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EFFECTIVENESS OF NIGERIA EROSION AND WATERSHED MANAGEMENT PROJECT IN CONTROLLING ENVIRONMENTAL DEGRADATION IN ABIA STATE

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ABSTRACT

The study assessed the effectiveness of the Nigeria Erosion and Watershed Management Project (NEWMAP) in controlling environmental degradation in Abia State, Nigeria. The study specifically identified the structures employed by NEWMAP to control environmental degradation, determined how these interventions influenced the livelihood of the beneficiaries, determined the level of effectiveness of NEWMAP in controlling environmental degradation, and ascertained perceived constraints faced by NEWMAP in environmental management in the area. A total of 90 respondents were selected for this study using a multistage sampling procedure. Primary data were collected with the aid of a structured questionnaire and analyzed with appropriate descriptive statistics such as frequency counts, percentages and mean ($\bar{x}$). The study identified bioremediation (96.7%), gabion boxes (74.4%), rock retaining walls, and gutters (61.1%) as some of the structures used by NEWMAP to checkmate environmental degradation in the study area. Results showed that the livelihood of the respondents was improved in areas such as increased arable land ($\bar{x}$ =3.72), better living environment ($\bar{x}$ =3.62), and increased income ($\bar{x}$ =3.52). The study further revealed that NEWMAP was effective in using state-of-the-art designs of engineering and flexible structures to control gully erosion ($\bar{x}$ =3.74) and to put adequate safeguard measures to strengthen disaster risk management ($\bar{x}$ =3.77) among others. It was concluded that the implementation of NEWMAP's environmental management strategies was effective and had a positive influence on the livelihood of the respondents. The study, therefore, recommended that NEWMAP should continue with their stated objectives and also intervene in other parts of Abia State currently faced with gully erosion.

Keywords: *NEWMAP, Effectiveness, Environmental degradation*

INTRODUCTION

In Abia State as well as the entire South Eastern Nigeria, the greatest environmental threat is the gradual but constant dissection of the landscape caused by soil erosion. In Nigeria, about 48.04% of the population live in rural areas and are directly or indirectly involved in the use of land resources. The majority of these rural dwellers are facing lots of environmental constraints such as erosion and flooding. These problems reduce their productivity and income and as well threaten their existence. The current rate of erosion occurring in the country has serious implications for agriculture, especially in this era of growing concerns about food security and rural development (Igwe, 2012).

Owing to the continuous degradation of land, it is expedient that several strategies be put in place to curb environmental degradation. Maina (2019), reported that the Federal Government over the years has implemented various strategies to effectively manage the environment. One such strategy was the Federal Environmental Protection Agency (FEPA). According to Omofonwan and Osa-Edoh (2008) in Maina (2019), FEPA was established to control the Nigerian environment, its resource exploitation, and management. But field observation reveals that environmental degradation is growing at a rate worse than in the pre-FEPA period. The solution to these problems requires going beyond the strategies and objectives of FEPA.

The ineffectiveness of previous measures taken by the federal Government resulted in the rapid and continuous loss of land, especially in the southern part of Nigeria. In 2010, Nigeria made a request to the World Bank for assistance in addressing the challenges of gully erosion, emerging land degradation, and environmental insecurity in the country. This request led to the formation of the Nigeria Erosion and Watershed Management Project (NEWMAP), an eight-year multi-sectoral project aimed at addressing gully erosion in Southern Nigeria and land degradation in Northern Nigeria. The development objective of the NEWMAP is to reduce vulnerability to soil erosion in targeted sub-watersheds with a portfolio of US $508 million plus additional financing of $400 million (Iruoma, 2021). The initiation of the NEWMAP

project was borne out of the necessity to address the multiple and complex challenges arising from past efforts of governments in addressing the gully erosion menace in the South East. These include weak local participation, absence of land use planning, and insufficient attention to livelihood issues among others. This eight-year innovative, multi-sectoral project, which has been extended as a result of the hiccups and challenges of COVID 19 is supposed to finance State-led interventions to prevent and reverse land degradation, initially focusing on gully erosion sites that threaten infrastructure and livelihoods in seven states: Abia, Anambra, Cross River, Ebonyi, Edo, Enugu, and Imo. One major aim of NEWMAP is to induce community development by bringing the environmental hazards caused majorly by water (rainfall) to the barest minimum. For this to be a success, the people will have to participate favorably.

