Socio-Economic Impact of the 2012 Flood

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ABSTRACT

In 2011, 23 out of the 36 states in Nigeria were severely affected by floods. By 2012, the number increased to 32. During these incidents, lands were over-run by flood; buildings and other social infrastructure were destroyed, the eco-system was devastated killing animals and destroying farmlands and crops. A lot of families were rendered homeless and means of livelihood cut-off. Outbreak of epidemic became a source of concern to both individuals and government. The Federal, State and Local Governments as well as groups and individuals reacted in various ways to address the problem.

The paper examines the economic and social loss suffered by individuals and groups using four communities in Ahoada-East Local Government Area of Rivers State as a paradigm of analysis. It highlights the problems encountered by the people during the period with the attendant consequences to the development of the rural populace. The paper finally recommends ways of addressing problems encountered in order to mitigate the effects of floods, which affect the development of the citizenry.

KEYWORDS: Climate Change; Natural Disasters, Flood, Development

INTRODUCTION

Climate change related natural disasters have become increasingly frequent in the environment. Incidents such as flood, erosion, desertification, hurricane, rise in ocean tide, tornadoes, amongst others are common occurrence in different parts of the world. The situation has resulted to increased concern by governments and world leaders. This is against the backdrop that the primary function of any government is to protect lives and property of the citizenry. No responsible government would sit and watch the lives and property of its citizenry destroyed without doing anything about it. Nigeria is not an exception. Former President, Olusegun Obasanjo had acknowledged that soil erosion and flood hazards are widespread in Nigeria when he stated that:

Valuable resources have been lost as a result of the sheer magnitude of the problem and our inability to tackle them. Although the losses inflicted by soil erosion and flood are diverse, by far the greatest single source of loss, on both monetary basis and in terms of directly affecting the greatest number of people, is damage to transportation, infrastructure and utility services. To this end, we have seen efforts made at various levels of government to tackle the problems associated with climate change (National Erosion and Flood Control Policy, 2005).

From the global perspective, the United Nations (UN) has, over the years, initiated several strategies to tackle the issue of climate change. The establishment of the United Nations Framework for Climate Change (UNFCC), International Panel on

Climate Change (IPCC), amongst others are some of the mechanisms adopted by the UN to combat the negative effects of this global scourge. Member nations have also followed suit by initiating climate change policies to address the problem. There have been major International Climate Meetings and Conferences from 1979 to 2015 present to address the problem. For instance, the First World Climate Conference was held in 1979, while the second edition in 1990. In 1988, the World Meteorological Association and the United Nations Environmental Programmes established the Intergovernmental Panel on Climate Change. In 1992 there was the signing of the Framework Convention on Climate Change at the United Nations Conference on Environment and Development. Several other initiatives including meetings of Conference of Parties (COP) have held in various parts of the world.

As a result of this, Climate Change has become a key development issue that should be urgently tackled. Its negative effects transcend territorial boundaries. Concerning the adverse effects of climate change, Odjugo (2010: 45) avers that:

Climate change will alter all aspects of hydrological circle ranging from evaporation through precipitation, run-off and discharge. The global warming and decreasing rainfall, together with the erratic pattern of rainfall produce a minimal recharge of groundwater resources, well, lakes and rivers in most parts of the world, especially Africa, thereby creating water crisis.

As highlighted earlier, one of the major consequences of climate change is flood. Fubara (2014: 1) defines flood as an overflow of water that submerges land or a covering of land by water. He adds that:

Mere overflow of water is not a significant flood unless such water overflow endangers land areas used by wild life or man for habitation (villages and cities), socio-economic infrastructure (road, railways, engineering structures, etc), agriculture, livestock, maintenance, mineral exploitation/exploration facilities.

