

## URGENT NEED TO EFFECTIVELY ARREST THE INTRACTABLE EROSION PROBLEMS FACING ANAMBRA STATE

**UKPAKA, C. G.**

Biological Science Department, Chukwuemeka Odumegwu Ojukwu University, Uli.  
[ukpakachukwu@yahoo.com](mailto:ukpakachukwu@yahoo.com)

### ABSTRACT

*Anambra State has been horrendously ravaged by a devastating erosion onslaught dating back to the early 20<sup>th</sup> century. Erosion is concerned with the destruction and carrying away of top and sub-soil by the forces of wind, water and other forms of precipitation. There are different types, degrees and complexities of erosion. Effects are awful and control is difficult. It is one thing for man to acknowledge his apparent helplessness in the face of the indefatigable forces of nature, but another thing for man not to engage in unhealthy habits that exacerbate nature's destructive powers but instead to channel nature's forces to his advantage. All hands must therefore be on deck to ensure that Anambrarians and their partners are effectively dissuaded from ignorantly or otherwise, assisting erosion to consume the state, but rather to contribute their quota (individually and collectively) towards arresting this hydra-headed monster before it succeeds in depriving our posterity of a state they can call their own. This paper highlights the erosion challenges in Anambra state, with perspectives on what has been done in the past, what obtains presently and how these challenges can be overcome.*

**Keywords: Urgent, Need, Effectively, Arrest, Intractable, Erosion**

### 1.0 INTRODUCTION

Erosion is the action of surface processes (such as water flow or wind) that remove soil, rock, or dissolved material from one location on the Earth's crust, then transport it away to another location (Encyclopedia Britannica, 2015). It also implies the destruction of something by natural forces such as wind or water. Natural rates of erosion are controlled by the action of "drivers" such as rainfall, groundwater processes, landslides and debris flows, areal flooding, among others. The rates at which such processes control how fast a surface is eroded is partly dependent on the size and the topography of the acted area/land (Cheraghi, Jomaa, Sander & Barry, 2016). Typically, physical erosion proceeds fastest on steeply sloping surfaces, and rates may also be sensitive to some climatically-controlled properties, including amounts of water supplied by rain, storminess, wind speed, wave fetch, or atmospheric temperature (Bernard, 1981). While erosion is a natural process, human activities (most notably farming practices) have increased the rate at which erosion is occurring globally by 10-40 times (Markus, 2013).

Factors affecting erosion rates include: climate (most notably amount and intensity of precipitation), vegetative cover, topography of the land (which determines the velocity at which surface runoff will flow), agricultural and urban development (which affect soil structure), etcetera (Boardman, Poesen, 2007; Gyssels, Poesen, Bochet & Li, 2005; Whisenant, 2008; Nichols, 2009; Zeitler, 2001). Excessive/accelerated erosion causes both "on-site" and "off-site" problems. On-site impacts include decreases in agricultural productivity and ecological collapse (on natural landscapes), both because of loss of the nutrient-rich upper soil layers which is constantly being

washed-off by erosion. In some cases, the eventual end result is desertification. Off-site effects include sedimentation of waterways and eutrophication of water bodies, as well as sediment-related damage to roads and houses (Humberto & Lal, 2008; Toy, Foster & Renard, 2002).

Water-induced erosion is the most prevalent type of human-induced soil erosional over the country. It occurs when land use does not offer sufficient protection of the soil against the impact of rain and sufficient run-off. In the South Eastern part of Nigeria, severe sheet, rill and gully erosion types have become endemic ecological problems ravaging almost all states in this geopolitical zone. According to Egboka (1999), almost every town in Anambra, Enugu, Ebonyi, Imo and Abia states is continuously devastated by water erosion. In Agulu, Nanka, Alor, Oraukwu, Oko, and environs, all in Anambra state, erosion has been a recurrent phenomenon constantly affecting the lives of Anambrarians.

## **2.0 EROSION: ANAMBRA STATE IN FOCUS**

Anambra, popularly called the ‘Light of the Nation’, is threatened by erosion, which seem to have cast a shadow of sorts upon the state. Erosion, a great ecological challenge, is confronting the state and stands like an eclipse, threatening to dim the radiant light of the state. At a time when other states are reclaiming land from the sea, Anambra is losing its landmass to erosion (Eleke, 2016). The biblical valley of the shadows of death in Psalms 23, is used to depict a condition of fear and harm, but in Anambra, there exist physical valleys of the shadows of death scattered around the state, all resultants of erosion. As at 2016, there are over a thousand active erosion sites scattered all over Anambra State, and these have in most communities swallowed up houses, making residents lose their places of abode (This Day Newspaper, 2016).

