

Mitigating Gully Erosion and Landslide in Anambra State, Nigeria Through Participatory Communication and Community Initiatives

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Abstract

Soil erosion is one of the prominent features in southern Nigeria, especially in Anambra and Imo States and has destroyed roads, homes and farmlands. In Oko community of Anambra State, landslides have added to the misery of the community. While government responsiveness is growing compelling, it is important to galvanise community initiatives. In this respect, many government apparatuses worldwide have increased obligations to develop frameworks for minimum formal opportunities for the public to talk their way through. This expository paper captures the causes, and consequences of erosion in Anambra State, Nigeria. The paper, anchoring on Behaviour Change and Multi Track Models, is of the view that government agencies should integrate the people's initiatives as a key component of the strategy for change, aimed at mitigating gully erosion. The paper identified some erosion sites in the state and offered remedies to the menace. Pursuant to the remedies, the paper proffered participatory communication as an important component of change, aimed at mitigating the menace of erosion and landslide in the environment.

Keywords: *Development, Communication, Participatory communication, Erosion, Landslide, Behaviour change*

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Background to the Study

Some parts of Nigeria are troubled by large doses of natural disasters. While desert encroachment is mainly discussed in the North, erosion and landslide have formed a major discourse in southeast Nigeria. Occasional overflow of riverbanks led to major displacements in Nigeria, the last experience being in 2022. These disasters have formed major headlines, and they have attendant severe socio-economic implications on affected Nigerians.

Erosion, the subject of this paper is the geological process in which sand or earthen materials are worn away and transported by natural forces such as wind or water. Finally, gully erosion is the stage in which soil particles are transported through large channels (National Geographic, n.d.). The incidence of soil erosion is not new in Nigeria as it has formed a subject since the early 21st century. As an early approach to stem the erosion menace, the Udi Forest Reserve was created in 1922, followed by an anti-erosion plantation also at Udi in 1928 (Sykes, 1940). Early studies by Grove (1951 and 1952) in parts of the former Eastern and Northern provinces of the country also point to the early acknowledgement of the problem in Nigeria.

Since this early period, soil erosion has continued to attract attention and made headlines. It has formed topics of conference debates, as well as legislative and government actions, leading to some degree of general awareness. Despite measures taken to combat erosion, it would appear that efforts and management strategies remain ineffective as new erosion sites develop, and old ones deteriorate. Soil erosion is one of the prominent features in southern Nigeria, especially in Anambra and Imo States and has destroyed roads, homes and farmlands with communication measures necessary for mitigating the menace in mind, this paper, in what follows, aims at identifying the communication strategies for dealing with the problem in south-east Nigeria.

The Nigeria Civil War 1966-1970 brought untold hardship, misery and near hopelessness onto the south-east part of Nigeria. Today, erosion, especially of the gully variant, appears to be struggling to bring worse misery to the South-east people of Nigeria. In view of the scale and lack of visible government containment measures, some writers argue south-east is obviously threatened by a physical environment that seems ever ready to slip into "nothingness".

In the light of lack of any contradictory evidence, Anambra State may be adjudged the most erosion-prone and erosion-devastated landscape in Nigeria. The number and scale of gully erosion sites in the state is frightening and menacing. Across the other parts of the eastern states, gully erosion has proved to be a nuisance to the people. According to the World Bank, south-east Nigeria is a hotspot for massive erosion, an advanced form of land degradation. The Anambra State Government last year said more than 1,000 active erosion sites spread across the state have become a major natural disaster (*Premium Times*, April 3, 2021).

The Nanka- Agulu-Okoro erosion sites are a classic example of a people under siege by nature. These sites are in addition to many other contiguous towns threatened by gully erosion. The

Umuchu erosion site in Aguata Local Government Area is an example. In Anambra State alone, the Nkisi-Water-Works erosion in Onitsha as well as the ones at Umuchu, Ojoto and Alor in Idemili South Local Government Area, in addition to the Umuchiana erosion site in Ekwulobia, Aguata Local Govern Area, are all a matter of grave concern. In many parts of Oko, Nanka and Ekwulobia, ravaging flood move at a speed capable of challenging any heavy earth-moving machine. The consequences are obvious and unpalatable.

