GULLY EROSION MENACE IN AKWA IBOM STATE: IMPLICATIONS FOR SUSTAINABLE ENVIRONMENT AND DEVELOPMENT

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Abstract

Akwa Ibom is one of the littoral states of Nigeria within the Niger Delta with a litany of environmental problems across the 31 Local Government Areas. Among these include gully and coastal erosions, flooding, oil spillage, deforestation and pollution. However, gully erosion which is aided by geology, relief, high rainfall and human activities has proven to be a terminal and cancerous ecological disease that removes within minutes and hours, land formed millions of years' back which cannot be replaced later. Direct field observations and measurements of widths and depths of some gully erosion sites formed part of the data generated for this study. The study revealed that the people of the state have suffered so much socio-economic loses and woes: have affected settlements, trade, commerce, industry and infrastructures. This makes it highly difficult to entrench sustainable development because what is built is readily destroyed. Since man-made problem can successfully be dealt with by the perpetrator-man, this paper proffers measures of arresting this eco-disaster such as covering exposed top-soils and residential compounds with trees, shrubs and grasses, not only to minimize surface erosion but to encourage optimal seepage; mass education; enforcement of law on erosion prone areas; and communities and governments to take pro-active actions to stop erosion wherever it occurs, among others.

Akwa Ibom is one of the littoral states within the oil-rich Niger Delta Region underlain by sedimentary rock origin. Her landscape comprises a generally low-lying plain and riverine areas with abundant rainfall all year round (2000-4000mm). Like other states within the Niger Delta Region, she has a litany of environmental problems across her length and breadth. Among the well-known ecological problems in the state include gully and coastal erosions, flooding, oil spillage, deforestation and pollution. These, especially, gully erosion, are matters of grave concern of our time because gully erosion is a terminal and cancerous ecological disease that threatens within minutes and hours, land formed millions of years ago and carries them

away which is difficult to be replaced years later.

According to Egboka (1993), our country Nigeria has four natural disasters – erosion, floods, desertification and drought, but erosion is the most severe. This is because whereas all the other three disasters lead to flight from the area, hunger and death, only gully erosion leads, in addition, to the disappearance of land itself. The lives of all Nigerians are intimately and ultimately linked with our environments and our survival and that of the future generations depend on maintaining a sustainable and harmonious relationship with nature. Therefore, the leadership must know that failure to protect the environment (land) means failure to meet the aspirations of all Nigerians especially the people of Niger Delta Region whose 'black gold' is the hub on which the development of all parts of the nation revolves.

In view of this, the protection of our environment should be included in formulating political, economic and social policies of the nation. The Obasanjo administration instituted on May 29, 1999 recognized this fact and gave a new fillip to the environmental battle by creating for the first time, in the history of this country, the Ministry of Environment in 1999. This new ministry absorbed the Federal Environmental protection Agency (FEPA) with the primary mandate to protect land, water, air and wildlife of Nigeria in line with section 20 of the National Constitution.

Furthermore, the Millennium Development Goals (MGDs), a series of eight time-bound development goal agreed upon by the International Community at the United Nations Millennium Summit held in New York in September 2000, seeks to address the vital issues on environment, health, poverty, education and equality.

Against this backdrop, this paper is written within the framework of actualizing certain objectives which include:

1. Examining the factors responsible for gully erosion in Akwa Ibom State.
2. Discussing the impacts of gully erosion on sustainable development, and
3. Suggesting measures to tackle this eco-disaster-gully erosion in the state.

Factors Responsible for Gully Erosion in Akwa Ibom State

Erosion can be defined simply as the loosening and consequent removal of particulate soil materials from one location to another through agents such as water, wind and man (Iwena, 2008; Hammond, 2000 and Adeleke and Leong 2001). Soil erosion comprises sheet, rill and the gully or channel erosion types (Onwuka, 2008). The intensity of erosion is governed by factors such as topography, intensity of denuding agent, location of the erosion site, attitude of the people and man's activities.

Geologic Factors: Due to tectonic activities such as minor or major earthquakes and tremors, land movements

and slides, soil heaves, etc; lands were broken up into blocks that became dislocated. These massive blocks of lands moved away relative to one another to form cracks on the ground that geologists call faults, joints, grabens, etc. These after a long period (geologic time) are covered up by deposits of clay, sands to provide a normal land surface. However, when these cracks or faults are weakened by triggers such as heavy urbanization activities, movements of heavy vehicles etc, they give off.

Topography: Akwa Ibom State is generally a low-lying plain and riverine area with no portion exceeding 175m above sea level (Mendie and Akpan, 1999). However, the topography of Obotme is rugged consisting of hills and ridges with steep sided valleys which occupy much of Ini, Ikono, Itu and Ibiono Ibom Local Government Areas. Heavy rainfall developed fast moving runoff down the steep and gentle slopes that are found all over the area. The soils, sand silts and clay are easily eroded and denuded.

