Ianna Journal of Interdisciplinary Studies, Volume 5, Number 1 June, 2023

Bottom-to-top approach solution to environmental degradation in the Niger Delta area of Nigeria

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Abstract

Background: Environmental degradation in the Niger Delta Region of Niger has defiled all solutions. Therefore, there is a need to consider fresh approaches to addressing the problem.

Objective: The goal of this study was to determine the possibility of using bottom to top approach in addressing the problem of environmental degradation in the Niger Delta Region of Nigeria.

Method: The researchers applied a descriptive survey research design and sampled 472 respondents using a multistage sampling technique. The participants were sampled from three states that make up the Niger Delta. The states were Bayelsa, Delta and Rivers. Data were collected using a structured questionnaire, while analyses were done using percentages and multiple regression analysis.

Result: The majority of the participants reported that bottom to top approach can contribute to a large extent in addressing the problem of environmental degradation in the Niger Delta Region. The participants also reported that the bottom-to-top approach is more effective than the top-to-bottom approach in addressing the problem of environmental degradation. Finally, stages of the bottom-to-top approach, like problem identification and need priorities, motivation and mobilisation, working together and finally, creating an enabling environment, predicted the effective implementation of the bottom-to-top approach for addressing environmental degradation in the Niger Delta Region.

Conclusion: Bottom to top approach is more effective than top to bottom approach in addressing the problem of environmental degradation in the Niger Delta.

Unique Contribution: This study has offered empirical evidence that could be useful for addressing the problem of environmental degradation in the Niger Delta and elsewhere in the world where environmental degradation is a challenge.

Key Recommendation: Bottom to top approach should be used as a preferred approach for addressing the problem of environmental degradation in the Niger Delta Region of Nigeria.

Keywords: Bottom top; environmental degradation; Niger delta; top down

Introduction

Environmental degradation is one of the serious environmental problems facing the Niger ever since oil was discovered in the community in 1956. The problem has continued to linger and has posed a serious concern on how best to address it and improve the environment. Adekola et al. (2017) regret that the environmental challenges facing the Niger Delta are typical of what happens in almost every African country where oil is discovered. According to them, the discovery of oil in communities in African countries usually leads to conflict because such communities try to protect their interests and ensure they are very well protected. Ogbonne (2019) says that the oil that should have been a blessing to the people of the Niger Delta has become a curse. According to the scholar, the exploration of oil in Niger has posed a serious environmental threat to the people of the Region.

Environmental degradation can be defined as harmful effects on the environment. The United Nations (2012) defines environmental degradation as the depletion of soil, air and water resources. It is the destruction of the ecosystems as well as the extinction of wildlife. The United Nations further adds that environmental degradation is the modification or distortion of the environment. Baloch et al. (2020) note that it is essential to address the problem of environmental degradation because it is linked to development and poverty eradication. The researchers note further that the attainment of sustainable development goals cannot be possible if issues of environmental degradation are not addressed. Wang and Dong (2018) reveal that economic growth and expansions in Sub-Saharan Africa have raised fresh concerns about the problem of environmental degradation within the region. They added that the problem requires serious attention because of its impact on both humans and aquatic life.

Environmental degradation in the Niger Delta has a serious negative impact on humans, economic activities as well as wildlife. Regarding humans, environmental degradation has a negative impact on the mental and physical health of the people of the Niger Delta. Adekola et al. (2017) affirm that many people in the Niger Delta are at risk of different health challenges associated with oil exploration in the area. Aroh et al. (2010) regret that the health impact of oil exploration in local communities is of great concern because most of the people involved are from poor families and cannot afford the finances they require to treat themselves of the health hazards to which they are exposed. In the views of Adekola et al. (2017), many of the locals exposed to environmental hazards due to oil exploration are not equipped to deal with the consequences of such health hazards.

Environmental degradation also has a serious impact on economic activities. This is because when there is damage to the land, it negatively affects economic activities like crop production as well as aquatic life with a corresponding economic effect. Hein (2007) affirms that environmental degradation seriously affects farmers negatively, and this, in turn, impacts negatively on their earnings. Tamazian and Bhaskara (2010) regret that arguments regarding the consequences of environmental degradation often focus more on the health impact with less attention to the economic dimension. The researchers add further that when people are not healthy, their involvement in economic activities reduces, eventually reducing their earnings. Therefore, there is the need to come up with solutions to address the growing problem of environmental degradation, hence the need for this study.