Due to the failure and inadequacy of past approaches to erosion and flood control, NEWMAP intends to adopt a holistic watershed management approach; which includes: Use of state-of-the-art designs of engineering/structural and flexible structures at targeted gully complexes; bio-remediation use of vegetation (grass) measures to complement civil works in treated gully areas to enhance regeneration; introduction of proper and well-terminated drainage systems at targeted gully complexes and other erosion sites with reduced severity level after treatment; adequate safeguard measures to strengthen disaster risk reduction; community ownership and participation towards greater adoption of sustainable land and water management practices by local people in sub-watersheds; enhance livelihoods in the Sub-watershed, and where necessary implement local Resettlement Action Plans (RAP); and improve livelihoods of direct project beneficiaries in and around the project states and sites.

However, the extent to which NEWMAP had been effective in environmental management in Abia State has not been adequately documented. To ascertain if the project had achieved its noble objectives in terms of environmental management; there was a need to carry out a study in this direction. Thus, this study was conceptualized to scientifically investigate the effectiveness of NEWMAP in controlling environmental degradation in Abia State, Nigeria.

The study specifically identified the structures employed by NEWMAP to control environmental degradation, determined how these interventions influence the livelihood of the beneficiaries, determining the level of effectiveness of NEWMAP in controlling environmental degradation, and ascertained perceived constraints faced by NEWMAP in environmental management in the area.

METHODOLOGY

The study was conducted in Abia State, Nigeria. The state is made up of three agricultural zones (Aba, Umuahia, and Ohafia) and 17 local Government Areas. The rural population constitutes 60% of the population of the area. The State has a population of 4,112,230 and a population density of 650 persons per square kilometer (NPC, 2006). The major occupation of residents of Abia state is farming and trading. The population of the study comprised all men and women in NEWMAP beneficiary communities in Abia state. The study adopted a multi-staged sampling procedure in selecting the beneficiaries for this study. There were four Local Government Areas (LGAs) where remediation work had either commenced or been completed. These include; Aba South, Isiala Ngwa North, Umuahia North, and Umunneochi. There were seven communities with active sites across these LGAs; Uratta, Umuagbai, Umuogele, Umuezeukwu, Umuagu, Amuzukwu, and Amuda Achara. In the first stage Umuahia North, Isialangwa North, and Umunneochi LGAs were purposively selected because of the high presence of NEWMAP activities. In the second stage, three communities; Amuzukwu, Umuezeukwu, and Amuda Achara were purposively selected. These areas were selected because they all had ongoing active livelihood activities and completed remediation works. In the third stage, 30 beneficiaries were randomly selected from each of the 3 communities, giving a total of 90 beneficiaries. These made up the respondents for the study. The study made use of primary data. Data were collected using a structured questionnaire. Data collected for the study were analyzed using percentages, frequency counts, and mean scores.

To identify the structures employed by NEWMAP in the control of environmental degradation, frequencies and percentages were employed. The influence of NEWMAP intervention on the livelihood of beneficiaries was measured using mean scores generated from a four-point rating scale of strongly agree (4 points), agree (3 points), disagree (2 points), and strongly disagree (1 point). The perceived level of effectiveness of NEWMAP was measured using mean scores

generated from a 4-point rating scale; strongly agree (4 points), agree (3 points), disagree (2 points), and strongly disagree (1 point) and perceived constraints faced by NEWMAP in environmental management in the area was measured using mean scores generated from a 4-point rating scale; strongly agree (4 points), agree (3points), disagree (2 points) and strongly disagree (1 point).

RESULTS AND DISCUSSION

Structures employed by NEWMAP in controlling environmental degradation

The result in Table 1 reveals the beneficiaries who were aware of the structure used by NEWMAP in the control of environmental degradation in the study area.

