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# Exploring environmental education programs in oil-producing indigenous communities in Niger Delta, Ogoniland, Nigeria

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## Abstract

Economic development and environmental development have been long-lasting debates between capitalists and environmentalists. It is also seen as a debate around modernization with globalization at one end and environmental justice at the other end. Our society today is moving rapidly toward development and increased industrial revolutions and globalization. Indigenous communities in Ogoniland are also experiencing such development due to multinationals' exploration of crude oil in their communities. The exploration of oil has caused environmental, socioeconomic, health and political problems in indigenous communities in Ogoniland. These issues require a depth of understanding from all sectors (public, government and corporate sectors) to address them. Hence, through textual analysis and interviews from the government and environmental social movement organizations, this paper presents the types of environmental education programs carried out in indigenous communities in Ogoniland to address environmental issues and other socioeconomic issues due to oil exploration. These environmental education programs in indigenous communities contribute to environmental policy creation, the development of environmental curricula and pragmatic actions toward mitigating environmental degradation and socioeconomic issues in indigenous communities. Thus, revealing the significance of indigenous knowledge and practices in addressing contemporary environmental issues.

**Keywords:** Ogoniland; environmental education; indigenous knowledge

## Introduction

Industrialization has resulted in human activities having an increasingly damaging impact on the natural environment, which in turn threatens the well-being of humans who rely on the environment. Life in the modern era thus requires humans to be environmentally conscious and to actively protect and sustain the natural environment. To achieve this, humans require education about and for the natural environment. This involves a transformative approach to understanding the complexities of the natural environment, issues that affect the environment, and ways (practical/pragmatic) to address these issues. Education has a formative effect on the minds and character of individuals (Ramana, 2012). Education is more than fostering understanding, it is also concerned with transformative change. This implies a transformative education. In the context of this study, this explanation of education involves not just knowing or understanding the natural environment, but education for active participation and critical

thinking for sustainable development. This study, through textual analysis and in-depth interviews, highlights some indigenous types of environmental education programs used by government institutions and environmental social movement organizations to address environmental issues and other socioeconomic issues that are integral to the environment in Ogoniland.

### Contextual background of indigenous environmental education in Ogoniland

It is important to note that as an author, I am from Ogoniland. I am from Biara community in Gokana Local Government Area, Rivers State. This does not necessitate a conflict of interest in the findings in this paper because the findings are from NGOs that have worked in Ogoni communities. I spent my childhood and teenage life in Ogoniland. I worked with my father in our farmlands and went fishing with my friends. This was from 1992 to 2010. During this period, oil was discovered and explored in Ogoniland; however, oil effluents did not yet pollute some parts of the environment and rivers. My family was very involved in farming — the cultivation of yam tubers and cassavas. My father as a farmer had the practice of allowing one farmland to fallow while cultivating another one. This was to allow the fallowed farmland to regain nutrients. Another indigenous practice my family and other Ogonis apply is the use of ashes from firewood for manure/nutrients. My mother always instructs us to save the ashes from cooking and pour them on the farmland for manure. I also remember how my parents and other community members identified plants and seeds used for medical purposes. These were some of the indigenous environmental education practices done in my community before modernization and oil exploration in Ogoniland. These indigenous environmental practices are handed down from generation to generation through informal education, and they remain part of the indigenous environmental educational processes.

The Ogoni people are an indigenous minority within the Niger Delta region but the majority ethnic group in Rivers State, with around 840,000 inhabitants occupying the eastern part of the state (Cayford, 1996, p. 184). The Niger Delta is the richest region in Nigeria in terms of natural resources — specifically crude oil — and the poorest in terms of infrastructural development. In addition to oil, the Niger Delta is rich in aquatic foods and plants (Obi, 2010). Ogoniland has crude oil resources and fertile agricultural land, with rivers and creeks for fishing. Traditionally, the Ogoni people are known for farming and fishing; Ogoniland has been referred to as “the Delta’s food basket” (Legborsi, 2010, p. 16; Yakubu, 2017, p. 4). Hence, before the discovery and exploration of oil in Ogoniland, we, the Ogonis, were closer to the natural environment and had indigenous environmental practices that helped us to sustain our farmlands and rivers.

