international community and has eaten deep into the fabrics of our economy and as a matter of fact the hostility has gone beyond religious or politic coloration. Several meetings, summits and conferences had been held in a bid to curb the menaces in the country all to no avail. Also apart from the fact that meetings had been held, the federal government has spent millions of naira in making sure that security is engendered but that has never worked.

After nearly a decade of violence, Nigeria government still does not have an effective strategy for dismantling these terrorist organizations, what an insolence!

Objectives of the study

The main objective of the study is to x-ray issues of insecurity in Nigeria and in its specifics;

i. To assess the security and insecurity challenges confronting development in Nigeria.
ii. To assess the remote and immediate cause of the security and insecurity challenges confronting development in Nigeria.
iii. To suggest ways of improving security in the country.

Research Questions

This research would be guided by the following research question questions which demands an answer at the end of the work.

i. What are the security and insecurity challenges confronting in Nigeria?

ii. What are the remote and immediate causes of the security and insecurity challenges confronting Nigeria?
iii. In what ways can the security and insecurity challenges in Nigeria be solved?

Significance of the Study

This work will be built upon relevant literatures on the security and insecurity challenges in Nigeria especially as *it affects development* and contribute to academic, professionalism and security at large as it enlightens,' develops and inform citizens and government of the re-occurring of domestic terrorism and making it possible for policy makers to *strategize* measures to handle the conflict of Nigeria.

Beyond serving as an addition to already existing literatures, it will serve as a practical guide for those in the field of criminal investigation departments, terrorism or counter insurgence. This study is thereby motivated strongly to contribute to the raging issue of insecurity, its socio-economic implication on Nigeria's development.

It is therefore hoped that this study will be relevant and of benefits to students and scholars of political science, history, intelligences and securities studies and the societies at large.

LITERATURE REVIEW

Concept of Insecurity and Security

In the view of Akin (2008) security refers to "the situation that exists as a result of the establishment of measures for the protection of persons, information and property against hostile persons, influences and action". It is the existence of conditions within which people in a society can go about their normal daily activities without any threats to their lives or properties, it embraces and encompasses all measures designed to protect and safeguard the citizenry and the resources of individuals, groups, businesses and the nation against sabotage or violent occurrence (Ogunleye, et al, 2011). According to Igbuzor (2011) it demands safety from chronic threats and protection from harmful disruption.

Security however, can be described as stability and continuity of livelihood stable and steady income), predictability of daily life (knowing what to expect), protection from crime (feeling safe), and freedom from psychological harm (safety or protection from emotional stress which results from the assurance or

showing that one is wanted, accepted, loved and protected in one's community neighbourhood and by people around. It focuses on emotional and psychological sense of belonging to a social group which can offer one protection). This description structured the concept of security into four dimensions. However, these dimension can be weaved together to give a composite definition of security as the protection against all forms of harm whether physical, economic or psychological. It is generally argued however that security is not the absence of threats or security issues, but the ability to rise to the challenges posed by these threats with expediency and expertise.

Insecurity on the other hand, is the antithesis of security. However, because of the very many ways in which insecurity affects human life and existence, the concept of insecurity has usually been ascribed different interpretations in as relation with the various ways which it affects individuals. Some of the common descriptors of insecurity include: want of safety; danger; hazard; uncertainty; want of confidence; doubtful; inadequately guarded or protected; lacking stability; troubled; lack of protection; and unsafe, to mention a few. All these have been used by different people to define the concept of insecurity. These different descriptors, however, run into a common reference to a state of vulnerability to harm and loss of life, property or livelihood. Beland (2005) defined insecurity as "the state of fear or anxiety *stemming* from a concrete or alleged lack of protection." It refers to lack or inadequate freedom from danger. This definition reflects physical insecurity which is the most visible form of insecurity, and it falls into many other forms of insecurity such as economic security and social security. Two views are of essence to this paper. These are (1) Insecurity as the state of being open or subject to danger or threat of danger, where danger is the condition of being susceptible to harm or injury, and (2) Insecurity as the state of being exposed to risk or anxiety, where anxiety is a vague unpleasant emotion that is experienced in anticipation of some misfortune. A major point about insecurity implied in these definitions is that those affected by insecurity are not only uncertain or unaware of what would happen but they are also not able to stop it. protect themselves when it happens. It is in this view that we would describe insecurity in this paper as: 'not knowing, a lack of control, and inability to take defensive action against forces that portend harm or danger to an individual or group, or what make them vulnerable'. 'Vulnerability' is the situation that we do not know and we cannot face or anticipate. It is also something we may know would happen but we are not able to face it.

Insecurity: The Nigerian Experience

Appraising Nigeria's security problems Omoyibo and Akpomera (2012) avowed that security in Nigeria is synonymous to an individual who put iron bars across his or her windows which eventually prevents the individual from escaping a fire outbreak. For them, the only condition for the maintenance of peace and the guarantee of security is by upholding law and order. By this, state could be secured against threats which may include low-level civil disorder, crime, organised violence, or even an armed *insurgency* (El-Rufai, 2012).

Insecurity is continuing to hurt all inhabitants of Nigeria as it is already fast dawning on them that government cannot effectively guarantee the security of lives and properties. The state security agents who are saddled with the responsibility for the security of lives and property which include- the police, state security agencies, the military, immigration, and prison service have all performed abysmally in the discharge of their duties. The level of insecurity in Nigeria is multifaceted as such one cannot accurately categorise the patterns of insecurity.