Erosion, particularly water-mediated erosion is a problem that has depleted inhabitable lands in Anambra State – a State with the ration of population density to inhabitable land mass adjudged to be seriously lopsided. Erosion has depleted available farm lands, negating sustainable agriculture in Anambra State. Erosion has caused death, displacement, and obliteration of Anambrarians, their properties and communities for almost a century now. Erosion has eroded the socio-cultural and traditional/religious values of some communities in Anambra state by destroying places of worship, artifacts, separating families from their kith and kin permanently, and preventing kindred from co-habiting/communing in their ancestral lands. Erosion has destroyed fertile soils and economic trees/other plant/animal species, and their unique habitats which represents the foundation for industrialization. It has destroyed infrastructure, communication, transportation and other vital life support in Anambra State.

Erosion affects every one of Anambra’s 177 communities. According to the Commissioner for Environment in the state, Honourable John Odey, ‘gullies are formed every day, and every rainy season opens up a bunch of new gullies. Rains come down as a torrential downpour, and when that happens, the soil that is known to be very loose is washed away. The geology of the soil in Anambra also is a major contributing factor to the erosion episodes occurring in the state as it lends itself to easy erodibility. Thus, the top soil is easily washed-off. As it continues to wash off the top layer, it comes back again, and takes the bottom layer, resulting in a string of washed off gullies that gradually develop into big gullies. There are 1,500 gullies in Anambra state, ‘with more developing every day.’ As the state ministry of environment tries to document them, more and more are formed,

and many of them are active (Ujorha, 2017). The most popular erosion sites in Anambra State are located at the Nanka-Agulu-Oko axis, Nkisi near Onitsha, Ojoto, Alor, Umuchiana in Ekwulobia, Ozubulu, Oraifite, Uli and Awka, among many other areas (Ujumadu, Okoli, Nkwopara, Igata, Nwaiwu & Ozor, 2016).

The effects of erosion in Anambra state has been devastating. These effects have been reported by This Day in an interview with two residents of Oko and Nanka communities of Anambra, the two communities in Orumba North Local Government of Anambra State which have been ravaged by erosion in recent times. In Nanka, an indigene of the community and an elder, Mr. Okorie Nwawo told THISDAY that the gullies in Isiakpuenu Village of Ifite Nanka are older than him, even though he is over 70 years of age. He added that the gullies were not as big as they are today when he was a growing boy. He however recalled that from the time he was a boy, he and his parents had to abandon their residence for fear that it may cave into the gullies, and relocated to another land, where they built their house.

Anambra State has battled erosion for almost ten decades now. Undoubtedly, some measure of progress has been made. However, the progress that has been made is not satisfactory. It is times to get everybody involved (government, individuals, educated, novices, old, young, rich, poor, urban dwellers, rural inhabitants, touts, law enforcement agents, town unions, environment ministry, etcetera); every option must be exploited. Every nation, every state, and every individual have their peculiar challenges in life. At one time or another they must face challenges dispassionately of consumed by it. The *laissez-faire* attitude of Anambrarians to environmental issues is nauseating. Life is not all about money, banks, markets, housing, estates, industries, transport, etcetera. Forests and other plant communities must be protected in Anambra State, so that nature can protect us. Our founding fathers handed down forested communities (flowing with milk and honey to us). We are poised to hand over desertified, erosion-devastated, wastelands, disease-prone, violence-infested communities, where life is “nasty, brutish and short” to our posterity. Time is right. The will is available. Those that are not ready must be left behind. Anambra State must be delivered from sliding into stupendous decadence. In this regard, people all over the state do whatever they like and no one asks questions. What do you expect visitors to do when bonafide Anambrarians are destroying vegetation with reckless abandon? People build houses on drainage channels and flood plains. People build industries without any form of waste management plan. They dump dangerous effluents all over the state. People enter bushes and roadsides, excavate soil/sand/stones to the bedrock and the principal disaster (bone of contention is that no one asks. Someone must take responsibility. Why then is government and its agents there? Can this primordial indifference be countenanced in other states and climes? The rich floral heritage we have in Anambra State was given to us by the Omniscience, who expects judicious husbandry at least from us. We must take responsibility if we are truly a part of the “intelligent *Homos*.” If we allow erosion and deforestation to obliterate us, who will give us accommodation in other parts of Nigeria and in diaspora? Floods exacerbate erosion and floods become common place since the late 90’s.

A resident of Oko, Elder Caleb Ezeokeke said, “I have never seen a thing like this all my life. Daily, we live in fear of losing our residences, even though we have left our fate in the hands of God. As you look at this my house, I have counted it out as a belonging of mine because it can go in any day. We no longer sleep here. You are lucky to meet me because I just came to pick up something. We are calling on government to come to our

aid because this is beyond us.” Another resident, Mrs. Adaeze Okeke also said that her children now sleep in friends and relatives’ houses because of fear that their family house may cave in any day. She also implored the federal government to consider the Oko gully for repair. She said she has distributed her children among friends and relatives, and she only goes out every morning to check on them (This Day, 2016). These lamentations underline the urgent need to effectively arrest the intractable erosion problems facing Anambra state.