The discovery of oil led to the establishment of an oil refinery in Alesa Eleme in Ogoniland. The first oil wells in Ogoniland were drilled in Egbubu and Bomu communities. Ogoniland stands as the fifth-largest oil-producing community in Nigeria, with around 56 oil wells (Jaja & Obuah, 2019; Osaghae, 1995). Shell “started operations in Ogoniland in 1958, drilling a total of 96 wells to bring nine oil fields on stream. By the end of 1992, Ogoni production was 28,000 barrels of oil a day, about 3% of SPDC’s total production” (Shell Nigeria, 2021b). Its major sites of oil operation in Ogoniland include the Bomu, Korokoro, Bodo West, Kgbara-Dere and Egbubu communities. Oil production in Ogoniland by Shell has generated “a total of 634 million barrels of oil, valued at 5.2 billion dollars” (Boele, Fabig, Wheeler, Shell & the 2001, p. 75).

However, Shell stopped oil production in Ogoniland in 1993. This was due to the Ogoni uprising against Shell’s substandard environmental practices in its oil production activities; and refusal to address the infrastructural demands and fair sharing of profits generated from oil production in Ogoniland (Boele et al., 2001). Despite Shell’s stoppage of oil operations in Ogoniland, their Trans Niger Pipeline (TNP), one of the major oil pipelines, still runs through Ogoniland (Cayford, 1996; Jaja & Obuah, 2019; Shell in Nigeria, 2019). Shell “as operator, responds to any operational incident that may occur on the TNP, as well as sabotage and theft

incidents on the joint venture's assets in the Niger Delta region" (Shell Nigeria, 2021a, p. 19). Neither Shell nor any other national or international oil company has produced oil in Ogoniland since they stopped operations in 1993. However, there have been applications from multinational oil companies to resume operations in Ogoniland and the applications have been strongly rejected by the Ogoni people (All Africa, 2021).

The discovery of oil in the Niger Delta and Ogoniland in particular, has not only affected the environment, people and other aspects of the society; it has also caused conflicts between the Ogoni people, oil companies and the Nigerian government. As an author from Ogoniland, I have experienced the consequences of oil exploration in Ogoniland. I am a victim of environmental crises and it motivated my research into environmental sociology and environmental education in my postgraduate studies. There is a need to recover and review indigenous knowledge, especially indigenous knowledge on environmental sustainability to address modern environmental crises in indigenous communities. Some of the consequences of oil exploration are highlighted below.

### Consequences of oil exploration in Ogoniland

The discovery of oil in Ogoniland has had far-reaching consequences for the area. At first, the Ogoni people viewed the development of the oil industry as an opportunity for a better life through socioeconomic transformation. While the oil industry has benefitted the Nigerian economy generally, over time the Ogonis experienced increasing hardship due to the environmental degradation that resulted from the oil exploration activities. Oil operations in Ogoniland have not only affected the environment, but have had serious impacts on the socioeconomic, health and political aspects of the Ogoni people.

The health consequences experienced by people in Ogoniland as a result of oil production activities include respiratory issues; asthma; cancer; skin, throat and lung infections; and headaches and miscarriages among women (Adekola et al., 2017; UNEP, 2011; Yakubu, 2017). Udoh (2018) notes that "ten percent of airborne benzene detected in Ogoniland was higher than the concentrations WHO and the United States Environmental Protection Agency report as corresponding to a 1 to 10,000 cancer risk" (p. 386).

The socioeconomic effects of oil exploration in Ogoniland are experienced by the oil contamination of agricultural land and water sources. This has had a negative impact on agricultural production and fishing (Ite et al., 2013). For example, Ogoni communities are heavily dependent on fishing and farming for their livelihood, and pollution of the land and rivers has resulted in increased poverty (Odoemene, 2011). Another socioeconomic effect of oil exploration has been an increase in the cost of living and outsourcing of jobs to experts who are not indigenes of Ogoniland (Boele et al., 2001; Idemudia & Osayande, 2016).

Shell in Nigeria (2019) reports that in 2019, "security remains a high priority due to continued crude oil theft and criminality in Ogoniland and parts of the Niger Delta. Illegal refining and third-party interference are the main sources of pollution in the Niger Delta today" (p. 28). Violence and proliferation of arms among Ogoni youths have become a problem due to oil exploration: youth, under the guise of fighting for their rights and demanding development, have created several militant groups that threaten oil facilities and staff. There have been several incidents in which staff were kidnaped and militants demanded a large ransom from the company (Normakoh, 2019; Odoemene, 2011; Shell in Nigeria, 2019, 2021).