The beneficiaries affirmed they were aware of bioremediation (96.7%), bamboo sticks (90%), sandbags (74.4%), gabion boxes (74.4%), and rock retaining walls/ gutters (61.1%).

Table 1: Distribution of beneficiaries based on awareness of structures for control of environmental degradation

Control structures	Frequency (n= 90)	Percentage (%)
Bioremediation	87	96.7
Bamboo sticks	81	90.0
Sandbags	67	74.4
Gabion boxes	67	74.4
Rock retaining walls/ gutters	55	61.1

Source: Field Data, 2021

The result implies that most of the beneficiaries were aware of the structures used by NEWMAP in the study area. This could mean that NEWMAP was carrying the people along and they understood their activities. This finding is in tandem with that of Akinwande and Okiyi (2018) who reported that most of their beneficiaries were aware of what NEWMAP was all about and their activities.

Perceived Influence of NEWMAP Interventions on Livelihoods of the Beneficiaries

The result from Table 2 reveals a grand mean of 3.48. The table revealed that the livelihood variables influenced by NEWMAP intervention were; increased arable land ($\bar{x}$ =3.72), increased farm output ($\bar{x}$ =3.52), increased income ($\bar{x}$ =3.52), increased food availability and affordability ($\bar{x}$=3.58), better living environment ($\bar{x}$ =3.62), increased access to health care services ($\bar{x}$ =3.40), increased access to portable water ($\bar{x}$ =3.59), increased access to educational facilities ($\bar{x}$ =3.33), increased business opportunities ($\bar{x}$=3.48), ease in transportation ($\bar{x}$=3.66), greater job opportunities ($\bar{x}$ =3.29), increased government projects ($\bar{x}$ =2.97) and increased accessibility to other communities ($\bar{x}$ =3.56).

Table 2: Distribution of Beneficiaries Based on Perceived Influence of NEWMAP Interventions on Livelihoods of the Beneficiaries

Livelihood variables	Strongly Agree (4)	Agree (3)	Disagree (2)	Strongly Disagree(1)	$\sum fx$	Mean
Increased arable land	69(76.7)	18(20.0)	2(2.2)	1(1.1)	335	3.72
Increased farm output	51(56.7)	35(38.9)	4(4.4)	0(0.0)	317	3.52
Increased income	48(53.3)	41(45.6)	1(1.1)	0(0.0)	317	3.52
Increased food availability and affordability	53(58.9)	36(40.0)	1(1.1)	0(0.0)	322	3.58
Better living environment	58(64.4)	31(34.4)	1(1.1)	0(0.0)	326	3.62
Increased access to health care services	48(53.3)	34(37.8)	4(4.4)	4(4.4)	306	3.40
Increased access to portable water	57(63.3)	31(34.4)	0(0.0)	2(2.2)	323	3.59
Increased access to educational facilities	47(52.2)	32(35.6)	5(5.6)	6(6.7)	300	3.33
Increased business opportunities	49(54.4)	35(38.9)	6(6.7)	0(0.0)	313	3.48
Ease in transportation	60(66.7)	29(32.2)	1(1.1)	0(0.0)	329	3.66
Greater job opportunities	41(45.6)	34(37.8)	15(16.7)	0(0.0)	296	3.29
Increased government projects	30(33.3)	30(33.3)	27(30.0)	3(3.3)	267	2.97
Increased accessibility to other communities	58(64.4)	27(30.0)	2(2.2)	3(3.3)	320	3.56
Grand Mean						**3.48**

Source: Field Data, 2021

Decision mean point = 2.55

The intervention helped in the recovery of arable farmland, and the construction of roads and bridges. The recovered parcels of land were available to farmers to cultivate and perform other livelihood-enhancing activities which could lead to higher yields/productivity, increased income, and perhaps satisfaction. It also provided access roads for them to visit other farmlands and also access other essential infrastructure and services and attract development from other sources outside their domain. The result implies that NEWMAP's intervention in controlling environmental degradation in the study area influenced the livelihood of the beneficiaries positively. Beneficiaries, according to Akinwande and Okiyi (2018) in their focus group discussion confirmed that NEWMAP was doing a great job in controlling erosion in their communities and salvaging the environment.

