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Environmental Adult Education as a Tool for Reducing Community Participation in Illegal Oil Bunkering in Ogoni Land

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Abstract

This study examined environmental adult education for curbing the effects of illegal oil bunkering on Ogoni land, Rivers State. It was guided by three research objectives and three research questions, The population for this study consisted of 1,499 members of 20 Community-Based Organisations (CBOS), which were drawn from farmers and fisherfolk in Gokana and Khana Local Government Areas of Rivers State, out of which 400 CBO members were sampled through a simple random sampling technique. The instruments for data collection were a validated self-developed questionnaire titled "Environmental Adult Education Programme as a Tool for Reducing Community Participation in Illegal Oil Bunkering Questionnaire (EAETRCPIOBQ)". The instrument had a reliability index of 0.87. Data collected were analyzed using the mean statistics and standard deviation Findings revealed that poverty, unemployment, a lack of livelihood alternatives, weak institutional frameworks, and systemic corruption are central factors sustaining illegal oil bunkering in Ogoni land, despite government intervention. Community members in the area of study are environmentally aware of the impacts of illegal oil bunkering. Based on the findings, the researcher recommended, among other things, that the establishment of job programmes, skill acquisition facilities, and sustainable livelihood prospects in Ogoni land should be given top priority by the government, oil corporations, and development partners.

Keywords: Environmental Adult Education, Illegal Oil Bunkering, Ogoni Land, Rivers State Nigeria, Sustainable Livelihoods.

INTRODUCTION

Decades of oil exploration and extraction in the land of Ogoni, primarily carried out by Shell Petroleum Development Company (SPDC), profoundly affected Ogoni land and water bodies. Indigenous Ogoni communities have not profited much from oil wealth; rather, they have faced severe environmental degradation, economic disempowerment, social disturbances, and socio-economic marginalisation. Oil exploration activities have led to widespread pollution, including frequent oil spills that have contaminated land and water bodies, resulting in the destruction of farmlands, rivers, and fishing grounds crucial to local livelihoods. This situation, according to Lele (2023), has thrown the communities into a complex crisis where environmental, health, socioeconomic, and political challenges intersect, demanding a multifaceted approach to resolution. In the same vein, Odisu (2015) observed that the environmental problems are further compounded by illegal oil bunkering and artisanal refining operations, which exacerbate contamination and infrastructural damage, thereby intensifying the plight of the Ogoni people. Illegal oil bunkering has become one of the most enduring environmental and socio-economic issues facing communities in the Niger Delta, especially in the Ogoni region of Rivers State. Unauthorised tapping, refining, and distribution of crude oil have serious implications for environmental sustainability, public health, local livelihoods, and national economic stability. According to Ozogu (2023), illicit oil bunkering is the theft of crude oil and its byproducts using various methods, which has significant adverse effects on the economy and human health. He went on to say that when employees of oil companies began conspiring with foreign oil purchasers in 1993, the problem of illegal oil bunkering began to gain public attention. They had access to and operated in oil well heads. By breaking into pipes and falsified papers of landing, the bunkers directly access vessels concealed in tiny Greek in the mangrove jungle. Mohammed (2019) defined illegal oil bunkering as putting oil aboard a ship. It involves taking crude oil from an international oil company's pipeline and directing the commodity into tanks where it is heated to a high boil. When the military ruled the town in the late

1970s and early 1980s, illicit oil bunkering in Nigerian crude oil most likely began.

Illegal refining activities have worsened soil contamination, air pollution, biodiversity loss, and water impairment. This has intensified ecological stress in a region that is both environmentally fragile and socio-politically sensitive. Even with government interventions, security enforcement, and policy reforms, community involvement in these activities persists, often driven by poverty, unemployment, environmental injustice, and a lack of understanding of the long-term effects of such practices. These environmental crises have also caused increased unemployment, poverty, and serious health problems such as malnutrition and disease, as traditional livelihoods are lost and communities are exposed to toxins.

Politically, Ogoni Land, as described by Lauwo, Egbon, Denedo & Ejiogu (2022), has experienced rising tensions and conflict between local people, oil companies, and authorities, leading to human rights violations. The establishment of the Movement for the Survival of the Ogoni People (MOSOP) in the early 1990s highlighted the critical need to defend Ogoni rights and draw attention to oil-induced harm. The advent of illicit oil bunkering, which escalated with unemployment and hardship in the late 1990s, reflects how deeply socioeconomic factors are intertwined with the broader crisis, as residents turn to risky alternatives for survival. Ogoni land is more severely impacted by the current status of oil bunkering operations, which are evident in most of its towns. One of the most significant issues people have faced recently is illegal oil bunkering and its repercussions on Ogoni land. Illegal crude oil bunkering in Ogoni territory may have begun during the 1993 confrontation between the Ogoni people and Shell Petroleum Development Company. Four local government areas (Khana, Gokana, Tai, and Eleme) were affected by this showdown. To put an end to the mayhem that ensued, Mobile Police stormed the area; it has been said that 27 villages were raided, killing 20,000 Ogoni people and uprooting 80,000 more (Monaue, 2020). According to a 1993 United Nations report, Shell Petroleum Development Company (SPDC) ceased operations on Ogoni land due to this unpleasant circumstance. Amanyie in Monaue (2020) also noted that the Illicit oil bunkering has ruined rivers and streams, aquatic life, air quality, soil fertility, and human health.