The social consequences of oil production in Ogoniland also have a gender dimension. Women are usually the first to be exposed to contaminated land and water as they cultivate the land for crop production and fetch water from the streams for domestic purposes. Hence, women suffer more severe health effects from chemicals because of the oil production processes (Chircop, 2008; Odoemene, 2011; Saracli et al., 2014). There has been an increase in prostitution among young Ogoni girls, who see prostitution as a means of economic survival. This can result in women

becoming subordinate to the men around them. There have been cases of domestic violence and women being physically abused by men acting out of frustration because they could not find employment (Jike, 2004; Odoemene, 2011).

Bodo and Ukpong (2018) highlighted the eroding trust among community members because of oil production. They argue that “there are differences of opinions within the communities and these differences have led to confusion or uncertainty about the way forward on the polluted environment” (p. 98). This is very evident in my community as some leaders benefit (money/job opportunities for their children and relatives) from oil companies, while the larger community suffers the environmental consequences. This divided my community and instilled a lack of trust in our leaders.

Due to the issues from oil exploration in Ogoniland, the Nigerian government and other institutions, including civil society organizations, have implemented policies and strategies to address the environmental problems and other societal issues resulting from oil exploration in Ogoniland. However, these efforts have proven inadequate to remediate the profound environmental destruction that has occurred in Ogoniland. These responses have typically focused on social infrastructural development rather than the restoration of the natural environment. The development of roads, the building of schools, school scholarships and other social infrastructural interventions are of little benefit to the Ogoni people while the environmental crisis continues. The environmental issues led to the initiation of the United Nations Environment Program (UNEP) report, which was published in 2011. Following the environmental assessment of Ogoniland, UNEP recommended that a Centre of Excellence for Environmental Restoration be established in Ogoniland to promote learning, run training courses in environmental monitoring and restoration and provide a range of environmental activities and services (UNEP, 2011). This suggests a strong and advanced environmental education (EE) program to address the issues of oil exploration activities for the sustainable development of indigenous oil-producing communities in Ogoniland. The UNEP recommendation for the establishment of the Centre of Excellence for Environmental Restoration is in line with the purpose of this study in which the findings highlight how indigenous environmental education programs are used to address environmental and socioeconomic issues in indigenous communities in Ogoniland.

The next section discusses the relevance of indigenous knowledge and how it could be utilized to address some of the consequences highlighted above.

### **Relevance of African Indigenous Knowledge (AIK) and environmental education**

Each society produces its local knowledge and methods of knowing. Prior to the colonization of African societies, African communities had indigenous methods of deriving knowledge, which can be used to address problems that arise in communities. Onyema, Azeez, Edet and Osuagwu (2016) explained that before modernization, indigenous people had their ways of natural resource management and development. They also highlighted that indigenous people hold a wide bank of knowledge information on their environment. However, due to colonization/modernization, African indigenous knowledge has often been dominated by the influence of Western knowledge. Thus, there is a need to restore the value of African indigenous knowledge to address the issues facing African communities today; one being the environmental and socioeconomic issues highlighted in this paper (see section “Consequences of oil exploration in Ogoniland”) (Ngulube, 2002; Ntuli, 2002; Owuor, 2007; Van Damme & Neluvhalani, 2004). Although indigenous cultural practices and beliefs are within local/rural settings, they can be utilized in ways that affect social change in urban societies. Thus, both indigenous knowledge and modern knowledge could be integrated to respond to modern challenges, such as environmental issues (Alaribe, 2015; Owuor, 2007). In the context of this paper, the Ogoni indigenous knowledge and practices on the environment should be revived and reviewed to address the environmental issues.

According to Shava et al. (2010), indigenous knowledge is characterized by the local people, context, culture, language, rituals, knowledge and practices. Indigenous knowledge consists of cultural practices and beliefs, songs and proverbs that help people to make sense of the world and the issues in their communities; at the same time, they enable people to find solutions to their problems (Dei et al., 2002; Owuor, 2007; Shava, 2011; Owusu-Ansah & Mji, 2013). This buttresses the socio-ecological and environmentalism of the poor—recognising the people in the situation as a meaningful way of engaging the people for solutions (Gutti et al., 2012; Martinez-Alier, 2014; Stern et al., 2014). The acknowledgement of the indigenous people's knowledge and experiences on the environment also supports the holistic nature of environmental education.