Beneficiaries' Assessment of Level of Effectiveness of NEWMAP in Controlling Environmental Degradation

Table 3: Distribution of Beneficiaries Based on their perceived Level of Effectiveness of NEWMAP in Controlling Environmental Degradation

Effectiveness variables	Strongly Agree (4)	Agree (3)	Disagree (2)	Strongly Disagree(1)	$\sum fx$	Mean
Able to use state of the art designs of engineering and flexibles structures to control gully erosion	72(80.0)	13(14.4)	5(5.6)	0(0.0)	337	3.74
Able to revegetate or grass to complement civil works in treated gully areas to enhance regeneration	67(74.4)	20(22.2)	3(3.3)	0(0.0)	334	3.71
Able to introduce gutters at targeted gully complexes and other erosion sites after treatment	68(75.6)	22(24.4)	0(0.0)	0(0.0)	338	3.76
Able to put adequate safeguard measures to strengthen disaster risk management	69(76.7)	21(23.3)	0(0.0)	0(0.0)	339	3.77
Able to effect community ownership and participation towards greater adoption of sustainable land water management practices by local people	71(78.9)	19(21.1)	0(0.0)	0(0.0)	341	3.79

Able to enhance the livelihoods of the people in the sub-watershed and pay compensation where necessary	74(82.2)	16(17.8)	0(0.0)	0(0.0)	344	3.82
Able to improve livelihoods and direct project beneficiaries in and around the communities	72(80.0)	18(20.0)	0(0.0)	0(0.0)	342	3.80
Grand Mean						3.77

Source: Field Data, 2021

Decision mean point = 2.55

The result from Table 3 reveals a grand mean of 3.77, affirming that the beneficiaries' perception of NEWMAP's level of effectiveness in controlling environmental degradation was commendable. The variables listed in the table are the objectives of NEWMAP and the beneficiaries agreed that NEWMAP was realizing its objectives in their communities. They were able to; use state of the art designs of engineering and flexibles structures to control gully erosion ($\bar{x}$ =3.74), revegetate or use grass to complement civil works in treated gully areas to enhance regeneration ($\bar{x}$ =3.71), introduce gutters at targeted gully complexes and other erosion sites after treatment ($\bar{x}$ =3.76), put adequate safeguard measures to strengthen disaster risk management ($\bar{x}$ =3.77), effect community ownership and participation towards greater adoption of sustainable land water management practices by local people ($\bar{x}$ =3.79), enhance livelihoods of the people in the sub-watershed and pay compensation where necessary ($\bar{x}$ =3.82) and improve livelihoods and direct project beneficiaries in and around the communities ($\bar{x}$ =3.80). These to a great extent improved the livelihood indices in beneficiary communities. This result corroborates the findings of Oguaghamba and Onyia (2019) who stated that the World Bank and Nigeria Erosion and Watershed Management Project (NEWMAP) approach for erosion control in Nigeria have proved successful in the last eight years of the intervention.

Perceived constraints faced by NEWMAP in environmental management in the area.

The results in Table 3 revealed a grand mean of 1.67 which implies that the constraints were generally viewed as minor constraints. From the table, constraints such as lack of trust among members ($\bar{x}$ =2.08) and lack of group interest ($\bar{x}$ =2.06), group disintegration ($\bar{x}$ =1.94),

leadership structure problem ($\bar{x}$ =1.90), lack of personal ownership ($\bar{x}$ =1.83), untimely release of inputs ($\bar{x}$ =1.77), vandalizing of projects ($\bar{x}$ =1.76) likewise others had mean scores lower than 2.5 and were therefore not considered major constraints.

The findings revealed that although there were constraints, they were not perceived by the beneficiaries to have hindered the effectiveness of NEWMAP in controlling environmental degradation in the study area. This result contradicts the findings of Chukwu (2021) who identified certain factors like lack of trust among members and lack of group interest to be major constraints to the activities of NEWMAP in South-east, Nigeria.

Table 3: Distribution of beneficiaries based on perceived constraints faced by NEWMAP in environmental management in the area.