The alluvial soil of Ogoni land is no longer suitable for farming due to the consequences on farmland. The most evident and immediate result of illegal oil bunkering in Ogoni land is the extensive environmental degradation it causes. Deliberate sabotage, spills, and leaks from illegally tapping into pipelines result in significant volumes of crude oil being spilt into the environment. The surrounding ecology has suffered dramatically due to soil, air, and water contamination. Illegal crude oil bunkering operations in the region have wreaked havoc on the ecosystem. Illicit oil bunkering has significant adverse environmental effects, including hazardous emissions from makeshift refineries and oil spills as claimed by Badejo and Nwilo (2004). The most evident and immediate consequence of illegal oil bunkering in Ogoni land is the extensive environmental degradation it causes. Deliberate sabotage, spills, and leaks from illegally tapping into pipelines result in significant volumes of crude oil being spilt into the environment.

Consequently, the air, soil, and water sources have been contaminated, causing severe harm to the local ecology. The rivers, streams, and other water sources in Ogoni land are heavily contaminated with oil, making them unsuitable for drinking, fishing, or agriculture. Due to the disruption of aquatic life caused by this pollution, fish populations and other marine organisms which are vital to the local economy and food security, are decreasing. These environmental hazards negatively affect residents' livelihoods, reduce agricultural productivity, and lead to health problems. Illegal oil bunkering has resulted in leaks that have rendered large land areas useless because the crude oil seeps into the soil, deteriorating its quality and making it unsuitable for farming. Food insecurity in the region has worsened due to the decline in agricultural productivity due economic hardship brought on by environmental deterioration has made social unrest and instability in Ogoni land worse. Conflicts over territory and resources and how to divide oil profits have worsened tensions inside and between communities. The existence of armed groups involved in illicit oil bunkering has led to an upsurge in violence and insecurity.

Similarly, educational access is also impacted by the socio-economic challenges Ogoni land residents face. To provide for their families, many children are forced to drop out of school or are compelled to participate in illegal activities. People remain impoverished as a result, and their chances of escaping the socio-economic issues caused by the illicit bunkering of oil are diminished. Burning crude oil and refined products releases toxic fumes and particulate matter into the air, often linked to unlawful bunkering operations, (Mitee in Monaue). In addition to other health issues, the local population is suffering from respiratory illnesses due to the severe air pollution this has generated. Mitee in Monaue (2020) contributed to this by pointing out that everything in the ecosystem dies when it is violated because a safe environment is necessary for life and everything else that supports it. They also said that the right to preserve and protect the environment should come first, among other rights; that illegal oil bunkering and environmental oil spills are considered violations of this right, and the effects can last for generations. As a result of this, he concluded that environmental rights

violations in the pursuit of oil bunkering are severe and widespread and that anyone involved, whether individually or in groups, should face punishment for crimes against nature comparable to crimes against humanity. The ecosystem is a life-supporting system essential to the survival of humans and other living forms. The introduction of oil spills by multinational corporations or individuals through illicit oil bunkering activities on land, swamps, and different types of contamination into the environment has a devastating impact on human life. It has led to the extinction of numerous plant and animal species. Skin conditions, respiratory conditions, and waterborne infections are among the health problems that have increased among the local people due to the contaminated air, water, and soil. Lack of access to clean water and safe food has exacerbated these health problems and severely burdened the region's already inadequate healthcare system (Corporate Accountability Lab, 2023).

Most people living in Ogoni land are employed in agriculture and fishing. Oil spills have seriously harmed these businesses, leading to widespread unemployment and poverty. Because of the decline in fish populations and the loss of arable land, many families no longer have a steady source of income and some family members then resort to illegal activities like oil bunkering. Environmental Adult Education (EAE) is gaining recognition as a transformative approach to tackling complex environmental challenges in local communities. EAE, grounded in the ideals of lifelong learning, participatory knowledge-sharing, and community empowerment, provides adults with the skills, attitudes, and awareness needed to comprehend environmental challenges and make informed choices that foster ecological stewardship. In areas like Ogoni Land, where adults are pivotal in making community decisions and shaping livelihood practices, context-specific environmental education can ignite behavioural change. EAE has the potential to lessen community complicity in environmentally harmful activities by enhancing residents' awareness of the ecological threats posed by oil bunkering, including soot emissions, toxic waste discharge, and farmland destruction.

In addition, the effectiveness of environmental protection initiatives in the Niger Delta is heavily reliant on community agency. Given that many residents view illegal oil bunkering as a coping strategy during tough economic times, educational initiatives should go beyond mere awareness-raising to encompass empowerment, vocational guidance, and the promotion of alternative livelihoods. The widespread environmental harm caused by illegal oil bunkering in Ogoni land has had a significant negative impact on the indigenous population's ecology and way of life. This process entails removing crude oil from pipelines, frequently using risky and inexperienced techniques that harm the environment. These actions significantly impact the socio-economic lives of Ogoni community members. The region urgently needs comprehensive intervention because of the loss of biodiversity, the contamination of the land and water, and the ensuing socio-economic issues. Environmental Adult Education provides this opportunity by cultivating critical thinking, increasing environmental awareness, and bolstering residents' abilities to engage in sustainable development. Thus, examining EAE as a means of diminishing community involvement in illegal oil bunkering is both timely and crucial for sustainable environmental restoration in Ogoni Land.