In addition, indigenous people access information in both formal and informal storytelling on resource conservation and sustainable development (Onyema et al., 2016). Although such African indigenous knowledge is transmitted primarily in the informal educational setting, it could be reviewed and incorporated into mainstream formal education and a topic of interest in non-formal education. This could restore communities' recognition of the values and richness of their indigenous knowledge systems and the potential importance they hold for addressing the issues affecting their communities. Formal education can thus play a vital role in restoring the values of African indigenous knowledge in contemporary African society (Abah et al., 2015; Kaya & Seleti, 2013; Semali, 1994). These indigenous knowledge systems are sustained from generation to generation as a lifelong learning process in the family, community and across cultural age groups (Wangoola, 2002). Shava, Krasny, Tidball and Zazu (2010) added that language is the medium through which indigenous knowledge is transmitted.

Environmental education (EE) is an integral part of basic education that enhances personal and social development, and fosters the social dynamics needed for problem-solving in societies (Marouli, 2002; UNESCO, 2002, 2023). The transformative narratives of environmental education include “critical and innovative thinking, individual and collective learning, cultural interchange, systemic engagement with issues, indigenous knowledge, local culture and community participation” (Lotz-Sisitka, 2008, p. 5). In addition, Reddy (2011) explained that environmental education is a social agency for a transformative and ecologically sustainable society. Here, “sustainable” entails social, economic and cultural sustainability as they are integral to environmental development. The holistic nature of EE captures the interdependence of the natural environment and socioeconomic perspectives that are not separate but integral to the environment (Locke, Russo & Montoya 2013; Lotz-Sisitka, 2008; Marouli, 2002; McKeown & Hopkins, 2005; Yalcinkaya & Cetin, 2018). Thus, EE in Ogoniland should include socioeconomic and socio-political solutions, which are part of the environment.

The inclusion of indigenous knowledge in environmental education is important because the indigenous people have vast knowledge of their environment and a multitude of ways of engaging with the environment. Thus, in discussing the inclusion of indigenous knowledge in environmental discourse, Gadgil et al. (1993) argued that “it is vital, however, that the value of the knowledge-practice-belief complex of indigenous peoples relating to conservation of biodiversity is fully recognized if ecosystems and biodiversity are to be managed sustainably” (p. 151). Shava et al. (2010) acknowledged that indigenous people in rural communities have significant knowledge of food plants compared to people in urban communities who have limited knowledge of food plants. Thus, the vast indigenous knowledge of food plants indicates the integration of indigenous knowledge into educational systems.

Indigenous knowledge should not be excluded from environmental education as it will result in a shortage of content for environmental education programs/curriculums. Indigenous knowledge should be an integral part of environmental education to buttress the richness of environmental education programs/curriculums (Eze & Mba, 2013). To highlight this, Mwanango (2011) argues that the exclusion of indigenous knowledge from environmental education is responsible for a stagnation in the development of communities in Zambia. He argued for a synergy between indigenous knowledge and modern knowledge in mainstream environmental education for

sustainable development. This will promote multi-dimensional approaches to curriculum review and framework in environmental education for practical support and development. Reddy (2021) explained the vital role teachers play in EE and suggests active participation activities for teacher education programs to enable meaningful environmental learning and social justice (Short, 2009). This multi-dimensional approach that indigenous knowledge will add to environmental education buttresses the holistic and transformative approaches in environmental education.

### Data collection

The process of data collection involved the gathering of texts and interviews for analysis from two institutions: the government, and environmental social movement organizations. These institutions are actively involved in responding to environmental issues and conducting environmental education programs in Ogoniland. The government institutions consist of two government agencies: the Hydrocarbon Pollution Restoration Project (HYPREP) and the National Oil Spill Detection and Response Agency (NOSDRA). The social movement organizations consist of the Movement for the Survival of Ogoni People (MOSOP), Environmental Rights Action (ERA) and the Centre for Environment, Human Rights and Development (CEHRD). The participants were drawn from government institutions and the three social movement organizations. The participants are employed by these organizations/institutions as environmental education coordinators and facilitators. Two participants were selected from each of the institutions. Semi-structured, face-to-face, in-depth interviews were conducted with the participants. For ethical purposes, gatekeeper letters were sent to the institutions seeking approval to conduct interviews with their staff. These letters were presented to the participants to show their institution's approval for them to participate in the study. An informed consent form was also used to obtain the consent of participants before conducting any interviews. The names of participants used in the analysis and presentation of the findings in this study are pseudonyms; their real names or identity are concealed. The data analysis presents the types of environmental education programs implemented in Ogoniland to address environmental issues. The data analysis will be presented and discussed below.