Objective of the study

The aim of this study was to determine the possibility of using bottom to top approach solution to environmental degradation in the Niger Delta area of Nigeria. The specific objectives of the study were to:

1. understand the extend bottom to top approach can contribute in resolving the challenge of environmental degradation in Niger Delta.
2. compare the impact of bottom-to-top and top to down approaches in addressing environmental degradation in Niger Delta Region.

Literature review

The literature review in this study was done under the following sub-heading:

The Niger Delta and environmental degradation

The Niger Delta Region is regarded as the largest wetland in Africa and the second largest globally, only next to Mississippi (Nseabasi, 2005: 165). The area called Niger Delta is made up of nine states, namely Edo, Cross River, Rivers, Imo, Abia, Akwa-Ibom, Ondo, Delta and Bayelsa; the area is characterised by marine life, bird, towering mangrove plants and giant ferns (Powell et al., 2005). Additionally, the creeks, as well as the swamps of the Niger Delta, are located at the top of one of the largest crude oil reserves, estimated to be as high as 34 billion barrels (Nseabasi, 2005). Beginning in the 1970s, the economy of Nigeria has largely been dependent on the oil from Niger Delta. This is because crude oil exploration contributes 40 percent of Nigeria's earnings (Agbu, 2005). It is perhaps in consideration of the natural resources in the Niger Delta that Agbu describes it as paradise on Earth. Ironically, the Niger Delta region has suffered from the exploration of the oil in their locality top among which is environmental degradation.

Environmental degradation has had a significant negative impact on the Niger Delta. It has affected social activities and economic life and exposed people in the area to different health hazards. Aluko (2004) regrets that environmental degradation has rendered the Niger Delta backwards, poor, restive and in complete neglect and turmoil. The researcher regrets that the Nigerian state has not helped because of their lack of interest in addressing the environmental challenges associated with oil exploration in the region. Saliu et al. (2007) opine that even though the Niger Delta region produces oil that is used to finance Nigeria's budget, the area and its people have remained underdeveloped. The researchers further note that even though people of the area have continued to draw the attention of the relevant authorities to the need for the government to come to their aid, such has so far attracted little or no attention on the part of the government.

Another aspect of environmental degradation that is worth highlighting here is displacements. Many people have been displaced from their places of resident because of oil spillage and other environmental degradation associated with oil exploration. Opukri and Ibaba (2008) in a study reported that challenges related to environmental degradation like gas flaring, oil spillage, among others have forced some communities to relocate from their places of ancestral habitation with a corresponding significant negative consequences on their overall wellbeing. The

overall implication from the argument presented above so far is that solutions are needed to address the growing environmental degradation in Niger Delta.

There are studies that have examined ways of addressing the environmental degradation in Niger Delta. Lele (2013) conducted a study to determine the environmental education programmes in the oil-rich region of the Niger Delta. The researchers used content analysis with a structured interview guide as the instrument for data analysis. The researchers found that although environmental education programmes have been carried out in the Niger Delta area, more need to be done to make sure that the people of the area are less vulnerable to environmental hazards. Maiangwa and Agbiboa (2013) in a study reported that multinationals and government need to change their strategies and ensure that the problem of environmental degradation in Niger Delta is addressed. Maiangwa and Agbiboa further reported that oil companies in the Niger Delta Region of Nigeria are more likely to demand and support efforts aimed at promoting environmental safety in developed countries than they are in developing countries like Nigeria. Consequently, their negligence has led to rising cases of militancy, human rights abuses, conflict and other activities that could jeopardize development.

The bottom-to-top approach

The bottom-to-top approach is a development strategy that requires prioritising issues that promote development through community participation. The approach places premium on social cohesion, transparency, and decision-making. It entails making sure that development programmes are initiated through the base by local communities who take the lead in the development of their localities. According to Squazzoni (2008), the bottom-to-top approach ensures that the local community and their leaders assist in championing the course of development. It fundamental goal is to ensure that local communities play a huge role in defining their priories, rather than being forced to accept development agendas that may not be relevant to their needs.