Mbajiorgu (2014) asserts that floods can be classified as pluvial, fluvial, sea water, groundwater and the failure of groundwater-bearing structure. Fubara (2014) distinguished three (3) major types of flood namely: River or Lake Overflow, Tidal overflow and Meteorological flash floods. According to him:

River floods occur when the flow of water in the river exceeds the carrying capacity of the river channel and the banks are either not built up to prevent the overflow or there is no intervention or flood control engineering structure, such as reservoirs to accommodate water overflow. For the Tidal flow, he states that the gravitational attractions by the sun and moon on the ocean waters of the Earth cause such waters to raise (flow) and fall (ebb) in height. This phenomenon known as Oceanic Tide is simply called tide (distinct from earth tides of the rise and fall of the earth's crust which is not definitely rigid, a relevant phenomenon in Physical Geodesy). Oceanic tide floods estuarine, coastal lands and near shore rivers/creeks whose topography is either flat or low lying or lie below mean sea level, such as in the Niger Delta. The Meteorological Flash Floods occur in human habitations and other social infrastructure, due to high intensity rainfall, intense thunderstorms, dam break or intentional dam water release, which accumulate waters over impermeable surface or saturated soil usually without adequate drainage capacity (2014:1).

Incidents of natural disasters in Nigeria have had a long history with its attendant effects on the lives and property of the people as shown in the table below.

Table 1: Chronological Table of Natural Disasters (Total Droughts/ Famines, Earthquakes, Epidemics, Flood).

Year	Total Events	Total Killed	Total Affected	Events	Flood Killed	Affected
2001	8	744	152,168	3	200	149, 652
2000	11	135	7,055	6	4	5,500
1999	9	705	119,888	3	89	117,000
1998	3	54	107,211	2	15	107,000
1997	-	-	-	-	-	-
1996	2	5,231	45, 849	-	-	-
1995	-	-	-	-	-	-
1994	-	28	580,000	-	-	-
1993	-	-	-	-	-	-
1992	2	118	-	-	-	-
1991	2	7,689	11,200	-	-	-
1990	1	60	-	-	-	-
1989	1	29	41	-	_	_
1988	2	130	301,500	1	130	300,000
1987	5	530	120	-	-	_
1986	3	1,073	1,400	-	-	-
1985	1	_	3, 000,000	-	_	_
1984	1	-		-	_	_
1983	-	-	-	-	_	_
1982	-	-	_	-	-	-
1981	-	-	_	-	_	_
1980	-	-	_	-	_	_
1979	-	_	_	-	_	_
1978	1	100	_	-	_	_
1977	_	_	_	-	_	_
1976	_	_	-	-	_	_
1975	_	_	_	_	_	_
1900-74	_	2000	80,000	_	_	_

Source: Oyebande, Lekan Ph.D (2014) Integrated Flood Management and Mitigation Options for Nigeria: Proceedings of the 2nd International Conference on Flood and Erosion Prevention, Protection and Mitigation held at the Rivers State University of Science and Technology.

Table 1 above indicates that from 1900 to 1974, there was only one (1) incident of flood with a total of 2000 persons killed and 80,000 persons affected. From 1975 - 1977, there were no incidents of natural disasters while 1978 recorded only one (1) incident with 100 persons affected. Between 1979 and 1983, there was no incident of natural disasters and only 1 incident occurred in 1984 with no loss of lives and

persons affected. Between 1998 and 2001, there was increase in the frequency of natural disasters with the highest occurring in 2001. The Table also indicates that from 1998 to 2001, there were incidents of flood with the highest recording three (3) and killing 200 occurring in 2001.

THE 2012 FLOOD

The flood that ravaged most parts of the country in 2012 did not come as a surprise. This is because the Nigeria Meteorological Agency (NIMET) had predicted and warned of heavy rainfall that year. The Agency categorically stated that the rains would be more than the one of the previous year, which is 2011. That was not the only warning that came. Earlier that year, the Cameroonian authorities had warned their Nigerian counterparts of an impending opening up of the Lagdo dam, to avoid its overflowing with water. The Lagdo dam located in the northern part of Cameroon was a source of electricity supply to the people. That country, in the past, experienced inadequate rainfall which predictably affected the production capacity of the hydroelectricity of the Lagdo dam. As a result, the management of the dam retained as much water as possible in its reservoir. The increase in the rainfall in 2012 saw more water stored in the reservoir and so more 'rain meant more doom', as excess water stored in the dam would become catastrophic whenever the gates of the dam were opened to avoid its overflowing. The water released from the Lagdo dam flowed directly to River Benue from the highlands of Cameroon. Since River Benue is naturally steep, this consequently leaves the lowland planes of Adamawa, Plateau, Benue, Kogi, Delta and some other states flooded with the high volume of water dispensed from the Dam whenever the authorities of the Dam deemed it fit to release water so as to preserve the Dam. The case of the 2012 incident was not an exception. It was expected that with these warnings, any responsible government ought to take proactive measures to address the impending problems that may arise. However, the resultant effect was the massive flood that occurred in which homes, farmlands, livestock, means and sources of livelihood of thousands of Nigerians were directly or indirectly affected. Social and economic infrastructure such as roads, bridges, schools, markets, hospitals and health centres were adversely affected. Fear of impending epidemic and health hazard became rife. The environment was devastated leaving the citizenry in poor and helpless conditions.