### Types of environmental education programs in Ogoniland

The two institutions examined in this study differ in their objectives, their structures and modes of operation and their ongoing roles in Ogoniland. It is thus reasonable that the types of environmental education programs, contents they provide and their methods of implementation might be different. At the same time, there could be similarities between the types of environmental education programs developed by the institutions. This section examines the types of environmental education programs that have been implemented in Ogoniland by the two institutions. The two institutions examined in this study are not structured or formal educational institutions; thus, there is no structured environmental education curriculum, methods or strategies.

From the data collected, there are two major types of environmental education program offered by the institutions in Ogoniland. The two types of environmental education in Ogoniland are (a) *“General knowledge, sensitization and awareness of the environment and environmental issues”* and (b) *“Environmental education on practices/training/workshop on how to respond to environmental problems.”*

The *General knowledge, sensitization and awareness of the environment and environmental issues* type of environmental education program give a general knowledge of the natural environment and environmental issues. It focuses on the theoretical, sensitization and awareness campaigns of the natural environment. The *Environmental education on practices/training/*

**Table 1.** Type of environmental education based on general knowledge, sensitization and awareness of the environment and environmental issues in Ogoniland

Institutions	Contents or activities in General knowledge, Sensitization and Awareness about the Environment and environmental issues	Outcomes or goals associated with this type of Environmental education
CEHRD	Sensitization on community perceptions of the Ogoniland clean-up program to ensure community trust and confidence in the program	The outcome or goal of this content is designed to change the negative attitudes of the people in the community and to foster positivity toward the clean-up program.
	Creation of environmental clubs in secondary schools to sensitize young students on environmental issues in their communities	The outcome is to create environmental awareness and consciousness in the mind of young students in Ogoniland.
MOSOP	Sensitization on the value of their environmental resources and awareness of environmental degradation in Ogoniland	The goal of this content under the general knowledge and sensitization type of EE is to let the Ogoni people know the value of their environmental resources and the effects of environmental degradation.
	Establishing environmental clubs in secondary schools to teach the students about biodiversity and climate change in Ogoniland	The outcome is to spread knowledge on biodiversity and climate change among secondary students in Ogoniland.
ERA	ERA target and teach school students, aged 12 to 18 about environmental issues, and to encourage them to take up environmental issues as lawyers, agriculturists, academics or engineers.	The outcome of this content in Ogoniland is to create a consciousness of the environment in students to help them take up careers around environmental issues.
NOSDRA	Awareness campaign on the dangers of pipeline vandalism, oil theft and illegal artisan refinery in Ogoniland	The outcome is to educate people to avoid activities that cause damage to the natural environment and people's lives.
	Awareness campaign on oil spill dangers on the environment and health of people	The outcome is to let people be aware of the dangers of oil spills to their health and environment.
HYPREP	HYPREP creates awareness about the environment to increase community involvement in the ongoing environmental remediation in Ogoniland.	The outcome of this content is to create awareness about environmental remediation processes and to get the people involved in the environmental remediation processes in Ogoni communities.

*workshop on how to respond to environmental problems* type of environmental education program is a pragmatic/practical type of environmental education, which involves training to equip people with the skills needed to prevent and address environmental issues. Thus, there are two types of environmental education in Ogoniland but the activities, contents and outcomes of this environmental education are different.

In Table 1, the second column presents the environmental education contents and activities that the institutions are conducting in Ogoniland. The third column presents the outcomes or goals of this particular type of environmental education. From Table 1, the main narrative is the promotion of environmental awareness and environmental knowledge in Ogoni communities. This type of environmental education is important to the Ogoni people as it contributes to their understanding of the natural environment and some concepts in environmental activism.

The second type of environmental education program identified is Environmental education on practices/training/workshop on how to respond to environmental problems, which is focused on practical environmental activities in Ogoniland. This is a pragmatic/practical type of environmental education, which involves training to equip people with the skills needed to prevent and address environmental issues. This is presented in Table 2 below.