Identifying a unique environmental issue, such as the illegal oil bunkering activities that are currently destroying Ogoni's environment, and implementing suitable solutions require careful planning and execution of environmental adult education programmes to alter public perceptions of illegal oil bunkering activities and raise the standard of living for the Ogoni people and protect the environment. This study, therefore, seeks to examine the extent to which Environmental Adult Education can influence knowledge, attitudes, and behavioural change among adults in Ogoni communities, with the broader aim of curbing their involvement in illegal oil bunkering. By exploring the interplay between environmental learning, community empowerment, and sustainable practices, this research contributes to ongoing efforts to promote ecological integrity and socio-economic stability in the Niger Delta.

Statement of the Problem

In Ogoni land, Rivers State, Illicit oil bunkering has had detrimental socio-economic repercussions and seriously harmed the ecological. Because of the widespread contamination of the land, water, and air due to oil pollution by illegal oil bunkerers which are mostly community members and some oil companies, biodiversity has decreased, agricultural output has reduced, and population health has deteriorated. These has resulted to severe environmental damage, health issues, and socio-economic hardships. This widespread environmental deterioration has made it harder for majority of community members who depend on the land and water as sources of livelihood to survive due to destroy of farmlands, poisoning water supplies, and reducing biodiversity. Furthermore, pollution-related health problems like respiratory disorders and tainted water have increased frequently. Despite the physical and health impacts of illegal oil bunkering activities, illegal oil bunkering continues primarily due to unemployment, poverty, and a lack of capabilities for viable alternatives livelihoods. Illegal oil bunkering in the Ogoni area continues to grow daily, affecting the inhabitants daily.

Ogoni land, which is renowned for its superior farming, fishing, and other agricultural output, was formerly thought to be one of the Niger Delta's richest

wetlands and was home to a wide variety of aquatic-terrestrial plants and animals. However, it is currently only a shadow of its natural wealth due to the effects of illegal oil bunkering. Although the government has taken steps to mitigate the impact of unlawful oil bunkering in the area, such as enforcing the law and implementing cleanup programmes, loss of livelihood, poverty and neglect from government that drive people to engage in this activity have yet to receive enough attention. Government enforcement strategies, such as military interventions and pipeline surveillance, have been shown to be insufficient because they do not address the fundamental socio-environmental factors that drive community involvement. Thus, there is a significant deficiency in the application of educational and behavioral strategies that can equip adults with pertinent knowledge, alter their environmental attitudes, and encourage sustainable options to illegal oil refining.

A more community-focused strategy that equips locals with the information and abilities they need to lessen the detrimental effects of these activities is desperately needed. This study explored the potential of Environmental Adult Education (EAE) as a method to reduce the socio-economic impact of illicit oil bunkering in Ogoni land by addressing how EAE can support environmental conservation and socio-economic sustainability on Ogoni land by increasing environmental awareness and knowledge, altering attitudes and behaviours, and offering skills for alternative livelihoods.

Aim and Objectives of the Study

The aim of this study is to leverage environmental adult education to mitigate effects of illegal oil bunkering in Ogoni land. Specifically, the objectives of the study are to:

1. Identify the key factors that contribute to continuous illegal oil bunkering in Ogoni land despite government interventions.
2. Examine ways environmental adult education influence community members' knowledge and awareness of the environmental impacts of illegal oil bunkering in Ogoni Land?

Research Questions

1. What are the key factors that contributed to continuous illegal oil bunkering in Ogoni land despite government interventions?
2. In what ways has environmental adult education influenced community members' knowledge and awareness of the environmental impacts of illegal oil bunkering in Ogoni Land?

Hypotheses

The following null hypotheses guided the study and were tested at 0.05 level of significance.

HO_1: There is no significant difference in the mean response of members of community-based organisations in Gokana and Khana Local Government Areas on key factors that contribute to continuous illegal oil bunkering in Ogoni land despite government interventions

HO_2: There is no significant difference in the mean response of members of community-based organisations in Gokana and Khana Local Government Areas on ways environmental adult education has influenced community members awareness of the environmental and health impacts of illegal oil bunkering in Ogoni Land

CONCEPTUAL REVIEW

Environmental Adult Education

Environmental adult education is a revolutionary approach to education that (EAE) equips adults to think critically about environmental challenges and take sustainable action, it gives people and communities the means to tackle urgent environmental issues by incorporating adult learning theories, encouraging interdisciplinary comprehension, and cultivating action-oriented learning. Dokubo and Okorie (2017) posited that environmental adult education aims to teach people about environmental issues and how to manage their lifestyles for the sustainability of the ecosystem. It also helps people see themselves as change agents in the social and environmental sphere, which makes it possible for adults to participate in environmental management. The field of environmental adult education (EAE) combines environmental education concepts with theories of adult learning to address environmental issues through education. It aims to give adult learners the knowledge, skills, and attitude they need to make informed decisions that promote environmental sustainability.