Throughout the length and breadth of the country there was massive destruction of property and loss of lives. For instance, about 200 villages in Afijio Local Government Area of Oyo State were cut-off from other areas in the State during the period. The rain which affected farm settlements also washed away the popular Eleran bridge that linked the affected villages in the local government with other areas, thereby making it difficult to transport food items to major towns. (Feyispo, 2012:6). In Edo State, over 20 communities were affected. Worst hit included: Yiluwa, Dochi, Ofukpo, Agbabu, Iguzi-Ofukpe, Udaba, Unudoboh, Udaba-ogho, Aneghette, Ilushi, Urho, Urhowa, Inyelen, Ifeku Island, Ekweshimimi villages. Many of these affected areas in Edo State were farmlands that the State government had given to some Vietnamese farmers for the cultivation of rice to reduce the N356billion Nigeria spends annually as the second largest rice importer in the world (Alemma-Ozioruwa, 2012). In Kano State, flood ravaged nine local governments claiming 12 lives. The local governments affected were: Bagwai, Bebeji, Gabasawa, Garun, Malam, Karaye, Nasarawa and Sumaila. The flood washed away over 220 houses, farmlands and live stock in Bauchi State. Misau, Giade, Shira and Jama were some of the local government areas affected. (Agada, 2012:9). Bayelsa was cut off from other parts of the country when the Patani section in Delta State and the Okogbe Section in Rivers State along the East/West Road became impassable (Mboji, 2012:15). In Taraba State, 34,395 were said to have occupied 27 camps scattered across the six affected local government areas in the State. Karin Lamido Local Government Area had 16,582 internally displaced persons. It was followed by Lau Local Government Area with 8, 588. Others are Ardo Kolo, 3,762; Wukari, 2,933; Gassol, 1, 342; and Ibi, 1,188. (Adetayo, 2012:14). The Nigeria Emergency Management Agency (NEMA) reported that about 27 persons lost their lives as a result of the incident in Taraba State (Idegu, 2012:16).

On October 1, 2012, two children died as a result of excessive rainfall in Niger State, (Daily Sun, October, 2, 2012). The National Emergency Management Agency (NEMA) confirmed the registration of 88,740 internally displaced persons (IDP) in Adamawa, Benue and Taraba States. In Delta State, the government had confirmed that 42, 271 internally displaced persons were in 18 relief camps scattered all over the state. (Agada, 2012:9). In Cross River State, cocoa, cassava, maize, yam, melon farms, mango, orange, pear, pineapple orchards, vegetable, bananas and other plantations were washed away in communities such as, Ayiormor, Ugbem, Agwagwune and Umon communities in Biase Council. Residential houses, bridges and farmlands in Envi-Boje, Kachie-Boje Asu ben Boje, Katabng, Orimekpang-Aymekang, Buanchor, among others in Bje and Abo wards of Boki council as well as Calabar South, Calabar Municipal, Abi, Yala, Ogoja, Obudu and Odukpani Councils were affected. Over 18,000 yam farms, 10,000 livestock, cassava, vegetable, cocoayam, melons and other cash crops worth millions of naira were destroyed, while parts of Afi Mountain Range rolled down the valleys, bringing down rubbles, rocks and heavy boulders tearing down vegetation, houses, bridges and other structures along paths covering over two kilometres (Ozioruwa-Aliu, 2012:51). About 100 houses collapsed in three communities in two Local Government Councils of Zamfara State, following a ravaging flood caused by torrential rain (Ibrahim, 2012:40). Floods caused by torrential rainfall that persisted for 12 hours rendered over 50 families including the village head of Wuma community in Jigawa State homeless, (Akiubo 2012:46).