There are four levels of the bottom-to-top development approach. They are information, consultations, joint development and collective decision (Babajanian, 2005). The information stage is the time when relevant information is gathered on how to effectively implement the development plan. Information could be gotten from the mass media, public meetings, fair and exhibition. The consultation phase is the time when relevant people in the community are consulted to understand the needs of the community and how best to go about the development plan. The third phase, which is the joint development plan is the time when people work in groups through partnership and committees to drive the development plan further. The last stage which is collective decision-making is the time when people engage in collective decision making for the overall benefit of the community.

Bottom to top approach is regarded as a useful strategy for promoting development among people. Turner (2007) conducted a study to examine the impact of bottom to top approach for community development. The researcher based the study on his ten years of working as a community development and also used content analysis as the design of the study. They interviewed some experts and held focus group discussions. Their result revealed that bottom to top is an effective approach for promoting community development. The study of Turner is useful to the current one because the researcher examined the usefulness of bottom-to-top as a strategy for promoting community development. However, the researchers did not link it to environmental

degradation. The current study filled this gap by examining bottom to top as an essential strategy for addressing the problem of environmental degradation in Nigeria Delta.

Fu and Ma (2020) conducted a study to examine the usefulness of self-governance and participatory community development on urban development. The researchers used a case study design and conducted semi-structured interviews among the participants. The researchers found that self-governance is a useful approach for promoting urban development. They also reported that self-governance is cost-effective and benefits the community members and the community. Although Fu and Ma used the term self-governance, they were referring to the bottom-top approach in engineering development. The limitation of Fu and Ma's study is that they examined urban areas specifically and paid less attention to environmental degradation. The current study extended that of Fu and Ma by evaluating the possibility of using bottom to top approach to address the problem of environmental degradation in the Niger Delta Region of Nigeria.

Zal (2016) did a study wherein he examined the application of community mapping as a development strategy. The researchers used content analysis as the study's design and sampled 33 participants from the top-down and 283 from bottom to top. The result of the study revealed that the category to which the participants belonged influenced their views on community development. The result highlights the need to use the bottom-to-top approach as a deliberate strategy for ensuring that local communities participate in developing their areas. Nonetheless, the researcher paid less attention to the problem of environmental degradation, which is the focus of the current study.

Quimbo et al. (2018) carried out a study to examine the application of community development approaches, including the bottom-top approach. The researchers used a systematic review and examined 217 studies that were related to community development. The researchers found that there was an increase in the number of studies on community development. The researchers further reported that there is an increase in the use of the bottom to top approach in community development. This study is relevant to the current one because it has examined issues related to the use of bottom to top approach in addressing community issues. However, the researchers did not focus on the use of the approach to address environmental degradation. The current study filled this gap by investigating the possibility of using bottom to top approach to address environmental degradation in Niger Delta Region of Nigeria.

Theoretical framework

The theory that was used in this study was the theory of community-driven development, as suggested by Glenn A. Bowen in 2005. The researcher suggested the theory-based social fund projects that were carried out in Jamaica. The theory holds that the designing and implementation of development that emanates from the bottom top is effective in addressing community problems. Bowen identified the four stages of using a bottom-to-top approach to community development, including problem identification and need priorities, motivation and mobilisation, working together, and finally, creating an enabling environment. According to the theory, during the problem identification, the goal is to ensure that the needs and priorities of the communities are identified. Within the context of this study, the problem is environmental degradation, and the priority is to solve it.