EAE seeks to encourage behavioural changes that promote responsible environmental care and raise awareness of environmental challenges. In view of this, Okorie (2015) pointed out that environmental adult education is educational programme that will increase adult learners' knowledge about the environment, develop in the adult the necessary skills, and also change their behaviour towards the environment. Haugen (2010) also asserted that environmental adult education is an active, inclusive, and engaging educational approach that equips students with the knowledge and skills they need to address environmental issues and engage in social activism. It also turns classroom instruction into practical action by addressing the root causes of environmental problems. Accordinlyg Alaboud (2022), environmental adult education is a vital educational strategy to give adults the information and abilities they need to solve environmental issues and support their communities' well-being. Ndulor and Dr. Mbalisi (2019) emphasise that EAE gives people the chance to learn about the environment, emphasizing systems thinking and how humans impact it; assess and clarify their attitudes and values toward the environment, including the natural

world and the environment created by humans; develop the skills necessary to deal with social and environmental issues and adopt actions that contribute to environmental protection and pursue a more sustainable future.

Environmental Adult Education (EAE) is essential for behavioural change and community empowerment, particularly in regions impacted by environmental issues. EAE teaches adults about environmental issues, raising awareness, and giving people the information and abilities they need to adopt sustainable behaviours that support ecological preservation. However, by influencing community attitudes toward more sustainable practices, EAE also helps to modify behavior. This is in support of Eze and Kalu (2021) assertion that when people are informed about the adverse effects of environmental degradation and are given access to valuable and practical alternatives, they adjust their behavior. Thus environmental adult education programmes in Ogoniland are critical tools for fostering community-driven solutions to environmental challenges.

Illegal Oil Bunkering

Bunkering includes all forms of oil theft, such as smuggling and diversion of oil as well as unapproved ship loading. Nigeria's constitution states that all of the nation's minerals, oil, and gas belong to the federal government. Oil extraction without a contract with the federal government is illegal. One typical procedure is to tap into an oil pipeline and move the oil to another location for local refinement or international sale. When petroleum products are unlawfully drained from a pipeline or wellhead and loaded onto a ship or boat for sale at a discount, this is known as illegal bunkering (Ozogu and others, 2023). Despite Nigeria's government's efforts to address the issue, syndicates involved in the illicit crude oil refining industry, also known as oil bunkering, continue to sabotage the country's economy in the Niger Delta region by coming up with new ways to survive every day. Theft of crude oil and its byproducts through various means without the federal government's consent is known as illegal bunkering of crude oil. When petroleum products are unlawfully syphoned from pipelines or well heads and loaded onto ships or boats for low-priced sale, this is known as illegal bunkering. Silas (2015) defined illegal oil bunkering or oil theft as the removal of crude oil without authorization.

In Ogoni land, crude oil is being unlawfully bunkered which occasionally results in explosions and contribute to oil spills. Crude theft and illicit oil refining are also rapidly growing industries in Ogoni land, with many young people working in the supply chain for illegally processed petroleum products, or "kpofire" as they are known in Ogoni land. In Ogoni land, kpo-fire originated in the Bodo community and was named after the sound that was produced when the drum used to refine the crude oil was struck, which frequently caused fire to flare up. According to relative deprivation theory (Pettigrew, 2015), Kpo-fire began as a response to the community's requirements for livelihood; the Ogoni people felt "deprived." ." In response to the main reason why people started doing kpo-fire in Ogoni land, Bumbari (2023) stated that people are laying their heads where they can survive since there are no employment, no one seems to care about the community or the rural areas, and even the government is not taking care of the people. The people utilize the indigenous technique used to distill locally produced gin, ogogoro, or kai kai to refine the stolen crude oil and this so-called bush refineries utilise local resources and skill.

The United Nations Environmental Programme (UNEP) conducted an environmental impact assessment of oil exploration in Ogoni land, Rivers State 2011. The report found that artisanal refining and illegal oil bunkering are the primary sources of soil contamination and water and air pollution in the region, with detrimental effects on aquatic life, human health, and the ecosystem. In addition to the adverse impact on the environment and human health, illicit artisanal oil refining has exacerbated organised crime and the use of oppressive security tactics in the area. Due to spills and local crude oil refining processes, kpo-fire hurts the ecosystem. The ecology will suffer as long as the "fossil fuel sector keeps milking the planet while they can" (Pule *et al.,*). According to Onuh *et al.,* (2021), illicit artisanal refining (kpo-fire) has extremely adverse environmental effects on people and the ecology. According to Ewubare *et al.,* (2021), the environment is overwhelmed with the consequences of human excesses in their fight for existence. This is because local oil refineries spew black soot into the atmosphere, which pollutes the air. As a result, the residents are currently dealing with many environmental issues, including stagnant rivers, useless agricultural land, contaminated drinking water sources, and inadequate health conditions. (Boris, 2015; Ozogu *et al.,* 2023).