Ocher et al. (2014:118) argued that:

The flood disaster is the worst in 40 years according to the Red Cross Society when viewed in terms of magnitude, intensity, duration, spatial dimension and consequent damages and losses. According to Director General of the National Emergency Management Agency (NEMA), Nigeria lost N2.29 trillion to the 2012 flood disaster. This is equivalent to 14 per cent of Nigeria's Gross Domestic Product (GDP).

They further stated that:

The Comprehensive Post Disaster Need Assessment conducted from November 2012 to March 2013 with the support of the World Bank and Global Facility for Development for Disaster Reduction and Recovery, United Nations Office for Partnerships and relevant Ministries, Departments and Agencies put the estimated total value of infrastructures, physical and durable assets at \$9.6 billion. The total value of losses across all the sectors of the economy was estimated at \$7.3 billion. The combined value of these damages and losses was \$16.9 billion, in all 363 were killed; 5,851 injured. 3,691,394 affected and 3,871,530 displaced.

There is no doubt that these incidents have adversely affected the socio-economic lives of the impacted individuals. This is given to the magnitude of losses suffered by the people. This is more so because the livelihood of the people is solely based on the environment as most of the people are farmers, fishermen, canoe carvers and craftsmen and women as well as distillers of local gin and traders. For many months, their fate hung in the balance.

While the floods raged, experts predicted food shortages, epidemics and worsening living conditions in the temporary abodes of the internally displaced persons (IDPs) in the affected areas. The then President of the Christian Association of Nigeria (CAN), Pastor Ayo Oritsejafor, was quoted as saying that "the floods had exposed the country to the possibility of famine and hunger next year" (Omokhumu, 2012:7). There were also fears among many people that the country is most likely going to witness food shortage soon after the floods which destroyed several farmlands and submerged many communities across the country. Transnational transportation will be seriously threatened and so food prices and production will be affected. (Sessou, 2012:11). The then Commissioner for Culture and Tourism in Kogi State, Mr. Thomas Acholo, had described the loss to culture and tourism in the State as colossal. He stated that the flood destroyed some significant monuments and artefacts in the State, as well as compelled the suspension of some cultural and tourism related activities. (Nwogu, 2012:25).

That these natural disasters affected agricultural production in Nigeria posed grave consequences to its socio-economic development. This is because agriculture holds the key to employment and poverty alleviation as it is the mainstay of most of the communities affected. According to Hargrave: The best way to address the unemployment challenges is to provide the right incentives, the right infrastructure to make farming attractive to young people. We need to get our young unemployed into farming. Obviously, agriculture is an enterprise that can weekly contribute to growth of food production in the country. (Adekoya, 2012:12).

As a result of this development the United Nations warned of a looming food crisis by 2013. The United Nations Report stated that the world grain reserves were dangerously low and that severe weather in the United States and other food exporting countries could trigger major hunger crisis the following year.

THE STUDY AREA

Four communities in Ahoada-East Local Government Area of River State are used as paradigm for analysis. They are Ihuaje; Abarikpo, Ogbo, Ula Ehuda. Ahoada East is one of the 23 local government Areas in Rivers State. Rivers State is one of the states geographically located in the Niger Delta region of Nigeria where tributaries run and flow into the Atlantic Ocean. The people are also engaged in economic activities such as fishing and farming. They form the major occupation of the people. Most of the farm produce are taken to the popular Ahoada and Elele markets, as well as Mbiama. The produce are bought by traders and taken to Port Harcourt, Yenagoa and other neighbouring cities in the region. The major means of transportation is by road and as such their exist a good road network in the area

DATA COLLECTION

The data utilized for this study was generated through direct field observation, oral interviews and administration of questionnaires. Three hundred questionnaires were administered with the aid of systematic sampling technique at interval of five households in each community in the inundated areas. Out of this number, 203

responded while 97 did not. Reason given was that they have seen a lot of people come with questionnaires asking similar questions with the aim of coming to their aid and yet they have not seen anything come out of such exercises.

The questionnaire was designed to ascertain that the people were actually affected by the 2012 flood as well as the extent to which they were affected. This is to identify the implications of the incident on the socio-economic lives of the people. Oral interviews were also conducted by the researcher on the paramount ruler of three of these communities. They are Chief Henry Abidhi, Paramount Ruler of Ogbo Town; Chief Philemon Daniel Ozor, Paramount Ruler of Abarikpo community and Chief Friday Ekwushi, paramount ruler of Ihuaje community. The data are presented in tables.