It is not the trust of this paper to examine the extent of government commitment towards solving this problem, but it is right to put it on record that the erstwhile government of Mr. Peter Obi did well to bring the menace to the national limelight. There was also evidence of small-scale government interventions as a means of bringing palliatives. In areas where the scope was within the state government intervention, government presence was felt such as in Ogboji and Ndiokpalaeze areas of Orumba South and North respectively. In some other areas such as Nanka, Oko, and Ekwulobia, the scope is clearly huge and challenging the lives of the people and deserves national attention. In some parts of Umuchu, Aguata Local Government area, some areas have been contained, but gully erosion remains a nightmare threatening lives and property.

A massive landslide at Ezioko village, Oko, in Orumba North Local Government of Anambra State in 2022 claimed unprecedented space in one swoop. The landslide also threatens the federal road, and has claimed more homes. The area affected is also within sight range of Federal Polytechnic, Oko (authenticreporters.com, October 22, 2022). At a press conference by the Rector Federal Polytechnic Oko, Anambra State Nigeria, Engr. Dr. Francisca Nwafulugo, on the rampaging gully erosion at the extension site of the polytechnic held on 16th February 2022, the Rector stated:

This gully erosion was a sudden occurrence which took us unawares. It surfaced in August 2021. Ever since the emergence of the gully, we have been making serious efforts to see how it can be solved. Already, we have reached out to both the State and Federal Government. The gully is over 20 metres deep. It is quite an alarming sight. Most unfortunately, the gully is beyond what the Polytechnic could handle...It has also encroached into the 1.23km road built by the Federal Ministry of Works and commissioned in February 2021. Already the integrity of that road has seriously been undermined and if nothing is done urgently the entire road may be washed away when the rains set in. There are also surrounding buildings that are at the risk of being washed away if no urgent solution is proffered. The greatest threat the menace poses is a threat to the life of students and staff alike (authenticreporters.com, February 17, 2022)

Acknowledging the roles of the media, the Rector, Engr. Dr. Francisca Nwafulugo stated that "It is, therefore, a welcome development that the media is partnering with us in this drive to find a solution to the threat of gully erosion besieging Federal Polytechnic Oko" (authenticreporters.com, February 17, 2022).

Causes of Erosion

While erosion is a natural process, human activities have contributed tremendously to the exacerbation of the menace. Rainfall, soil structure, and human activities have contributed largely to the causes of land degradation and these activities are responsible for erosion. Today, erosion, especially gully erosion, is one of the most significant environmental problems in Anambra. The following have been advanced as the reasons for erosion in Anambra State:

1. The activities of slave trade merchants were a precursor to the current erosion problem in the South-east. In Nanka Community, the Eke-Ntai in Amako village, the slave trade is reported to have flourished. The menacing erosion in Nanka the natives has its origin in the notorious market. The logic is that the slave trade conducted within the sites led to the development of hidden bush foot pathways that were heavily flooded from neighbouring communities precipitating gully erosion (Wikipedia retrieved March 28, 2023).
2. There are strong arguments that war activities, such as indiscriminate digging of trenches by soldiers, as well as the detonation of explosives and bombs across the Igbo land, were a catalyst to the current ravaging erosion sites which dot like toad tools across the eastern landscape.
3. Indiscriminate felling of trees for development and economic purposes created openings and made large areas of the soil open and thus vulnerable to erosion.
4. The rising number of road networks without proper flood management has contributed much towards the rising scope and number of erosion.
5. The rise in the number of middle-class citizens gave rise to an increase in medium-scale houses. These houses have nearly successfully replaced the thatch roof models in many parts of the South-east adding to the volume of water floor across the planes. This also evolves within a smaller space compared to the North, with vast land.
6. The inability of the government to evolve a clear development plan for flood management is a source of worry. Over the years, many newly developed road networks were not matched with an adequate drainage system. Many existing ones lead to nowhere, and floods simply empty into any available space. This is evident in the flooding of many roads during rainy seasons.
7. Illegal dumping of refuse along existing waterways and canals is inimical to normal water flow.
8. Corruption is one problem bedevilling interventions from both government and no government bodies. There are news reports of diverted or unaccounted Ecological Funds.
9. Overgrazing and other poor agricultural practices also account for the washing away of soil surface.
10. The climate change leading to global warming has caused vigorous hydrological cycles such as more total rainfall and more frequent high-intensity rainfall. These rainfall changes, along with changes in temperature, radiation, and atmospheric CO₂ concentrations cumulatively have significant impacts on soil erosion rates.
11. Some locals in Nanka-Oko-Amaokpala attribute the menace to the handwork of evil spirits, especially with the regard that there is a large python existing within Nanka-Oko axis of the erosion sites (Onu 2021, 193-203).