One of the leading causes of the growing decline in biodiversity, including wild plants and animals, in the Niger Delta is the vast number of artisanal oil refineries. The nearby flora and fauna suffer tremendously due to these refineries' harm to the air, water, soil, and ecology. Faunas absorb heavy metals from contaminated surroundings, which is harmful to them. Birds and other animals that rely on beautiful feather colours for courtship may also experience indirect effects of gaseous pollution (black soot) from artisanal refineries on reproduction. Plants absorb harmful substances such as Polynuclear Aromatic Hydrocarbons (PAHs) from waste left in the soil, water, and environment. Plant species variety and abundance decrease due to the effects on plant growth. Yabrade and Tanee (2016) discovered that refinery sites had substantially higher levels of Total Hydrocarbon Content

(THC) and Total Organic Carbon (TOC) than the controlled sites when comparing the total hydrocarbon content (THC) and total organic carbon (TOC) in the affected sites to the total hydrocarbon and total organic carbon in the unaffected controlled site. Therefore, artisanal oil refineries may hurt the ecosystem. Similar results on the impact of petroleum products on heavy metal levels in soil samples were reported by Iwegbue (2011) and Akpomrere and Uguru (2020), and according to Iwegbue (2011), Ni, Cd, and Zn contents increased from 7.0 to 31 mg/kg, 0.02 to 1.12 mg/kg, and 23 to 29.3 mg/kg, respectively, in soils impacted by crude oil.

In Ogoni land, illegal oil bunkering has a substantial and pervasive detrimental environmental impact. Oil spills are one of the most dangerous consequences of using crude methods to syphon oil from pipelines. The spills have contaminated large areas of land and water, rendering them unsuitable for agriculture and fishing, the primary income sources for many local households (UNEP, 2011). Many communities in Ogoni land have unusable soil due to oil contamination, which has reduced agricultural productivity (Osuji & Onojake, 2016). This soil deterioration impacts food security because many communities struggle to grow enough food to meet their needs. Additionally, water body pollution has devastated aquatic life, leading to a dramatic drop in fish populations. Nwilo and Badejo (2018) claimed that the once-thriving fishing industry in Ogoni land has suffered, resulting in financial losses for numerous people. Air pollution is one of the significant environmental effects of illegal oil bunkering. When crude oil and refined products are burned during refining, toxic fumes are discharged into the atmosphere. Aghalino (2015) claims that this has led to increased respiratory problems among the local population, which has sparked worries about public health in the region. Human and ecosystem-wide biological, social (militancy, migration, and the rise of environmental refugees), and economic (food shortages and nutritional inadequacies, destruction of traditional means of livelihood) aspects of the Niger Delta are all significantly and extensively impacted by artisanal oil refining. Efenakpo *et al.,* (2018). By polluting the air, water, soil, plants, fish, and animals, artisanal refineries affect the ecosystem and may harm human health.

Kpo-fire's effects on the ecosystem are similarly disastrous. Illegal crude oil refining contributes to environmental deterioration by causing extensive oil spills and uncontrolled gas flaring. Large tracts of arable land are no longer suitable for cultivation, and aquatic life has been wiped out due to the unchecked release of hydrocarbons into farmlands and water bodies. According to a 2021 United Nations Environment Programme (UNEP) assessment of Ogoni land, decades of illicit refining and oil spills have damaged water and soil resources, with the pollution reaching up to five meters into the ground (UNEP, 2021). Additionally, since trees are felled to fuel the refining process, kpo-fire exacerbates the issue of carbon emissions and global warming by contributing to deforestation in the area. The effects on the environment extend beyond the immediate Niger Delta region and are part of Nigeria's environmental imprint worldwide. Since these emissions are frequently uncontrolled and unregulated, Osuji and Onyenekwe (2019) claimed that the discharge of greenhouse gases from illicit refineries contributes to climate change.

The sensitivity of the mangrove vegetation's pneumatic roots to petroleum pollution determines the extent of the damage (Asimiea, 2011). Ikezam *et al.,* (2021) and Dominic (2016) claim that tidal effects cause wastes from illicit refineries to spread along the river's upstream and downstream path, killing mangrove trees. illicit refineries can worsen environmental conditions, such as soot pollution, which could lead to skin conditions and respiratory tract illnesses in the state. Additionally, the socio-economic structure of the area has been further burdened by the detrimental health effects of environmental pollution. The rise in health problems such as skin conditions and respiratory disorders has put more strain on local healthcare systems, which usually need funding and preparation to handle such challenges (Weli, 2021), furthermore, the stress on local healthcare systems as stated by Weli, (2021) which are frequently underfunded and ill-prepared to address such challenges, has increased due to health issues such as skin ailments and respiratory diseases.