The second stage, which is motivation and mobilisation, entails galvanizing the community members to solve the identified problems. Within the context of this study, it entails mobilisation and motivating communities in the Niger Delta to get involved in solutions to environmental degradation. Working together, the third stage, entails collective efforts to solve the problems facing the communities. From the perspective of this study, this stage entails people of the Niger Delta closing ranks to address the problem of environmental degradation. The last stage is creating an enabling environment. It entails ensuring that the community's people have the enabling environment to fully contribute to solving community problems. From the perspective of this study, this stage entails creating an environment for the people of the Niger Delta to contribute to solving their environmental degradation problems. The researchers applied this theory because it is a useful framework for understanding how the bottom-to-top approach can be implemented to address the problem of environmental degradation in the Niger Delta Region of Nigeria. The theory's fundamental assumption is the need to involve communities in developing their areas. The theory makes a case for allowing people of communities to take the lead in championing issues that bother their welfare and promote the development of their communities. A study by Babajanian (2005) reported that the bottom-to-top approach is more effective for community development than the top-to-down approach. Nikkhah and Redzuan (2009), in a study, also reported that the bottom-to-top approach is a more effective development approach than top-down approach. Based on the above, the researchers suggested the following hypotheses:

H1: Bottom to top approach is a more effective approach for addressing environmental degradation than top to down approach.

H2: Problem identification and need priorities, motivation and mobilisation, working together and finally, creating an enabling environment will predict effective implementation of bottom to top approach for addressing environmental degradation in the Niger Delta Region.

Methodology

The researchers used descriptive survey research design to conduct this study. This design was found useful because, by its nature, the survey is used to explore, describe and explain an issue. The researchers used this design because it enabled them to determine the potential of bottom to top approach in addressing the problem of environmental degradation in the Niger Delta. The study was conducted in three states of the Niger Delta, namely Delta, Rivers and Bayelsa. The total population of the selected States and sample size is shown in Table 1:

Table 1 Population of the Study and the sample selected

S/N	State	Population	Sample size
1	Rivers	7,303,924	226
2	Delta	5,663,362	175
3	Bayelsa	2,277,961	71
4	**Total**	**15,245,247**	**472**

Source: : National Population Commission and National Bureau of Statistics Estimates 2016

NOTE: The researcher did not project the population because doing so does not usually change the sample size. Moreover, 2016 is less than ten years old.

To determine the sample size, the researchers conducted a *priori* Power analysis using G*power software version 3.1. The researchers set the effect size at 0.001, the confidence level was set as 95 with 0.05 alpha level. The result of the analysis showed a sample size of 472 was needed for the study. The output from the analysis is shown in Figure 1 below:

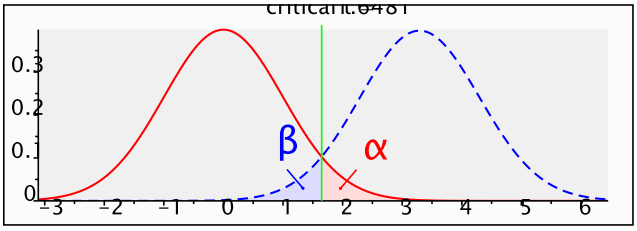

Figure 1: Sample size determination

The researchers used the multistage sampling technique to sample the participants. Therefore, the researcher used a purpose sampling technique to sample the states that were examined. This was done using a balloting system whereby all the nine states in the Niger Delta Region were put in a container and mixed. Three states were randomly selected. In the next stage, the researchers used a proportionate sampling technique to sample participants in each of the states. In the last stage, the researchers used a purposive sampling technique to sample the participants in each state selected. The researchers visited public places like schools, churches, markets, and motor parks to select the participants who would eventually be included in the study. The criteria for inclusion were readiness to take part in the study free of charge, ability to read and write and residency in the three selected states for at least one year.

The instrument for data collection was a structured questionnaire because of its capacity to gather data in large volumes. The questionnaire collected demographic and psychographic data. Three experts in environmental protection validated the instrument. Also, a pilot study (using repeated measures with two-week intervals) with 30 participants in Rivers States who were not part of the real study revealed a correlation coefficient of 0.78, meaning that the instrument was a valid measure. To analyse data for the study, the researchers used percentages as well as multiple regression. The results were presented in tables.