### **3.0 STATISTICAL DATA ON FLOOD/EROSION DISASTERS IN ANAMBRA STATE**

A greater number of communities in Anambra state will be found in the inland areas. These include: Idemilli North and South, Njikoka, Dunukofia, Awka North and South and Aniocha. South: Ihiala, Nnewi North and South and Ekwusigo, Aguata Orumba North and South. Communities in the inland zones have a common problem of flooding and erosion, differing only in the severity and incidence rate in individual areas. As the rainy seasons come and go, more communities answer this description, just as the situation in existing ones become worse. It is safe, therefore to state that nearly all inland areas of Anambra State are at high risk of erosion and flooding. In fact, communities in the state are united by this common problem and history, the worst of which is gully types (Ministry of Environment, Awka, 2011).

The communities in the North of Anambra state are located more in the riverine zone. Ogbaru, Onitsha North and South, Oyi, Ayamelum, Anambra East and West, etc. The riverine areas of Anambra state like the inland areas, keep their own date with the routine heavy flooding and soil degradation that bedevil the entire state. In the recent past, coastal areas, especially in the lower river Niger, have hosted a lot of infrastructural development such as construction of electricity overhead transmission lines, extensive dredging activities and other high impact human activities in their watershed, de-zoning of floodplains and swamp forest reserves, etc. These gave rise to many record changes in flood profile and extremely high flood losses and still continue (Ministry of Environment Awka, 2011). As the original South East rural forest are rapidly being replaced by urbanized, concretized paved surfaces, flooding and erosion holds sway all over the state, especially during the rainy season. The only panacea lies in restoring the forests.

### **3.1 WHAT WAS OBTAINABLE IN THE PAST**

Prior to the 20<sup>th</sup> century, in Anambra, the forests were still intact and human populations were still minimal. So, to a large extent, erosion was not an issue. However, as the years progressed, factors that enhanced erosion increased and erosion started assuming prominences. Certain communities in Anambra State developed a system of catchment pits dug in households, on farmlands and on the roads, accommodate excess run-off from rainfall. At this time, surrounding vegetation was sufficient to percolate the rest. Most communities had roads that were not asphalted. Several times a year, able bodied men came out in mass and cut surrounding bushes and used it to fill potholes caused by rainfall. They also constructed drainage channels with hoes and machetes so that both the road and surrounding farmlands are not eroded, and the roads remain passable/motorable throughout the year. Farm implements were handmade hoes, cutlasses, diggers (some with wooden head), they neither hard-tanned the soil nor destroyed its structure/profile, therefore, rainfall could not carry the soil away. Sloppy lands, even when they lacked contours and stripes, retained sufficient vegetation (trees, shrubs, lianas, grasses and forbs) to impeded rapid water movement that erodes the top /subsoil.

### 3.2 WHAT OBTAINS PRESENTLY

Roads are flagged off, caterpillars and bulldozers move in, mow down the forest; in the interval between drainage construction, filling and first coating and even asphaltting, because the land has been eroded, the floods come with the heavy rains and erosion stamps its mosaic of Architectural design on the deluded land, carrying off top and sub soil and silting far away streams and rivers with it. Floods that surprise unsuspecting communities usually following overnight rainfall, chase them away from their homes and wash away farmlands and livestock. Low quality road construction with substandard with coating and drainage systems are done occasionally are expected to store and contain the floods temporarily until it drains away. Instead the floods temporarily until it drains away. Instead the floods carry away parts the road and the drainage systems themselves. As the rains persist, the roads deteriorate further.

Years ago, I have often heard elders talk about keeping a clear distance of about twenty feet from the road before building houses. These days however, houses are built very close to each other and the road as well. This arrangement automatically converts the roads into a massive drainage system in such a manner that rainwater (floods) carries away cars, animals that are supposed to be moving on them, parked vehicles, wares and other items kept beside the road. When the water has no other route to seep/flow through, it converts the entire thoroughfare into a gutter.

In times past, the level of the roads were higher than the surrounding land. When water falls on the road, it drains away. But these days, the level of the road is often lower than the houses along the road, so when rain falls, the flood water inundate the roads as if the road were a pond, making vehicular and other traffic impossible or difficult. Waste materials and other effluents are often dumped on the roadsides. These waste products of commerce, industry and residential areas often contain hazardous waste that corrode and deteriorate the road with time, surrounding also are contaminated, losing their potential relevance.

**The Nnewi example:** In Nnewi town, a drainage system was constructed and it transversed several villages. This system was subsequently connected to the flood plains. A few minutes after a heavy downpour, the water quickly disappeared into this flood carriageway. This is a brilliant example of what it should be like in other communities, and soon the erosion problem of Anambra State will become a thing of the past.