DATA PRESENTATION

Table 2: Socio- demographic characteristics of respondents

Sex:	RESPONDENTS	PERCENTAGE
Male	167	82.3
Female	36	17.7
Total	203	100
MARITAL STATUS	RESPONDENTS	PERCENTAGE
Single	54	26.6
Married	131	64.5
Divorced	16	7.8
Widowed	2	09
Total	203	100

Source: Field Survey, 2014

TABLE 3
What is your occupation?

Response	No of Respondents	% of Respondents
Public/ Civil Servant	17	8.3
Trader	23	11.3
Farmer	110	54
Craftsman	37	18.2
Self-employed	9	4.4
Others	7	3.4
Total	203	100

Source: Field Survey 2014

Table 3 indicates that 17 respondents were farmers, 23 traders, 110 farmers, 37 craftsmen, 9 self employed and 7 fell in the group of other occupations not listed above.

TABLE 3
Which of these infrastructures was damaged as a result of the flood?

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Response	No of Respondents	% of Respondents
Hospital	78	38.4

Electricity	160	78.8
Public water supply	97	47.7
Tarred roads	158	77.8
School	203	100

Source: Field Survey 2014

Table 3 indicates that 78 respondents making a total of 38.4 per cent indicated that hospital was affected by the flood, 160 respondents making a total of 78.8 per cent, 97 respondents giving a total of 47.7 percent identified public water supply (neighbourhood water scheme and mechanized hand pumps) were affected, 158 representing 77.8 per cent, while all respondents stated that the school in the area was damaged as a result of the flood.

TABLE4
Where you directly affected by the 2012 flood?

Response	No of Respondents	% of Respondents
Yes	203	100
No	Nil	Nil

Source: Field Survey 2014

The Table indicates that all the 203 respondents making a total of 100 percent were directly affected by the flood

TABLE 5
To what extent were you affected by the flood?

Response	No of Respondents	% of Respondents
Seriously	156	76.8
Very Seriously	24	11.8
Not Strongly Affected	23	11.3
Not Affected	Nil	Nil

Source: Field Survey 2014

Table 5 shows that 156 respondents representing 76.8 percent said that the flood affected them seriously, while 24 respondents representing 11.8 percent responded very seriously. 23 respondents representing 11.3 percent said they were not seriously affected.

TABLE 6
Were you provided with relief materials during the incident?

Response	No of Respondent	% of Respondents	
Yes	186	91.6	
No	17	8.4	
Total	203	100	

Source: Field Survey 2014

In this table a total of 186 respondents representing 91.6 percent affirmed that relief materials were provided for them while 17 respondents representing a total of 8.4 percent say that relief materials were not provided for them. The category of persons fall into the group of those who did not take refuge in the camps but rather took refuge with friends and relatives in neighbouring communities not affected by the flood and in Port Harcourt.

TABLE 7
To what extent did the relief materials reduce the effects of the flood?

Response	No of Respondents	% of Respondents
Fairly well	146	71.9
Large Extent	34	16.9
Considerable extent	23	11.3
Not At All	Nil	Nil

Source: Field Survey 2014

This Table shows that a total of 146 respondents making a total of 71.9 were of the view that the relief materials reduced the effects of the flood fairly well, while 34 respondents who gave 16.9, affirmed that its effects were to a large extent. 23 respondents representing 11.3 percent agreed that the relief materials were of considerable extent.