General Impact of Erosion

The following are advanced.

1. In Agulu, Nanka, Oko, Ekwulobia, Awka, Uke, Ozubulu, Uga, and other communities several kinsmen are separated by dreadful gullies. This is a grave development for people whose lives are traditionally communal. This has serious implications for social bonding.
2. Contact during security challenges is minimal in view of the inability. Help is slow in coming as vigilante groups and other security apparatuses find it difficult to effectively police the areas.
3. Easy and free movement is impeded as erosion makes motorists to apply long and unwinding routes making journeys longer than necessary, cumbersome and more expensive.
4. Loss of economic property is commonplace, and this is regrettable. Pieces of evidence abound of people who have lost a whole building to erosion and economic property to ravaging erosion.
5. The psychological trauma of uncertainty is not the least. Some people as if in war situations cannot sleep with two eyes closed. This is a sad commentary for people who are grappling with stiff and inclement economic conditions.

Remedial Measures

The reversal of the erosion causative factors above can be achieved through the following practices.

1. Reduction of large volumes of flood water runoff originates from homesteads. This is the primary source of erosion. Deep water collection holes (implemented in Ekwulobia town) are one step aimed at reducing the impact of runoff water. Unfortunately, many of this ancient initiative is less enforced as the water collection holes are filled up with sand and are giving way to housing projects.
2. Indiscriminate felling of trees should be avoided. Tree planting practices should be encouraged and this has to be backed by proper legislation.
3. Government should evolve a clear and comprehensive development plan for flood management. New roads should be accompanied by an adequate drainage system.
4. Illegal dumping of refuse along existing waterways and canals must be stopped. Convenient disposal units should be created, and adequate measures should be put in place for monitoring and enforcement. In many parts of Anambra state, there are no signs of waste disposal points.
5. Good use of intervention funds from both governmental and non-governmental bodies must not be compromised. There are news reports of diverted or unaccounted ecological funds. This is counter-productive.
6. Grazing centres should be developed to reduce incidences of overgrazing. Good education on good agricultural practices should be encouraged.
7. Climate change has caused a vigorous hydrological cycle. Industrial practices that cause the depletion of the ozone layer should be properly managed. Adequate international and national policies aimed at reducing avoidable emissions and other causative agents must be addressed.

8. Indigenous research centres on erosion must be established as a means of infusing local content on erosion control. These research centres could be mainstreamed in higher institutions of learning. Funding for these research centres can come from multinational oil companies as well as federal and state budgetary provisions.

The Importance of the Media

The media have always played important roles in promoting modernisation and development, as well as articulating the views of the common man. But the benefits of the mass media do not undermine the strength of the traditional media for the same purposes. After all, Ugboajah (1985), talked about the “Oramedia” in Africa. His work described the effectiveness of the popular media: Drama, singing, dancing, poetry, proverbs town criers, fortune tellers, market women, theatre, and on. These are existing traditions enjoyed by many people. They are indeed popular and beneficial to them.

In 1927, the German author Bertolt Brecht formulated a “radio theory” in which he envisioned the new technology, the radio, as a *dialogical instrument for change*: “Change this apparatus over from distribution to communication... on this principle, the radio should step out of the supply business and organize its listeners as suppliers” (Brecht 1927, cited in Tufte & Mefalopoulos, 2009). The authors argue it was in many ways a precursor to the theory and practice of participatory communication, as well as of interactive media such as the internet.

Effective participatory communication, which enables stakeholders to be part of environmental decisions has become a key component of the current world development drive. The participatory communication approach was conceived more than three decades ago as an alternative to the overconfident city-centred and top-down diffusion approach. Participation, which necessitates listening, and moreover, trust, pro-participation scholars argue, would help “reduce the social distance between communicators and receivers, between teachers and learners, between leaders and followers as well as facilitate a more equitable exchange of ideas, knowledge and experiences.” And that “the need to listen is not limited to those at the receiving end. It must involve the governments as well as the citizens, the poor as well as the rich, the planners and administrators as well as their targets” (Servaes & Malikhao, retrieved, October 5, 2014, www.fao.org). No consensus exists around a common definition of participation (Tufte & Mefalopoulos, 2009).

