

Research Article

Sustainable Conflicts Resolution Through Engineering Mitigation of Gully Erosion; Cases of Oko/Amaokpala and Ekwulobia/Oko Communities

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Abstract

Anambra State Has Been Implementing Some multi-sectional erosion and water-shed management project financed by federal government, the world bank global erosion facility, the special climate change fund. The project development objective of this article is to improve erosion management gully rehabilitation, increase income for rural households from improved agricultural and forest practices and finally bring o an end communities dispute and conflicts through conflicts revolution and management. The socio-economic assessment of this study is to ensure the proposed rehabilitation project is captured and described while proffering solution to possible negative impacts to human habitat, health and livelihood, and unpredicted conflicts between communities.

Keywords: Erosion, Finance Rehabilitation Conflicts and Resolution

1. Introduction

The ecological menace is major disaster that continues to threaten land masses and conflict between communities in old Aguata local government comprising new Aguata, Orumba north Orumber south areas. In the three local government areas, erosion have resulted due to the natural and human causes [1]. Soil erosion is one form of soil degradation along with soil compaction, low organic matter, loss of soil structure, poor internal drainage, salinization and soil acidity problem. Soil erosion is naturally occurring process on the land and its agent are water and wind which contributing a significant amount of soil loss yearly in an environment. The impact of rain drops on the soil surface can break down soil aggregates and dispersing the aggregate materials, some communities in old aguata have been in dispute and conflict of divergence a flood from one community to another, oko against Amuakpala and Ekwulobia against Oko have not been resolved [2].

In the year 2021, a network road was constructed to alleviate issue of transportation in the permanent site of federal polytechnic Oko which the student is the first beneficiary unfortunately, the obstinate refusal of the contractors complying with rule of construction considering feasibility study of the area created a deep gully [3]. The poor construction, non-maintenance of surface drainage system and farming too close the bank of Oko/ Amaokpala lake led to the erosion menace, subsequently to unending conflicts.

1.1. Aim and objectives

The aim of the article is to access the cause and extent of drainage, solution in curbing further occurring conflict resolution and management.

The objective are to:

- Use geographical information system [GIS] and locate, analyze and determine the slop and depth of the intervention area
- construct concrete drainage system culvert gabion retaining wall and concrete channels and prevent future and further occurrence.
- Determine the surface run-off occurrence whenever there is excess water on the slop that cannot be absorbed in the soil.
- Encourage the protection of soil from rain drop impact by covering the soil with vegetation.
- Create awareness of exposure of erodible soil that has poor structure and cover with organic matters.
- Establish an assessment that determines how to respond to conflict between neighboring communities in the erosion pruned areas.

1.2. The Causes of Soil Erosion

Rainfall intensity and runoff factors are considered in assessing flood erosion problem, the impact of raindrops forming flood on the soil surface breaking down soil aggregates and dispersing the aggregate materials such as very fine sand, salt, clay and organic matter that can be easily removed by

the raindrops splash and runoff water, also greater amount of raindrops and runoff remove larger sands and gravel particles runoff occur whenever there is excess water on the slop that cannot be absorbed is reduced due soil compaction [4].

Land use and tillage local method of farming vegetables clearance, intensive harvest and over grazing leaving soil bare. Soil compaction cause by giving heavy duty machinery which reduces infiltration capacity of the soil and thus promoting excessive water runoff and soil erosion [5].

1.3. Study Areas/ Biophysical Environment

Old Aguata local government area comprises of three biggest local government areas in Anambra state, namely Aguata, Orumber north and Orumba south. The three local government area also comprises of many autonomous towns and villages [6]. The climate of old Aguata is characteristically of the equatorial type formed in south eastern Nigeria, essentially warm and humid. The climate is tropical with two distinct seasons, rainy season and the dry season, from May to September for rainy season while dry season is from November to April. Rainfall reaches its highest monthly maximum of 300-400 mm from June to September and drops to 0.01mm in December and January. The area is under-plained by the more resister sand stones of the Imo-shale formed by the sand stones of the Ameke formation [7].

2. Methodology

The erosion gully will involve design of the box culvert, cascade drop concrete channel, cascade drop chute and stilling basin, gabion retaining wall, check dam and outlet structure (ou shola et al 2022) more over the construction of the finger gully named as right and left gully follow by their respective sequential number of both right and left side of the main gully involves the design of the concrete canal, cascade drop, chute and stilling basin. Junction structure with the gabion retaining wall and outlet structure, Finally the design of gully banks treatment works, the gully banks is largely provided with Bio-remediation and stone pitching works, also the section of the design cover bank treatment works, interception and collector drains on the gully [7, 8]