Environmental Adult Education as a Tool for Reducing Community Participation in Illegal Oil Bunkering

Environmental adult education programmes do more than share information; they help communities take part in shaping environmental policy and decision-making. People get a better grasp of how their actions affect the environment through EAE programmes, which helps them make more sustainable decisions**.** This description of the EAE idea demonstrates how important environmental adult education is in enabling people to interact with their surroundings, think back on their experiences, and take action to support sustainability and the welfare of their communities. It is essential to social transformation and health promotion because it acknowledges the interdependence of the built environment, community, and individual identity. Developing appropriate attitudes in individuals and groups through exposure to values that foster proper sensitivity and concern for the environment is one of the goals of environmental adult education. EAE programmes encourage group action for environmental protection while empowering communities to confront detrimental ecological practices, thus by influencing community attitudes toward more sustainable practices, EAE also helps to modify behavior. One key outcome of these programmes is that more people understand the

dangers of illegal oil bunkering. They share information about health risks from pollution, like dirty water and air caused by small-scale refining. This helps community members see how these activities harm the environment and public health, making them more determined to stop such practices. However, EAE programmes can decrease environmentally damaging practices like illicit logging or oil bunkering. Additionally, EAE is a method for addressing sociocultural barriers that can prevent people from changing their behavior.

Similarly, Dokubo and Okorie (2017) posited that environmental adult education aims to teach people about environmental issues and how to manage their lifestyles for the sustainability of the ecosystem. It also helps people see themselves as change agents in the social and environmental sphere, which makes it possible for adults to participate in environmental management. To reduce the impact of illicit oil bunkering on Ogoni land, action plans must be established and well implemented, which will increase public awareness of environmental issues. According to UNEP, one of the resolutions of the Tbilisi conference emphasised that environmental education should aim to help people and communities comprehend the intricacies of natural and artificial environments, which was mentioned in Nzeneri (2021).

METHODOLOGY

This study adopted analytical survey design. An analytical survey design goes beyond describing data. Unlike descriptive surveys, which focus on characteristics, frequencies or averages, analytical surveys explain why patterns occur by using statistical tools (Shiksha.com, 2025). This design was chosen for this study because it lets researchers capture views of respondents from the two Local Government Areas in the area of study and determine if significant differences exist among their views. It also provides deeper insights into the issues of illegal oil bunkering in the different communities that will enable the researcher intends to assess in-depth ways in which environmental adult education is used to mitigate impacts of illegal oil bunkering in Ogoni land. The study area is Gokana and Khana Local Government Areas in Ogoni land in Rivers State. Gokana and Khana LGAs are is located in the southeast of Rivers State, in the Ogoni.

The population for this study consisted of 1,499 members of 20 Community Based Organisation (CBOS) which were drawn from farmers and fisherfolks in Gokana and Khana Local Government Areas of Rivers State. The population distribution consisted of 734 members of CBOs in Gokana LGA and 765 members of CBOs in Khana LGA respectively. The sample for this study was 400 members of CBOs in Gokana and Khana LGAs. The sample size consists of 200 members of CBOs in Gokana LGA and 200 members of CBOs in Khana LGA. The sampling technique adopted for this study is simple random sampling technique. The researcher randomly selected 20 members from each of the CBOs in the two LGAs under study. The instrument used for data collection was a validated self-developed questionnaire titled “Environmental Adult Education Programme as a Tool for Reducing Community Participation in Illegal Oil Bunkering Questionnaire (EAETRCPIOBQ)”, with reliability index of 0.87.

The instrument was administered to the respondents by the researcher and two briefed research assistants who were trained by the researcher on how to effectively administer the instrument. The researcher also sought the assistance of the various community leaders in organizing the audience to whom the instruments will be administered on. Data collected for this study was analyzed using the mean statistics, standard deviation and t-test. The mean and standard deviation was used in answering the research questions raised in the study while t-test was used to test the hypotheses raised at 0.05 significant level.

RESULTS AND ANALYSIS

Research Question 1: What are the key factors that contribute to continuous illegal oil bunkering in Ogoni land despite government interventions?

Table 1.1: Mean Analysis of Key Factors that Contribute to Continuous Illegal Oil Bunkering in Ogoni Land Despite Government Interventions

		Members of Community Based Organisationss	N	Mean	Std. Deviation	Std. Error Mean
1	Loss of livelihood drive individuals to engage in illegal oil bunkering despite the associated risks	Gokana LGA CBO Members	184	2.9511	.90705	.06687
2	Quest for quick money contribute to the persistence of illegal oil bunkering in Ogoniland.	Gokana LGA CBO Members	184	2.9348	.82719	.06098
3	Poverty among community members pushed some of people into illegal oil bunkering business	Gokana LGA CBO Members	184	2.7554	.94086	.06936

		Members of Community Based Organisationss	N	Mean	Std. Deviation	Std. Error Mean
4	Lack of alternative livelihoods influence community involvement in illegal oil bunkering	Gokana LGA CBO Members	184	3.5489	.75949	.05599
5	Demand for illegally refined petroleum products contribute to the continuity of illegal oil bunkering.	Gokana LGA CBO Members	184	3.1848	.91053	.06712
6	Inadequate inclusion of local communities in oil sector decision-making affect their chance on illegal oil bunkering.	Gokana LGA CBO Members	184	2.7011	.81837	.06033
7	Weak law enforcement mechanisms promote the continuation of illegal oil bunkering.	Gokana LGA CBO Members	184	3.2446	1.02428	.07551
8	Corruption among security and government officials affect the fight against illegal oil bunkering.	Gokana LGA CBO Members	184	2.8261	.89453	.06595
9	Political influence or elite sponsorship sustain illegal oil bunkering in Ogoniland.	Gokana LGA CBO Members	184	2.6359	.83176	.06132
10	Sense of ownership as oil producing communities.	Gokana LGA CBO Members	184	3.0761	.92605	.06827
		Khana LGA CBOs Members	180	2.7333	.82962	.06184