It varies depending on the perspective applied. Some stakeholders define participation as the mobilization of people to eliminate unjust hierarchies of knowledge, power, and economic distribution. Others define it as the reach and inclusion of inputs by relevant groups in the design and implementation of a development project. These examples represent two of the main approaches to participation: *a social movement perspective* and *a project-based or institutional perspective*. These perspectives share a common understanding of participation as the involvement of ordinary people in a development process leading to change. Their scope and methods, however, can differ.

Tufte and Mefalopoulos (2009), gave an account of why a participatory approach is required explaining that in respect of the institutional perspective mentioned above, “participation can be used as a tool to achieve a pre-established goal defined by someone external to the community involved. For the social movement mentioned above, participation itself can be a goal as an empowering process.” The authors highlighted the consensus for active participation in the early stages of a development project or program, both in research and design of interventions. They, however, asserted that “such participatory goal setting does not secure a continued role for participation in the following stages of project implementation. It only indicates that with ownership in setting goals a sustained process with relevant outcomes and impact will be possible.”

The FAO (1994), cited by Soola (2003), identified important roles that communication can play in participatory development:

1. Better planning and programme formulation by consulting the people and actively involving them in making decisions that will affect them;
2. People's participation and community mobilisation by building their confidence to make decisions and carry them out as a community in a self-reliant way;
3. Changing lifestyles through the use of mass media to raise awareness, peer counselling, the technique of interpersonal communication and social communication methods to pioneer attitudinal changes;
4. Improved training through communication media to bring alive new ideas and techniques and energise programmes of training and human resources development;
5. The rapid spread of information far and wide through a region or an entire country through the mass media;
6. Gaining the attention of decision-makers and generating their support.

At a close look, key elements of true participatory communication include Integration, truth, openness, dialogue, trust building, information sharing, equity, active listening, empathy, surveys, interviews, focus groups, community ownership, social networking, word of mouth, gong and runners and feedback. Whatever approach is taken, integrating the people in the process of handling numerous societal and development challenges so that they can directly influence the direction of their own lives is the idea of participation. “This might involve appearing and testifying at local government, serving in local boards, joining commissions, task forces, advisory committees, or study groups” (Senecah, (undated) retrieved, <http://books.google.com.ng/books>, October 2, 2014).

Theoretical Framework

1. The Advocacy and Behaviour Change Model

According to Nwosu (2008), development communication campaigns aim to change people's behaviours in the desired direction and the change may involve immediate action or a long-range behavioural change. He stated that "advocacy campaigns use multimedia and varied communication and persuasion strategies to achieve their objectives. And the flow of advocacy impacts can range from information or awareness creation, knowledge change, attitudinal change, to behaviour change, practice adoption or change" (Nwosu, 2008). This Model also shed light on the work.

2. The Multi-Track Model

The multi-track model enunciated by Tufte and Mefalopoulos (2009), further illuminates the paper. This model according to the authors “originated from the need to combine the richness and complexity of operational approaches and development challenges into a consistent methodological communication framework.” To highlight its flexibility and adaptability to various situations, this model divides its approaches to communication into two basic categories: *monologic* communication and dialogic communication. *Monologic* communication comprises one-way communication approaches such as information dissemination, media campaigns, and other diffusion approaches. Dialogic communication approaches refer to two-way communication, where the process and its outputs are open-ended and the scope explores issues and generates new knowledge and solutions, rather than just transmitting the information.

Role of the Participatory Communication

Participatory communication is also about visibility and voice in the mediated public sphere, which leads us to ask further about what “more concrete roles the media play in participatory communication” (Tufte & Mefalopoulos 2009). The authors continue:

While some of the diffusion-oriented, monologic models of communication focus on national mass media's key roles in communication interventions, the more participatory strategies emphasize media that allows more dialogue, such as community-based media. Whether media serve only as channels of communication or whether they become catalysts of social mobilization and change in themselves is another distinction (Tufte & Mefalopoulos 2009).