**The Alor example:** Alor was one town that a few years ago was threatened by erosion. Today, all that is history. The roads were asphalted with meaningful drainages interconnected in such a way that ultimately, every drop of water was neatly emptied into the Idemili river. This is classic. Other communities in Anambra state should emulate these examples.

### 4.0 PREDICTING THE FUTURE

The trees (vegetation) are succumbing to the destructive force of man, toxins and machines. A future without vegetation cannot be contemplated. Every community in Anambra state should be encouraged to develop a shelterbelt. These should serve as repositories of useful economic trees relevant to man. Road construction in the state should be made to enter the next level. The best in the industry should be contacted. Poorly constructed roads using substandard materials and technical know-how, have been at the center of our erosion woes. Proper construction and channeling of drainages from and highways ultimately to the closest natural aquatic water

bodies is imperative. Erosion-ravaged areas that cannot be effectively reclaimed should be converted into artificial lakes (for massive fish husbandry) and watersheds for the inevitable forest resource.

Communities on the higher slopes should adopt the “catchment pit option,” though moderately so that the onslaught of floodwaters on downstream communities would be minimized considerably. Lowly-lying communities should connect all erosion prone areas to their closest natural water bodies through proper drainages (channeling) that can stand the test of times. Scientific methods of waste disposal should be embarked upon comprehensively in Anambra state. The need to revisit the issue of forest reserves and botanical gardens in the state is long overdue. As erosion is being combated in erosion-prone communities, efforts should be intensifying through preventive measures that more communities are not engulfed. Santra (2005) highlighted a number of factors that control erosion viz:

- a. Erosivity of the eroding agent
- b. Erodibility of the soil
- c. Slope of the land
- d. Nature of the plant cover

He went further to list some mechanical field practices used to control soil erosion as follows:

- Contouring i.e. carrying out planting and cultivation on the contour can reduce soil loss from slopping land compared with cultivation up and down the slope.
- Contourbunds i.e. these are earth banks 1.5 – 2m wide thrown across the slope to act as a barrier to run-off, to form a water storage area on their upslope side.
- Terraces i.e. these are earth embankments constructed across the slope to intercept surface run-off as a non-erosive velocity and to shorten slope length.
- Waterways i.e. to convey run-off at a non-erosive velocity to suitable disposal part viz: diversion ditches, terrace channels, grass waterways, etc
- Stabilization structures i.e. this is a specialized structure built up to produce small dams (0.402m high) by locally available materials for gully erosion control.

#### 4.1 RECOMMENDATIONS

The paper recommends the following measures to be used to curb the menace of gully erosion:

- i. Poor farming techniques were found to be a contributing factor to the growth of erosion. Improved farming practices that reduce the erosion processes to the barest minimum therefore should be encouraged.
- ii. Refuse dump along the river courses impede the flow of water, leading to flooding especially during heavy rainfall. Therefore, dumping of refuse on the river channels and floodplains should be prohibited. Government at all levels should enact and enforce laws to deter such activities.
- iii. Cultural method of erosion control has been found to be a cheap and effective method. Planting of plantain and banana trees on the floodplains have also been found to be effective in controlling erosion. Grasses species such as *Eulaliopsiss binata*, *Neyraudia reynaudiana*, *Cymbopogon microtheca*, *Saccharum pontaneum* and *Thysanolaena maxima*, *Arunduella nepalesis* and *Themeda* species have been suggested suitable especially for slope stability.

- iv. Inadequate awareness of effects of human activities on both floodplain and river channels contribute to misuse of these areas. Therefore, there should be general enlightenment campaign on the dangers posed by erosion and human activities that promote them.
- v. Efforts should also be made by relevant authorities to enact a law against location of engineering structures on waterways.
- vi. The government at all levels in Nigeria should take it as matter of urgency to yield to addressing issues relating to erosion especially at an early stage, so as to avoid loss of lives of Anambra people and their properties.

## CONCLUSION

The destiny of a people lives in their hands. Many nations found themselves in deserts and inhospitable lands, suffering from famines, drought and extreme heat. They surmounted these problems and made something out of nothing. Others had to reclaim inhospitable, wet, wastelands and badlands, and made enticing homes out of them. Others still surrounded by oceans and seas, became innovative and soon swelled the ranks of the industrialized nations of the world. Necessity is the mother of invention. We developed “ogbunigwe” during the civil war. Our think tanks should come together and give this erosion challenge the battle it deserves. Where one preventive measure fails, another might work and a concerted approach could prevail. Measures that were used to combat this problem in the past and present could be reassessed, fine-tuned and patented for a lasting/final solution. The state government must lead the way in mobilizing men and materials. Hopeless cases could be converted into artificial lakes. Urgent reforestation of our communities is indispensable toward a permanent solution.

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