**Table 2.** Environmental education program based on practices/training/workshop on how to respond to environmental problems in Ogoniland

Institutions	Contents or activities in Environmental education on Practices/Training/Workshops on how to respond to environmental problems	Outcomes or goals associated with this type of Environmental education
CEHRD	Training of Ogoni youths to become environmental monitors, training on visual data collection, training on how to use GPS for environmental location	The outcome or goal of this content under the practical or training type of environmental education is to equip Ogoni youths with the skills on how to use environmental monitors, skills on visual data collection and skills on how to use GPS to locate where there are oil spills in the environment.
	Workshops and training on capacity building on environmental monitoring	The outcome is to build environmental skills and capacity of the Ogoni people to help them participate in the Ogoniland clean-up program.
MOSOP	Teaching people about the stoppage of bush burning that destroys soil nutrients and pollutes the air	The outcome is to educate the Ogoni people that some of their environmental practices are not environmentally friendly.
	MOSOP encourages indigenous conservation practices such as the conservation of trees, forests and rivers in Ogoni communities.	The outcome of this content is to encourage indigenous environmental conservation practices that are environmentally friendly in Ogoni communities.
ERA	ERA provides young people in Ogoni communities with training on how to monitor the environment and provides them with equipment such as an anemometer, thermometer, barometer and air monitoring equipment.	The outcome of this content is to empower young people in Ogoni communities with skills in environmental monitoring and providing environmental equipment for young people in Ogoniland.
NOSDRA	NOSDRA teaches and encourages the Ogoni people to use palm frond branches in places where there are oil spills in the rivers.	The outcome is to encourage the indigenous environmental practices of the Ogoni people in responding to oil spills in the rivers.
HYPREP	HYPREP trains Ogoni youths on health and safety and basic environmental remediation processes.	The outcome is to provide Ogoni youths with skills in environmental health and safety and how to engage in remediation processes.
	HYPREP trains some Ogoni youths in Geneva in the Management of Contaminated Sites Assessment, Clean-up Assessment and Fieldwork Techniques.	The outcome is to provide Ogoni youths with professional skills in the Management and Assessment of Contaminated Sites and Fieldwork techniques.

Significantly, in Table 2, we see MOSOP (one of the social movement organizations) and NOSDRA (one of the government institutions) adopting cultural practices<sup>1</sup> in their environmental education content. We also see CEHRD and ERA (both social movement organizations) including environmental monitoring as activities in their environmental education content. These show similarities in environmental education contents or activities across the institutions.

A significant feature of the two types of environmental education programs in Ogoniland is that the two types hinge more on a non-formal educational system because the activities and contents in the two types of EE are not accredited into curriculums. However, across the data presented in the tables, there are shreds of evidence of how the institutions move toward formal education, for example, the HYPREP training of some Ogoni youths in Geneva in Management of Contaminated Sites Assessment, Clean-up Assessment, and Fieldwork techniques. Thus, the systems of education (formal and non-formal education) are identified in the institutions' environmental education programs in Ogoniland. Hence, with the corporations from the two institutions (government and social movement organizations), these programs can be adopted into formal educational systems/curriculums in Ogoniland. From the tables, we can also see how



environmental education addresses environmental, social, economic and cultural issues that are integral to environmental issues in Ogoniland. This also highlights the transformative and holistic nature of environmental education as discussed in section “Relevance of African Indigenous Knowledge (AIK) and environmental education”.

### **Highlights of the two types of environmental education programs in Ogoniland**

Generating the two types of environmental education programs in Tables 1 and 2 from the data is a significant finding in this study. This is because the tables give a clear understanding of the types of environmental education programs, the content, activities and outcomes of environmental education programs in Ogoniland. This section briefly discusses some key contents/activities of the types of environmental education programs in Tables 1 and 2.

#### ***Environmental clubs***

The establishment of environmental clubs in secondary schools is an important activity carried out by some of the institutions in Ogoniland. A participant in this study explained that:

[They] targeted some of our students in secondary schools and started training them on environmental education—I think about 10 secondary schools. And we did something about biodiversity protection; issues of climate change. Then from there [we] established environment clubs in schools. They currently exist very strongly in polytechnic secondary schools in Bori and in some other communities in Ogoni. (Nudi, E. personal communication, October 20, 2020)

These environmental clubs provide general environmental knowledge to young students to create environmental awareness and environmental activism—to engage their minds toward finding solutions to the environmental problems in their communities in Ogoniland. The establishment of these environmental clubs buttresses the inclusion of environmental education in schools in Ogoniland.