There are different forms of insecurity in Nigeria. For example in the South-West geo-political zone, armed robbery is prevalent especially in cities like Lagos, Ibadan, Akure and Abeokuta; in the South-South and South-East which is the oil base of the nation, kidnapping is rampant and the activities cover every part of the zone with victims of all ages and all walks of life; in the North, robbery across me border coupled with Boko Haram and Shite insurgence is the security challenge. The menace of the Boko Haram for sometime now has constituted a thorn in the flesh of Nigerians; from the first time they struck in Borno State part of Nigeria in 2 209. over 4000 people including Nigeria citizens as well as expatriates has been killed in violent deadly attacks targeting Christian churches, police, a few mosques, military installations, Western-type educational institutions with innocent students and even children (Edukugho, 2012). They have also carried out a series of deadly and costly bombing campaigns in the country - the Independence anniversary bombing, the bombing of the United Nations office in

Abuja, the bombing of the Police Headquarters in Abuja, the bombing of the military base in Kaduna (Egbewole, 2013).

Reasons for Insecurity in Nigeria

A. Corruption

Corruption has remained one of the *major* reasons for insecurity in the country due to diversion of public resources to private individuals. This called for the government, non-Governmental Organizations (NGOs) and all other related agencies to realistically and comprehensively study and address the causes of this problem with a view to planning an action to address these persistent problems today and in future. Although some efforts were attempted to address these problems in the past; according to (Charas, Liberty, Wali 2014), for example, the previous governments, both Military and Democratic had tried to focus attention on good governance, prudence, transparency and accountability through number of ways, such as establishing Code of Conduct Bureau by the Murtala Mohammed administration in 1975, Ethical Revolution by Shehu Aliyu Shagari's civilian administration in 1979, War Against Indiscipline and Corruption by General Muhammadu Buhari's administration in 1984, Mass Mobilization for Self Reliance, Social Justice and Economic Recovery by General Ibrahim Babangida in 1985 , Failed Banks Tribunal by General Sani Abatcha in 1994, .Anti-Corruption Bill by Olusegun Obasanjo in 2000. Similarly, in 2007, the administration of Umaru Musa Yar'adua has made it a cardinal policy to observe rule of law to enhance public accountability and stamp out corruption in the Nigerian society.

B. Unemployment

Unemployment is defined as a situation when people are not engaged in meaningful work and are lacking the basic necessities of life. While we are not oblivious of the fact that there are other reasons why people engage in criminal activities, we cannot rule out the fact that activities resulting from unemployment are indirect consequences of corruption. Corruption leads to unemployment; unemployment to conflicts and conflicts to insecurity. Many Nigerian youths have become preys to terrorists and are easily radicalized. In the Niger Delta region for instance, unemployed youths were the ones employed in the armed conflicts between Multinational Oil Companies and militants while many of such youths are members of the Boko-Haram sect.

Adegbami (2013) opined that, idle mind; they say is the devil workshop so as the rate of unemployment continues to raise, so also the wave of crimes and its attendant effects. The Nigerian Bureau of Statistics (NBS) cited in Ogah et al., (2011) puts unemployment in Nigeria at about 23.9 per cent and still raising. These unemployed people now employ themselves by engaging in illegal activities such as kidnapping, robbery, bunkering, and other fraudulent activities.

This brings attention to their plight by engaging in destructive behavior at the slightest provocation.

C. Poverty

Another cause of insecurity is the poverty, which is a multidimensional phenomenon. The World Development Report 2000/2001 (World Bank, 2001) summarizes the various dimensions as a lack of opportunity, lack of empowerment and lack of security. The window of opportunity remains closed to the poor masses, and this makes them practically inactive in the society. Their lack of empowerment limits their choices in almost everything and their lack of security makes them vulnerable to diseases, violence and so on. Similarly, according to a United Nations statement, in Nigeria, widespread and severe poverty is a reality. It is a reality that depicts a lack of food, clothes, education and other basic amenities.

D. Government Policy

The responsibility for internal security of life and property is supposed to generally rest on the Government. The state's internal security is supposed to be maintained by either the ordinary police or law enforcement agencies or more militarized police forces. Other specialized internal security agencies exist to augment these main forces, such as border guards, special police units, or aspects of the state. However, the Nigerian security agencies in the fight against insecurity especially in the North have fallen short of their diligent responsibilities. Unfortunately, some states, especially in the Northeast where insurgency and terrorist activities are so high, the internal security tasked responsibility of providing secret police service, the level of authorized force used by agencies and forces responsible for maintaining internal security range from un armed police to the fully armed Para-military organizations, or some level of less-lethal weaponry in between.

E. Poor Leadership

They say that leaders are born, not made while, it is true that some people are born leaders; some leaders are born in the midst of adversity. Often, simple people who have never had a leadership role will stand up and take the lead position when a situation they care about requires it. Although you can still learn the techniques of true leadership and Influence and build the confidence it takes to take the lead. The more experience you have acting as a genuine leader, the easier it will be for you. It is never easy to take the lead, as you will need to make decisions and face challenges, but it can become natural and rewarding.