2.1. Potential Environmental and Social-Economic Positive Impacts

- Rehabilitation of erosion menaces in the community
- Repair of the watershed gullies
- Connection and restoration of access to houses and villages already cut-off by the erosion
- Provision of employment of opportunities for both skilled and unskilled workers
- Improved agricultural productivity within the community and Anambra state at large
- Community development programs.
- Reintegration of community and diversification of source of livelihood.
- Reduction of mortality rate
- Promotion of afforestation programs with all benefits.
- Minimization of flooding and control of overflow.
- Reduced fear of perception of loss of property, inhabita-

tion and ancestral origin of the communities

- Initiation/kick off of rapid production system and agricultural practices.
- Increase in social interaction between the disputing communities.
- Improved livelihood enhancing activities.
- Gender issues of inequality, construction activities will encourage economic activities especially for women since there would be large work force, petty trading and food-spots owners will benefit immensely from the demand on-site.
- Promotion of goodwill and community appreciation of the state government communities benefit from conflict resolution.

2.2. Potential Environmental and Socio-Economic Adverse Impacts

- Increase in fugitive dust emission during pre-construction and construction of phases of rehabilitation.
- Waste generation especially construction waste.
- Possibility of seepage and leak of fuel from machineries and effluent discharge in the watershed, thus impacting on the water quality.
- Site clearing will lead to loss of species diversity and abundance, including soil organism, fungi, invertebrates and bacterial.
- Noise and vibration from heavy project vehicles and equipment resulting in nuisance.
- The frequency and incidence of occupational hazards may rise with during construction activities. Loss of employment for laborers after the completion of the rehabilitation work
- Loss of employment for labourers after the completion of the rehabilitation of work
- Loss of productive farm land.
- Cut off access to road network.
- Underming of structure such as draning system and culverts.
- Washing out lanes, roads and building foundations.
- Treat to class room.
- Inter-community conflicts.

3. Analysis and Discussion

Anambra state has already design developed an implementation and environmental social health and safety management system processes and procedures for all the local government areas that will establish a foundation for sound mitigation of adverse impact, enhancement of positive impact, Institutional responsibilities indicative cost for miligation and eventual monitoring of the policy.

However, there are a lot of challenges posed by the gully through the construction of new road network infrastructure in the permanent site as a consequence of the erosion. The environmental concerned is identified as irregular rainfall around Amuokpola/Okoko lake and Ekwulobia/Okoko road and excess rainfall, weak nature of the soil which led to soil loss and degradation.

The problem of gully erosion developed as a result of the

road drainage which collects from across the catchment with the increase in hardened surface in the catchment due mainly of anthropogenic influence with the result increase peak flow [6]. Many people are cut off from existing livelihood opportunities, income and health with the problem of gully erosion. There must always be conflict among communities as well as pressure of the influx potential job seekers into the area and associated risk. New wealth among the youth world threatens the existing authority structure. Moreover, conflict over loss of land and resettlement benefits for demolition of some existing properties obstructing of diverting culvert and concrete drains. Unfortunately, loss of fertile to soil for infertile, sub-surface soil that would not enhance vegetation establishment, loss of agricultural land and increase in exposure of erodible soil, increase in turbidity and sediment load in downstream receiving water body [9].

Obliviously Anambra state government will close collaboration with the consultant of project, contractor and both Oko and Amoakpala communities [10]. The consultant shall always visit intervention site to have firsthand overview of situation on the site, so that he will have adequate knowledge of requirement for the project and identify, the proposed management strategies to ensure the environment is appropriately mitigated [11].

Finally, in context of environmental management the power of management is biophysical and socio-economic environment which is vested in environmental protection agency, will also prescribe specific guideline and regulation and ensure compliance with the relevant regulation for environmental impact [12].

4. Conclusion

Anambra state has put in place policies like, environment and social management framework and resettlement policy frames aiding and in conflict management and resolution that may occur between some communities. Moreover, will help to develop, procedures and plans to ensure that the mitigation measures will be implemented throughout the phases for the rehabilitation, also the ensure the effective long-term protection of the areas and other biotic and abiotic components of the environment obviously, Government will be in close. Collaboration with the consultant, contractor and both Oko/Amoakpala and Ekwulobia/Oko communities [13].

The consultant shall visit the intervention site, to have firsthand overview of the situation on ground at the site so that he will have adequate knowledge of requirement for the projects and identify the proposed management strategies to ensure the environment is appropriately mitigation. Consequently, in the context of environmental management, the power for management of biophysical and socio-economic environment which is vested in environmental protection agency which will also prescribe specific guidelines and regulation and ensure compliance with the relevant regulation for environmental impact assessment without consideration at early stage of environmental and socio impact.

Finally, the state government must adopt a new conflict man-

agement guideline for effective conflict resolution strategy to avoid litigation among the communities. Moreover, government must create a renowned method which expects an unconventional approach to conflict management that can turn adversaries in partners [10, 14-21].

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