#### ***Incorporating indigenous cultural practices and beliefs into environmental education programs in Ogoniland***

The study found that local cultural practices in indigenous communities play a valuable role in responding to environmental problems in the communities. The cultural practices such as the use of palm fronds to trap oil from stream surfaces presented in Table 2 demonstrates indigenous practices that engage sustainably with the environment. For example, one of the participants from NOSDRA (a government institution) explained that:

[We] teach them to use palm frond branches in places where there is oil pollution in the streams. If they can cut palm fronds and place them across the surface of the stream, it can trap the oil on the surface. (Ike, L. personal communication, September 30, 2020)

Another participant from MOSOP noted that MOSOP:

... use local town criers in communities to sensitise the people and call them to town hall meetings in some of the selected communities. We educate them about the dangers that we face with oil extraction and its impact on the environment. There were town hall meetings with the youths and women. I think that was how we organised environmental education at that point. (Nudi, E. personal communication, October 20, 2020)

These indigenous cultural practices in Ogoni communities are very important in discussing environmental education in indigenous communities. The use of palm fronds is essential in engaging with a contaminated environment and the use of local town criers to communicate environmental knowledge and information to the people, especially in the remote areas of Ogoniland, is significant. Through the town criers, which are the local means of communication, the people can easily access environmental information. This highlights the importance and value of including indigenous knowledge in environmental education and the context of this study.

However, some indigenous cultural practices that are not environmentally friendly need to be reviewed in communities. For example, in Table 2 MOSOP noted that they teach people in Ogoni communities to stop bush burning that destroys soil nutrients.

### **Capacity building**

In Table 2, the importance of building the capacity of individuals and institutions in Ogoni communities to utilize environmental skills and strategies to address environmental problems confidently stood out. Building environmental capacity helps to build environmental knowledge and enables people to retain and share their knowledge and skills as they address environmental problems. For example, a participant from CEHRD noted:

We did several trainings. We did several workshops. We did capacity building. Up until now, we are still doing capacity building. So we took it upon ourselves to train their capacity basic skills — either monitoring or evaluation or reporting or the basic skills in environmental remediation. (Ndaka, B. personal communication, August 25, 2020)

This is an essential component of environmental education programs in Ogoni. Without capacity building, the knowledge and skills learned will not be retained. It will be a loss of knowledge and skills in the communities.

### **Socioeconomic nature of environmental education programs**

Apart from the environmental-laden view of environmental education programs, there is the socioeconomic nature of environmental education programs addressing socioeconomic issues (Locke et al., 2013; Lotz-Sisitka, 2008; Marouli, 2002). The socioeconomic issues mostly affect the Ogoni youths; hence, the environmental education program gives them knowledge and equips them with practical training and skills as seen in the tables how environmental education addresses these socioeconomic issues through practical training, conservation practices and workshops. With these training and skills, the Ogoni youths can be self-employed and be employed by environmental organizations. This will help reduce and address increased insecurities and violence, poverty, unemployment and other socioeconomic issues highlighted in section “Consequences of oil exploration in Ogoniland”. This is how the environmental education program addresses socioeconomic issues, which are integral to environmental problems.

### **Conclusion**

Environmental education is often assumed to be general knowledge of the natural environment. However, it goes beyond that conception. This study highlights two major types of environmental education programs done in indigenous communities in Ogoniland. The first type of environmental education deals with knowledge-based campaigns or advocacy/activism for the natural environment and the second type of environmental education focuses on practical skills and training on how to address environmental issues in society. These two types of environmental education programs have various contents/activities that address environmental issues in

communities. When faced with environmental issues and their consequences such as the ones identified in Ogoniland in section “Consequences of oil exploration in Ogoniland”; it is important to address them using the two types of environmental education programs identified in this study. This is because, with the first type of environmental education, we need to have good knowledge of environmental issues and their consequences. Then with the second type of environmental education, we need to apply practical skills and training in addressing environmental issues and their consequences. The holistic nature of environmental education entails indigenous knowledge of environmental-affected communities. Hence, this study demonstrates the use and significance of indigenous knowledge in environmental education programs in addressing environmental issues. This study also demonstrates that environmental education can address socioeconomic issues associated with environmental problems. It buttresses the significance of environmental education programs to contemporary social issues, especially in Ogoniland.

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**Competing interests.** None.

**Ethical standard.** All ethical concerns were highlighted in the methodology and data collection sections of the article.

## Note

1 Cultural Practices: (a) stoppage of bush burning that destroys soil nutrients and pollutes the air; (b) they use palm frond branches in places where there are oil spills in the rivers.

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