Result

The result of the study showed that among the 472 copies of the questionnaire that were administered, 451 copies representing 95% were returned and found useful. The participants were 67% male and 33% female. Regarding their educational qualification, the majority (87%) of the participants had tertiary education while the remaining 13% had secondary education. The result of the study is presented below:

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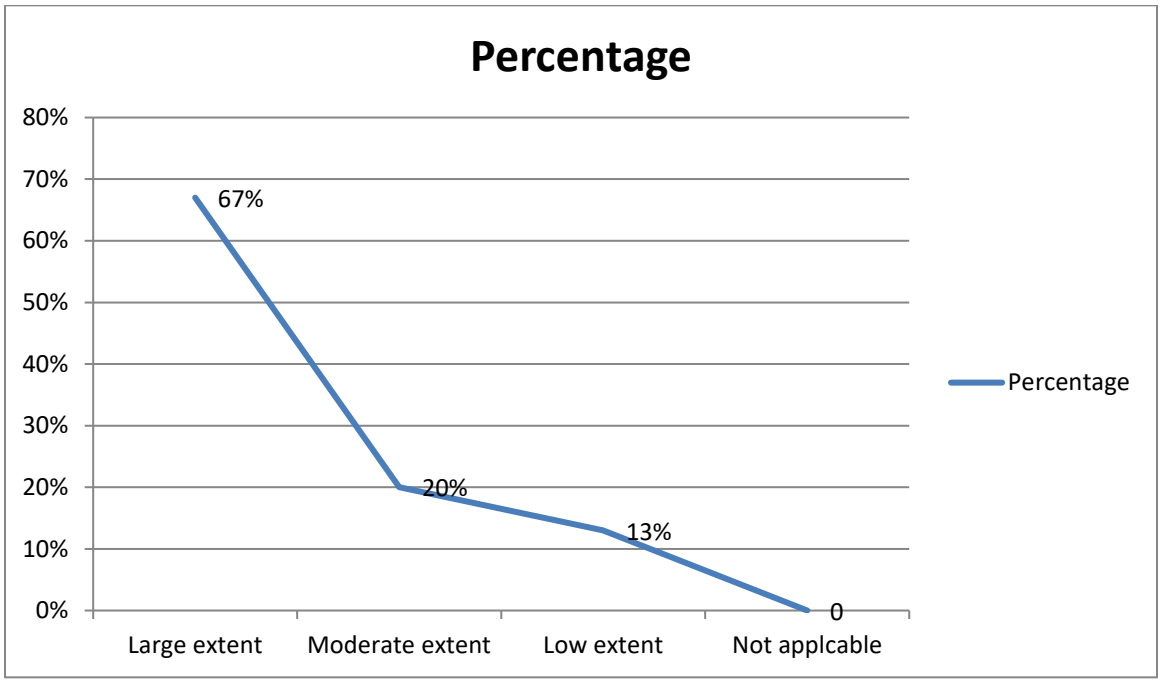

Figure 2: The extent bottom to top approach can be used to address environmental degradation in Niger Delta

The researchers plotted the Figure I to determine the extent bottom to top approach can be used to address the problem of environmental degradation in Niger Delta Region of Nigeria. The result of the study revealed that the majority of the participants reported that bottom to top approach will be effective in addressing the problem of environmental degradation in Niger Delta to a large extent.

H1: Bottom to top approach is a more effective approach for addressing environmental degradation than top to down approach.

H2: Problem identification and need priorities, motivation and mobilization, working together and finally, creating an enabling environment will predict effective implementation of bottom top approach for addressing environmental degradation in Niger Delta Region.

Table 3: Regression analysis of the predictive power of bottom to top and top to down approaches to resolving the problem of environmental degradation in Niger Delta

	Constant	β *value*	*R square*	*F. value*	*P. value*
Bottom to top	2.201	.482	.315	32.120	.001
Top to down		.158			.210

The researchers computed Table 3 to determine the predictive power of bottom to top and top to down approaches in addressing the problem of environmental degradation in Niger Delta. The result of the study showed that bottom to top approach significantly predicted solutions to the environmental degradation in the Niger Delta but top to down did not. Based on this result, the first hypothesis was accepted and the researchers concluded with 95% confidence that bottom to top is a more useful approach for addressing environmental degradation in Niger Delta than top to down approach.