Constraints	Strongly Agree	Agree (3)	Disagree (2)	Strongly Disagree (1)	$\sum fx$	Mean
Poor construction of projects	2(2.2	0(0.0)	45(50.0)	43(47.8)	14	1.56
Lack of adequate training	3(3.3)	4(4.4)	46(51.1)	37(41.1)	15	1.70
Sub-standard projects	2(2.2)	0(0.0)	39(43.3)	49(54.4)	13	1.50
Hostility of the community	0(0.0)	3(3.3)	44(48.9)	43(47.8)	14	1.56
Lack of proper supervision	1(1.1)	2(2.2)	40(44.4)	47(52.2)	13	1.52
Group disintegration	9(10.0)	10(11.1	38(42.2)	33(36.7)	17	1.94
Leadership structure problem	10(11.1)	8(8.9)	35(38.9)	37(41.1)	17	1.90
Lack of personal ownership	6(6.7)	8(8.9)	41(45.6)	35(38.9)	16	1.83
Lack of trust among members	12(13.3)	14(15.6	33(36.7)	31(34.4)	18	2.08
Lack of group interest	13(14.4)	11(12.2	34(37.8)	32(35.6)	18	2.06
Poor maintenance	2(2.2)	5(5.6)	43(47.8)	40(44.4)	14	1.66
Lack of projects appropriateness	1(1.1)	2(2.2)	38(42.2)	49(54.4)	13	1.50
Vandalizing of projects	2(2.2)	15(16.7	32(35.6)	41(45.6)	15	1.76
Untimely release of funds	2(2.2)	5(5.6)	42(46.7)	41(45.6)	14	1.64
Untimely release of inputs	2(2.2)	9(10.0)	45(50.0)	34(37.8)	15	1.77
Irregular payment of counterpart	0(0.0)	2(2.2)	39(43.3)	49(54.4)	13	1.48
Lack of group payment of counterpart funding	3(3.3)	6(6.7)	35(38.9)	46(51.1)	14	1.62
Elite members capture and abuse of the group inputs	4(4.4)	6(6.7)	29(32.2)	51(56.7)	14	1.59
Communal conflicts	2(2.2)	1(1.1)	31(34.4)	56(62.2)	12	1.43
Political influence	5(5.5)	7(7.8)	31(34.4)	47(52.2)	15	1.68
Shortage of project staff	0(0.0)	4(4.4)	43(47.8)	43(47.8)	14	1.57
Illiteracy of participants	1(1.1)	7(7.8)	40(44.4)	42(46.7)	14	1.63
An uncooperative attitude of the Project Management team	2(2.2)	2(2.2)	42(46.7)	44(48.9)	14	1.58
Insufficient credit facilities	1(1.1)	1(1.1)	40(44.4)	48(53.3)	13	1.50
Grand Mean						**1.67**

Source: Field Data, 2021 Decision mean point = 2.55

CONCLUSION AND RECOMMENDATION

The study analyzed the effectiveness of the Nigeria Erosion and Watershed Management Project in controlling environmental degradation in Abia State, Nigeria. The findings from the study have shown that NEWMAP is using bioremediation, gabion boxes, rock retaining walls, and gutters among others to checkmate environmental degradation in Abia State Nigeria. The study also found that the livelihood of the beneficiaries has been greatly improved by NEWMAP since its intervention. This is evident as there was a positive perception from the beneficiaries of most of the livelihood variables identified in this study. This study also confirmed that NEWMAP has been able to meet all her stated objectives in the study area with minor constraints and therefore has been effective in controlling environmental degradation. This is visible in sites across Abia state which were initially taken over by gully erosion and landslide. This further confirms that the project had a positive impact on both the livelihood and environment of the beneficiaries as they can now engage in various activities like farming and trading among others which were initially hindered prior to NEWMAP's intervention. Also, roads that were initially lost to gully erosion as well as communities cut off from other parts of the state have now been restored. The study, therefore, recommended that NEWMAP should continue with their stated objectives and also intervene in other parts of Abia State currently faced with gully erosion.

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