Table 1.1 reveals that the responses from Gokana LGA CBO members on factors that contribute to illegal oil bunkering in Ogoni land despite government intervention showed that items 1-10 have mean scores that ranges from 2.64-3.55 which are all greater than 2.5 criterion mean and implies positive responses—for respondents in Khana LGA, CBO members' responses yielded mean scores ranging from 2.73 to 3.35, which are also greater than the criterion mean of 2.5 and imply positive responses. The pooled mean scores of respondents from Gokana and Khana LGAs were 2.98 and 3.08, respectively. This indicated that respondents strongly agreed that poverty, unemployment, lack of livelihood alternatives, weak institutional frameworks, and systemic corruption are central factors sustaining illegal oil bunkering in their communities. This highlights that the problem is multidimensional and deeply rooted in both socioeconomic and structural conditions.

In both LGAs, economic-related considerations were prominent. Compared to their Gokana counterparts, Khana LGA respondents gave poverty, the pursuit of quick cash, and loss of livelihood much higher ratings. This shows that, despite its risks, illicit oil bunkering is a desirable coping technique in Khana due to the country's worsening economic conditions, restricted revenue prospects, and survival pressures. These results suggest that the underlying socioeconomic vulnerabilities that community members, especially those in Khana LGA, suffer have not been adequately addressed by government efforts. On the other hand, respondents in Gokana LGA believed that the ongoing demand for illegally processed petroleum products and the absence of alternative sources of income were more significant issues. This suggests that illegal oil bunkering becomes accepted as an economic activity in areas with few legal employment opportunities and a consistent local demand for artisanal fuel. Given the importance of demand-side factors in Gokana, enforcement-focused initiatives that do not successfully disrupt local markets for illicit petroleum products are limited.

Institutional and governance concerns were also noted as essential motivators, particularly in Khana LGA. Khana respondents rated corruption among government and security officials, political or elite sponsorship of illicit oil bunkering, and inadequate local community participation in oil-sector decision-making much higher. This reflects the belief that the government's attempts to stop bunkering are undermined by influential players and insufficient accountability systems, which keep the practice going. Such circumstances strengthen the community's tolerance of unlawful behaviour and undermine faith in formal institutions. Although both LGAs acknowledged inadequate law enforcement procedures, the notable disparity in responses suggests that enforcement issues persist across localities. Additionally, the sense of ownership that comes with living in an oil-producing community was more strongly supported by respondents in Gokana LGA. Because community members may see oil resources as a legitimate entitlement rather than as assets under governmental control, this attitude may justify local participation in illicit oil bunkering.

Hypothesis One:

There is no significant difference in the mean response of members of community-based organisations in Gokana and Khana Local Government Areas on key factors that contribute to continuous illegal oil bunkering in Ogoni land despite government interventions.

Table 1.2: T-Test Result on Difference in Mean Response of Members of Community Based Organisations in Gokana and Khana Local Government Areas on Key Factors that Contribute to Continuous Illegal Oil Bunkering in Ogoni land Despite Government Interventions

			Levene's Test for Equality of Variances		t-test for Equality of Means						
										95% Confidence Interval of the Difference	
			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
1	Loss of livelihood drive individuals to engage in illegal oil bunkering despite the associated risks	Equal variances assumed	1.687	.195	-4.285	362	.000	-.39891	.09310	-.58200	-.21582
2	Quest for quick money contribute to the persistence of illegal oil bunkering in Ogoniland.	Equal variances assumed	.368	.545	-4.738	362	.000	-.37633	.07943	-.53253	-.22013
3	Poverty among community members pushed some of people into illegal oil bunkering business	Equal variances assumed	2.623	.106	-3.412	362	.001	-.33345	.09773	-.52564	-.14127
4	Lack of alternative livelihoods influence community involvement in illegal oil bunkering	Equal variances assumed	.022	.882	5.398	362	.000	.44891	.08316	.28538	.61244
5	Demand for illegally refined petroleum products contribute to the continuity of illegal oil bunkering.	Equal variances assumed	.129	.719	4.424	362	.000	.40700	.09201	.22607	.58794
6	Inadequate inclusion of local communities in oil sector decision-making affect their	Equal variances assumed	2.110	.147	-4.007	362	.000	-.37114	.09263	-.55330	-.18897

			Levene's Test for Equality of Variances		t-test for Equality of Means						
			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
										Lower	Upper
	chance on illegal oil bunkering.										
8	Corruption among security and government officials affect the fight against illegal oil bunkering.	Equal variances assumed	.002	.961	-3.269	362	.001	-.30169	.09228	-.48317	-.12022
9	Political influence or elite sponsorship sustain illegal oil bunkering in Ogoniland.	Equal variances assumed	4.545	.034	-6.093	362	.000	-.55857	.09167	-.73885	-.37830
		Equal variances not assumed			-6.087	357.019	.000	-.55857	.09177	-.73905	-.37810
10	Sense of ownership as oil producing communities.	Equal variances assumed	.243	.623	3.717	362	.000	.34275	.09222	.16140	.52411
		Equal variances not assumed			3.721	359.243	.000	.34275	.09211	.16161	.52390