ANALYSIS/DISCUSSIONS

From the data obtained for this research, it is obvious that the economic and social lives of the people under study were significantly affected by the floods. Infrastructure such as hospitals, schools, electricity, public water supply and roads were greatly affected to a large extent, especially their farmland which is the major source of livelihood to the people. This implied the reduction in the quality of life of the people. It was also ascertained that efforts were made by government, agencies, non-governmental organizations, philanthropists and individuals to come to the aid of the people through the donation of relief materials. Materials such as food stuff, clothing and beddings were provided for the people. There was also the provision of medical services by government agencies, the Red Cross and Medical Associations. A major segment of the respondents were of the view that the relief materials provided went a long way to cushion the effects of the flood incident. It was also observed that those who did not feel the impact of the relief materials provided were those who took refuge with friends and relatives from neighbouring towns, villages and Port Harcourt. Crops planted during the planting season were totally destroyed. All respondents affirmed that their farmlands were destroyed as a result of the incident. All over the world incidents of flood have been observed to have caused severe negative impacts on the affected people with huge socio-economic consequences. For instance, Chesen (:2010:442) argues that flood and other water related disasters cost the world economy as much as \$50 to \$60 billion per year. It's devastating effects cannot be overemphasized. He further argues that the greatest potential for flooding is in Asia where more than 1,200 floods occurred between 1900 and 2016, claiming an average of 5,300 lives costing up to \$207 billion in losses. This looses, no doubt, affect the economic fortunes of the people, thereby resulting in a decline in their standard of living. The World Bank Technical Paper on Flood Control in Bangladesh also adduced that in 1987 and 1988, Bangladesh experienced two of the most severe floods on record as widespread damage was caused to crops, roads, railroads, cities and towns and more than three thousand people lost their ;lives. It further indicated that the floods were a major setback to the country's economy because of the heavy expenditures by the Government in its prompt and effective relief efforts and in part the disruption of economic activities (1990:1). In Somalia, a United Nations Environmental Programme (UNEP) Desk Study avers that flooding in the Jubba and Shabeelle regions caused cereal production to fall to its lowest post war level. It also disclosed that flooding in the Gu rainy season in the Hiran and Middle Shabeelle regions where the situation was described "precarious" with several thousand households being forced to flee their riverine villages. From all indications, there occurrences have impacted negatively on the socio-economic lives of the affected populace.

SUMMARY/CONCLUSIONS

From the study, it is obvious that the 2012 flood that ravaged most parts of Nigeria affected the people adversely. It was as a result of the inability of government and relevant agencies to take proactive measures to heed to early warning of the impending disaster from both the Nigeria Meteorological Agency (NIMET) and the Cameroonian authorities. The relevant agencies preferred to provide relief materials, rather than adopt proactive measures to combat the problem. Caution was thrown to the wind, thereby making the people suffer immensely. The people, who are basically farmers, had their farmlands destroyed thereby causing untold hardship on their lives. Apart from that, those who resided in neighbouring cities such as Port Harcourt, Mbiama, Yenagoa who depended on farmers from the area for purchase of food items such as garri, plantain, banana, amongst others were also affected indirectly. The threat of food shortage and high cost of food stuff, particularly garri, which is the staple food in this region, became imminent. With the prolonged effects of the flood on the land, there were also fears of health hazards and imminent epidemic as animals in the forests that were killed as a result of the incident began to decay. There was also the issue of water submerging pit toilets and throwing up the wastes. The quality of life of the people was seriously affected as a result of these incidents. The impact of the flooding became evident in data released by the National Bureau of Statistics that showed marked increase in inflation which jumped to 10.2% in September 2012 compared to 9.8% in August. The data showed that the rise in the food index was mainly due to higher food prices in various cases led by potatoes, yams and other tubers, fruits, beans, bread and cereal (including rice), as well as movement of food products to markets across the country. (Sessou, 2012:11). According to a Tribune Editorial (2012), "There have been predictions of an imminent food crisis by the Federal Government and the course of events appeared to be leading inexorably towards the fulfilment of the forecast. The commentary further argued that Nigeria falls squarely within the fold of countries that need to get their acts together in the critical area of food security. Another Editorial from the Punch stated that: "Long after the raging flood may have been tamed and the waters may have found their way back to the ocean, rivers and rivulet, Nigerians will still have to put up with other related challenges, chief of which is food shortage. The Federal Government was quick to warn of the threat of an imminent food crisis which will only compound an already miserable condition." (October, 2012:18) These concerns posed serious issues regarding the socio-economic lives of not only those affected but the general populace.

RECOMMENDATIONS

In line with the observations from this study, the following recommendations are made:

Government policy on erosion and flood should be strengthened in order to have proper implementation of the policies. Although it is certain that incidents of flood cannot be prevented, the policies should be geared towards reducing the harsh affects of climate change related incidents such as flood on the people. This will help boost their standard of living.

There should be early warning signs to alert those who live in flood prone areas on the impending dangers. This will help mitigate the effects of flood and erosion in the country.

Public enlightenment and orientation should be carried out in order to enlighten the people on the reality of flood and the forecasts by the experts. This will ensure that the people cooperate with the relevant authorities in the quest to tackle incidents of flood.

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