Intensity of Denuding Agent: Heavy rainfall in the state moves and wreck havoc aided by topography and the geology of the state especially in areas where there are no natural or man-made obstructions to stop the ravaging floods.

Attitude of the People: The former evergreen forest belt in Akwa Ibom has been deforested through excessive farming, urban development, building houses, markets, churches, schools, roads, NITEL and NEPA lines etc. These unplanned developments in recent years expose the weak, acidic and sandy soil to erosion.

Location of Erosion Site: When any erosion site is directly on top of a hill, its intensity will differ from relatively plain surface. Similarly, a site initiated by road construction will also have a different intensity from that located in a farm. In all, location determines how the denuding agent(s) will loosen and carry away the weathered materials (Nnodu, Okoye and Onwuka, 2008).

Ecological Problems and Sustainable Development

Environmental issues cannot be seen in isolation, they must be addressed together with the process of development. One of the most important questions is how we can continue improvements in human welfare within the limits of the land and its resources. A possible solution to this dilemma is sustainable development, a term popularized in 1987 report of the World Commission on Environment and Development called our “common future”. In the words of this report, sustainable development means “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (Cunningham and Cunningham, 2002). Development means improving peoples’ lives. Development centres on man’s wellbeing and quality of life of the citizens. Such parameters as healthcare provision, life expectancy, water and sanitation provision, food

availability, employment and education, good shelter for living among others are indices for development (Godlewski, 2003).

The United Nations Development Programme (UNDP) has introduced the Human Development Index (HID) which consists of three key elements of human life – longevity, knowledge and decent living standards as indices for development. To meet this challenge, the central idea is that we should use resources (anything that is useful for creating wealth or improving our lives) in ways that we do not diminish them. Land however, is an inelastic resource. But gully erosion seems to be a terminal disease that destroys it within minutes and hours, lands formed many years ago. Soil erosion steadily removes, after, a few millimeters or centimeters of rainfall that must have occurred within minutes, thin layers of rich soils and sediments that are difficult to be replaced.

Gully erosion aided by rain water, relief, geology, and irresponsible human activities, has carried away humans, plants, animals, properties, farm crops and lands. Flood waters have dislodged and destroyed social infrastructures such as roads, bridges, water schemes, NEPA and NITEL lines etc. in the state (see table 1).

Many streams and springs that served as water supply sources to rural communities, for domestic purposes and for irrigation agriculture are gradually destroyed by gully erosion. Cases in point are Akpan Abara and shell streams in Ikot Akpa Nkuk, Ukanafun Local Government Headquarters where the former streams have completely been silted up with eroded and gullied debris. The relics of those previous streams are the beds and marshlands over grown with raffia palms.

In urban centers of Uyo, Ikot Ekpene and Oron, gullies are extending through streets, undermining buildings and eventually destroying them. The notorious Uyo ravine, for example, has an anatomizing network of gullies with extensive gully fingers, body and soul as well as tentacles that are well distributed in a complex manner far and wide within the ravaged environment. It has penetrated and encroached upon the newly commissioned government house behind Dominic Utuk Avenue; has hampered the expansion of the town campus of University of Uyo and has displaced many settlements along its course from Anua to Ikot Adaidem (see table 1).

Worse still, some federal and state roads as well as those of the communities have been gullied away and abandoned. The former federal Abak - Ikot Abasi road at Ibagwa (now abandoned), which was badly gullied and accompanied by landslide, has seriously threatened the Q. I. C. Secondary School at Ika Annang, devastated acres of farmlands and brought about the extinction of fauna and flora of that area. Some community roads at Obotme, Itu, Ibiono Ibom, and Ukwok in Ikono Local Government Areas are covered with heaps of sand deposited across them by floods and erosion. These dangerous obstructions are hardly ever removed until they cause fatal accidents and loss of innocent lives.

Most farmlands in gully areas are dead because the rich top soils have been washed away by erosion. While the uplands have soils nutrients leached out or wash away, the clayey lowlands are also being destroyed by erosions. The sands and silts eroded from the highlands are deposited on these formerly rich lowlands or marshlands. The rich top layers are covered with useless sands and silts, rendering them infertile. Even desperate attempts to remedy the situation by fertilizer application, do not help as much of the applied ones are easily washed away. Indeed the price of such soil loss, whether in the cities or villages, is unquantifiable. The less soil we have, the more food will cost and the more we find it increasingly difficult to feed the exploding population.