In her book *Fissures in the Mediascape*, Colombian scholar Clemencia Rodriguez argues “citizen media are highly participatory by providing access and space for people to participate in all phases of media production” (Rodriguez, 2001 in Thomas & Mefalopoulos, 2009). The authors chronicle a series of efforts by scholars to crystallize different aspects of media's role in participatory communication processes thus:

Ugboajah spoke in the mid-1980s of the "Oramedia" in Africa. These media were all the popular forms of communication from poetry and folk tales to theatre and musical concerts. They were grounded in indigenous culture, and both produced and consumed by members of a group, reinforcing the values of that group. This concept stresses not only the cultural characteristics of these media but also the people's participation in their production and consumption. With a more political approach, the concept of "Alternative Media" emerged in Latin America in the 1970s to signify the grassroots media—community radios, murals, and video documentaries—in opposition to the mainstream media. These came to symbolize a resistance platform in the fight against military dictatorships and provided a space for the voice and visibility of oppressed groups under these regimes. In 1984, British-American John Downing coined "Radical Media" and Clemencia Rodriguez the concept of "Citizen Media" in 2001. Each in their own way, these theories incorporate aspects of citizenship and people's participation (Thomas & Mefalopoulos 2009).

In developing participatory communication strategies, media-specific concerns evolve around the following issues:

- i. Types of media: from folk, community, and mass media to the new media of Internet and satellite communication. Uwakwe (2017) exposed the ongoing media revolution and highlighted the importance of new media as critical component of change.
- ii. Levels of media: local and community-based media to national and transnational media
- iii. Nature of media: electronic media, one-way or interactive, face-to-face Communication
- iv. Institutional characteristics of media: from public to private, national to community-owned, free and independent to closely government controlled
- v. Economic logic informing the media: commercial media, non-profit media, and mixed models.
- vi. Does the existing media environment stimulate dialogue and empowerment processes? This question needs to be answered to assess how and to what degree collaboration with media can contribute to giving voice and visibility to the communities involved (Tufté & Mefalopoulos, 2009 12-13).

Modes of Participatory Communication for Mitigating Erosion

Passive Participation

Taking this approach, the stakeholders are merely seen as subjects on the receiving end. The stakeholders receive information but contribute nothing and feedback is minimal or nonexistent.

Consultative Participation

Facilitators or development agents engage stakeholders in an interactive setting, posing questions. In this consultative arrangement, the stakeholders assume bigger status than passive participants. Even though this may happen, the decision on both data and the project rests on the facilitators.

Collaborative Participation

In this arrangement, stakeholders are formed in groups to participate in discussion and analysis. Decision on the project is produced from collaboration.

Empowerment Participation

Stakeholders take part in decision-making. Facilitators and agents are equal partners. Ownership and control rest in the hands of stakeholders. Thus, they make the final decisions on the process. Generally, four different ways of participation can be observed in most development projects claiming to be participatory in nature (Uphoff, 1985) and they are:

Participation in Implementation

People are actively encouraged and mobilized to take part in the actualization of projects. They are given certain responsibilities and set certain tasks or are required to contribute specified resources.

Participation in Evaluation

Upon completion of a project, people are invited to critique its success or failure of it.

Participation in Benefit

People take part in enjoying the fruits of a project, this may be water from a hand pump, medical care by a "bare-foot doctor", a truck to transport produce to market, or village meetings in the new community hall.

Participation in Decision-making

People initiate, discuss, conceptualize and plan activities they will all do as a community. Some of this may be related to more common development areas such as building schools or applying for land tenure. Others may be more political, such as removing corrupt officials, supporting parliamentary candidates, or resisting pressures from the elites. Yet others may be cultural or religious in nature--organizing a traditional feast, prayers for an end to the drought, and a big party just to have a good time.

Conclusion

This paper has identified causes of erosion in Anambra State, Nigeria. The paper advanced the types of participatory communication strategies available to development experts. Building a strong erosion control and management programme to be embraced by people needs real community partnership. This partnership is inherent in the participatory approach.

Recommendation

The use of "interpersonal channels of communication according to Nwuneli (1986, pp.203-204) "such as face-to-face communication situations in meetings, clubs, festivals and formal gatherings must be initiated to complement the modern mass media." Such traditional media include folk media, song, festival, drama, town criers, market square simulated gossip, village peer group forums and royal voices. To reduce the risk of failure, development initiatives—such as erosion control—must be of the people. This can be achieved by ensuring the whole participatory process in productive and convenient forms as discussed earlier. Scholars know about some limitations of participatory communication, and they must be carefully evaluated.