Table 4: Regression analysis of the predictive power of bottom top stages in addressing environmental degradation in Niger Delta Region

	Constant	β *value*	*R square*	*F. value*	*P. value*
Problem identification and priorities	3.101	.382	.335	34.524	.001
Motivation and mobilisation		.251			.001
Working together		.218			.002
Creating an enabling environment		.131			.002

The computed Table 4 to ascertain the predictive power of the four stages of the bottom-top approach in addressing the problem of environmental degradation in the Niger Delta Region of Nigeria. The result of the study showed that our model contributes 33.5% in explaining the implementation of the bottom-to-top approach to environmental degradation management, R^2=.335, p=0.001, *F*(3,310) 34.524. This result supported the second hypothesis as all the items collectively and individually attained statistical significance. An inspection of the items showed that problem identification (β=.382) and priorities contributed more.

Discussion of Findings

This study examined the usefulness of bottom to top approach in addressing the problem of environmental degradation in the Niger Delta Region of Nigeria. The researchers used the descriptive survey research design and sampled 472 participants from three randomly selected states in Niger Delta Region. The states were Bayelsa, Delta and Rivers. The researchers also pursued two objectives and tested two hypotheses.

The result of the study revealed that the majority of the participants reported that the bottom-to-top approach could contribute to addressing the problem of environmental degradation in the Niger Delta to a large extent. This result implies that the participants found bottom to top approach as a useful way to address the lingering problem of environmental degradation in the Niger Delta. This result has extended that of Adekola et al. (2017) and Agbu (2005), who examined the impact of environmental degradation in the Niger Delta without making efforts to highlight ways of addressing the problem. However, in the current study, the researchers did not

just look at the problem of environmental degradation and explored how the problem can be addressed. This study has also extended that of Squazzoni (2008), who examined the usefulness of bottom the bottom-to-top approach in community development but did not link it to environmental degradation.

This study also showed that when compared with top down approach, bottom to top approach is more effective. This study has extended that of Babajanian (2005), who examined the usefulness of the bottom-to-top approach to community development but did not compare it with top-to-down. In addition, previous studies like that of Turner (2007) did not examine the effectiveness of the bottom-to-top approach in solving the problem of environmental degradation. Therefore, the current study has extended the argument in the literature by showing that the bottom-to-top approach is a useful technique for solving the problem of environmental degradation in the Niger Delta Region of Nigeria.

Furthermore, this study has shown that the stages of the bottom-to-top approach, like problem identification and need priorities, motivation and mobilisation, working together and finally, creating an enabling environment, predict effective implementation of the bottom-to-top approach for addressing environmental degradation in the Niger Delta Region. This result has extended the study of Bowen (2005) that identified stages to bottom to top approach without exploring how it can be applied to address the problem of environmental degradation. This additional information is important because environmental degradation remains a serious problem facing the Niger Del Region, and ideas are needed on ways of solving it. The current study has also extended the studies of Quimbo et al. (2018) and Zal (2016) that have explored the impact of the bottom-to-top approach without examining how the stages can be applied to solve environmental degradation problems.

Conclusion and Recommendations

The conclusion of this is that the bottom-to-top approach is a more effective strategy for addressing the problem of environmental degradation than top the top-to-down approach. This approach is successful because it will enable members of the Niger communities to take the lead in solving the problem of environmental degradation, unlike the current top to down approach where the elite class take the lead. This study also concludes that the four stages that should be followed in implementing the bottom-to-top approach are problem identification and need priorities, motivation and mobilisation, working together and finally, creating an enabling environment. This study has contributed to the literature by providing a fresh perspective regarding the effectiveness of the bottom-to-top approach in addressing the problem of environmental degradation. This new perspective could be useful to scholars who may desire to ply the same research route. This study has also contributed to the theory of community-driven development, as suggested by Bowen (2005), by showing that the theory could be a useful framework for investigating the importance of a bottom-to-top approach in addressing community development challenges. Finally, we expect that policymakers will find the result of this study useful in planning and implementing policies and programmes to address the problem of environmental degradation. Despite the contribution of this study, it has some limitations. First, the researcher did not examine the moderating role of the participants' demographics and their responses. In the second place, the responses provided were based more on perception by the participants which could be biased. The researchers recommend that further studies should address the identified limitations.

Funding

TETFUND funded this study through its institutional-based research scheme.

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