The above mammoth environment problems have precipitated massive socio-economic losses and woes on the people and government of Akwa Ibom State and all Nigerians. It has adversely affected trade and commerce, industry and technological development. Most social and economic activities have been dislocated while infrastructures have been destroyed. It is therefore so difficult to entrench sustainable development because what is built is gradually destroyed. Worse still, this ecological problem seems to have been ignored by the Federal and State Governments and political representatives. Something most positive and drastic must be done now and urgently too to save our people and their lands from gully erosion.

Conclusion

Of all the earth's most precious resources, none is so abused, misused and taken for granted as our land/soil. Defying all wisdom, it has been over plowed, over planted, over fertilized and overpopulated. Bulldozer operators make their living moving it, humankind was made from it, when we expire, we are buried in it. Due to this abuse, erosion gradually sets in and cause irreparable havoc to socio-economic installations; thereby making it so difficult to entrench sustainable development in our state and nation.

No surgeon ever performed an operation without destroying some live tissues with the aim of saving the patient; knowing that time will heal the wounds and restore the living cells; therefore each of us has a stake in protecting the land by denying ourselves the use of land if such use will ultimately be to our detriment.

Remedial Measures and Recommended Solutions to Gully Erosions

Modern science and technology ensure that no problems particularly man made ones, are unsolvable. All that are required are the will, intelligence and financial muscle to tackle such problems. The problems posed by gully erosion are no exceptions. They can be successfully tackled and solved by us Nigerians since we are the perpetrators. The following are suggestions and recommendations that can be handled singly or in combination depending on availability of funds and materials/manpower. "An ounce of prevention is worth a pound of cure".

- Before gullies are allowed to start, develop and grow, concerned citizens have the opportunities to prevent sheet erosion from growing into rills and rill erosion into gullies through sand bagging, tree planting and total ban on sand excavation especially down slopes. This is a community based environmental planning approach. Such community approach builds social capital such as knowledge, cooperative spirit, trust, optimism and working relations.

- There is great need for agro-forestry and green belt development in erosion prone areas. Reforestation programmes should be embarked upon to reclaim the lands after mechanical/civil works must have been carried out earlier to check the gullies.

- A soil and Gully Erosion Commission (SOGEC) that shall take care of erosion matters in Akwa Ibom and Nigeria as a whole should be established by a bill of the National Assembly and such bills signed by the President. A special annual budget should be made to the commission for the next five years to handle erosion problems.

- Members of the National Assembly should urgently carry out guided tours to gully erosion affected areas of the state and elsewhere in order to appreciate the enormity of this ecological problem so as to allocate enough funds and assistance to the commission.

- The Federal, States and Local Government should declare erosion prone areas disaster areas and enforce laws on people to stop further developments and farming in such areas, and the land owners compensated and relocated elsewhere.

- The Federal Government should invite the World Bank, IMF, UNDP, UNEP, UNESCO, FAO, and other world bodies not only for funding the capital-intensive erosion projects but also for technical expertise which such projects require.

- Last though not the least, massive education should be carried out through schools, radios, television, newspapers and other informal settings to educate Nigerians on the need to care for their environment. In this 21st century, it will not be enough for a few specialists to know what is going on while the rest of us wander about in ignorance.

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Appendix 1

Table 1 Sampled Erosion Sites in Akwa Ibom State and Adverse Impacts.

S/N	LOCATION (L.G.A)	PROJECTS ENDANGERED
1.	Uyo: Ravine – Annua and Oku	General hospital, school of nursing and midwifery Annual, government house, university of Uyo, buildings, farmland etc.
2.	Ikot Ekpene – Ifuho and Libray Avenue	Secondary Schools Ifuho and Goreti, club house, farmlands and buildings etc.
3.	Itu – Enen Atai and Oku Iboku	Schools, farmlands, buildings, markets and shops
4.	Abak- Midim Waterside	Schools, steams, roads, bridges farmlands and settlements
5.	Oruk Anam: Obio Akpa and Ikot Ubo	Streams, bridges, buildings, farmlands etc.
6.	Etim Ekpo: Utu Etim Ekpo	Streams, bridge farmlands, secondary schools

		and buildings
7.	Ini – Obotmme and Odoro Ikpe	Electricity installations, etc.
8.	Ibiono: Afaha Itiat and Ikot Obong Ibiono	Farmlands, roads, streams and bridges, schools, water projects etc.
9.	Oron: Iquita and Okobo Crescent	Hospital, electricity installations, water project, markets, shops. Roads and buildings.
10	Ukanafun: Spring Road (behind WASCO)	Secondary schools, (WASCO), buildings, streams, bridges farmlands etc.

SOURCE: Data obtained from Ministry of Environment Uyo 2010 and field observation