References

- authenticreporters.com (2022). *Erosion ravages part of Fedpoly Oko*, https://authenticreporters.com/pages/news_stories.php?ref=16451263159713396 retrieved March 18, 2023, retrieved March 20, 2023
- authenticreporters.com (October 22, 2022). Oko landslide: Erosion victims call for help as Anambra erosion agency visits site, https://authenticreporters.com/pages/news_stories.php?ref=16664622749518924, retrieved March 20, 2023
- Grove, A. T. (1951). *land use and soil conservation in parts of Onitsha and Owerri Provinces*, Bulletin No. 21, Geological Survey of Nigeria.
- Grove, A. T. (1952). *Land use and soil conservation on the Jos Plateau*, Bulletin No. 22, Geological Survey of Nigeria,
- Grove, A.T. (1956). Soil erosion in Nigeria". In R.W. Steel and C.A. Fisher (eds.), *Geographical Essays on British Tropical Lands*, Philip, 77-111.
- National Geographic, (n.d.) <https://education.nationalgeographic.org/resource/erosion/> retrieved March 17, 2023
- Nwosu, I. (2008). Towards an integrated and holistic health communications strategy for sustainable human development. In Nwosu Ikechukwu, Soola, O. and Chinaka N.(eds.) *Communication for health and sustainable development in Nigeria*, Enugu: Rhyce Kerex Publishers, 1-15
- Nwuneli, O. (1984). Media use leisure among the urban poor in Nigeria, *African Communications Review* Vols. 1 & 2, 203-204.
- Onu, J. C. (2021). An investigative study of major gully erosion sites in Oko, Anambra State, *Journal of Management and Entrepreneurship*, 196-203.
- Premium Times (2021). *Special report: Communities groan as erosion ravages farmlands, threatens food security in South-east Nigeria* <https://www.premiumtimesng.com/news/headlines/452915-special-report-communities-groan-as-erosion-ravages-farmlands-threatens-food-security-in-south-east-nigeria.html?tztc=1>, retrieved March 17, 2023
- Senecah, S. (n.d.). The trinity of voice: The role of practical theory in planning the effectiveness of environmental participatory. In P. Stephen, Depoe, J., Delicath, M. (eds.) *Communication and Public Participation Process*, retrieved, <http://books.google.com.ng/books>, October 2, 2014.
- Servaes, J. & Malikhao, P. (2014). *Participatory communication*, retrieved, www.fao.org).

- Soola, E. O. (2003). Development communication, the past, the present and the future. In Soola, E. (ed.). *Communicating for development purposes*. Ibadan: Kraft Books, 1-28.
- Sykes, R. (1940). A history of erosion at Udi. *Farm and Forest*, 1, 3-6
- Tufte, T. & Mefalopoulos, P. (2009). *Participatory communication*, The World Bank Working Paper No. 170. 12-13
- Ugboajah, F. O. (1985). Oramedia in Africa. In Ugboajah, F. O. (ed.) *Mass Communication, Culture and Society in West Africa*. London: WACC.
- Uphoff, N. (1985). Fitting projects to people. In Cernea, M.M. (ed.) *Putting people first: sociological variables in rural development*, Oxford, UK: Oxford University Press. Pp.369-378
- Uwakwe, O. (2012). *Development communication: Philosophy and practice*, Awka: Amaka Dreams Ltd.
- (2017). *New Media and Online Journalism*, Enugu: Cecta Nigeria Ltd.
- White, S.A. (1994). The concept of participation: transforming rhetoric to reality. In White, S.A. et al. *Participatory communication: working for change and development*. New Delhi Sage Publications. P.18
- Yoon, C. (2014). *Participatory communication for development*, www.southbound.com. Retrieved October 1,.)

APPENDIXES



Fig. 1: Umucchiana-Ekwulobia Gully Erosion



Fig. 2: Oko-Nanka Gully Erosion
Source: Premium Times (April 3, 2022)



Fig. 3: Roof sheets from a damaged house and Oko community members
Source: authenticreporters.com (October 22, 2022)



Fig. 4: Properties of a displaced family in Oko
Source: authenticreporters.com (October 22, 2022)