The independent-samples t-test results clearly show that several interrelated factors sustain the ongoing illegal oil bunkering practice in Ogoniland with notable differences in perception among Community-Based Organisation (CBO) members in Gokana and Khana Local Government Areas, Although both populations identify similar drivers of illicit oil bunkering, the degree and prevalence of these factors vary by location, as evidenced by statistically significant differences in mean responses across all variables analysed. The p-value is 0.000 and o.001 for a degree of freedom (df) of 362. We conclude that there is a significant difference in the mean responses of members of community-based organisations in the Gokana and Khana Local Government Areas regarding the degree to which community environmental awareness programs have promoted environmental stewardship in Ogoni land, as indicated by p-values less than 0.05. According to the t-test results, Gokana CBO members thought the community ecological awareness program was more successful than Khana CBO members in lowering hazardous activities and promoting community involvement

Research Question Two: In what ways has environmental adult education influenced community members' knowledge and awareness of the environmental impacts of illegal oil bunkering in Ogoni Land?

Table 2.1: Mean Analysis of Level of Environmental Awareness Among Ogoni Community Members Regarding Impacts of Illegal Oil Bunkering

		Members of Community based organization	N	Mean	Std. Deviation	Std. Error Mean
11	Your community members' exposure to community environmental awareness programme, enhance their awareness of environmental issues in Ogoniland.	Gokana LGA CBO Members	184	2.9348	.95591	.07047

		Members of Community based organization	N	Mean	Std. Deviation	Std. Error Mean
12	Your community members' exposure to community environmental awareness programme increase your awareness to the dangers of illegal oil bunkering.	Gokana LGA CBO Members	184	2.5815	.82574	.06087
13	Your community members' exposure to community environmental awareness programme influence their attitudinal change toward environmental conservation in Ogoniland	Gokana LGA CBO Members	184	2.7120	.89239	.06579
14	Your community members' exposure to community environmental awareness programme has made you more concerned about the long-term effects of illegal oil bunkering.	Gokana LGA CBO Members	184	2.8424	.91266	.06728
15	You now see illegal oil bunkering as a threat to community development due to your involvement in community environmental awareness programme	Gokana LGA CBO Members	184	2.7826	.85987	.06339
16	You discourage people from involvement in illegal oil bunkering in your community after participating community environmental awareness programme	Gokana LGA CBO Members	184	2.8478	.78837	.05812
17	Your community members' exposure to community environmental awareness programme has promoted sustainable environmental practices among Ogoni community members.	Gokana LGA CBO Members	184	2.3641	.87028	.06416
18	Community members' exposure to community environmental awareness programme contribute to reduction of harmful environmental activities such as oil pollution and deforestation in Ogoniland.	Gokana LGA CBO Members	184	2.5815	.82574	.06087
19	Your community members' exposure to community environmental awareness programme foster community engagement in environmental advocacy and policy influence.	Gokana LGA CBO Members	184	2.6359	.86398	.06369

In Table 2.1, the responses from Gokana LGA CBO members on level of environmental awareness among Ogoni community members regarding impacts of illegal oil bunkering in Ogoni land showed that items 11-19 have mean scores that ranges from 2.70-3.26 which are all greater than 2.5 criterion mean and implies positive responses. For respondents in Khana LGA, CBO members' responses gave mean scores that ranges from 2.77-3.18 which is also greater than the criterion mean of 2.5 and implies positive responses. The analysis showed that community members across both Gokana and Khana Local Government Areas exhibited a generally high level of awareness of soil, air, water, biodiversity, agriculture, health, and livelihoods impacts of illegal oil bunkering as reflected in the overall mean scores of 2.86 and 2.89 respectively. This suggested that the practice of illegal oil bunkering and its effects are well recognised within the communities.

HO_2: There is no significant difference in the mean response of members of community-based organisations in Gokana and Khana Local Government Areas on ways environmental adult education has influenced adults' awareness of the environmental impacts of illegal oil bunkering in Ogoni Land.

Table 2.2: T-Test Result on Difference in Mean Response of Members of Community Based Organisations in Gokana and Khana Local Government Areas on Ways Which Environmental Adult Education Has Influenced Community Members' Awareness of the Environmental Impacts of Illegal Oil Bunkering in Ogoni land

			Levene's Test for Equality of Variances		t-test for Equality of Means						
										95% Confidence Interval of the Difference	
			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
20	Your community members' exposure to community environmental awareness programme, enhance their awareness of environmental issues in Ogoniland.	Equal variances assumed	.034	.854	2.457	362	.014	.24589	.10006	.04912	.44267
22	Your community members' exposure to community environmental awareness programme increase your awareness to the dangers of illegal oil bunkering.	Equal variances assumed	3.441	.064	-5.535	362	.000	-.51848	.09367	-.70268	-.33428
23	Your community members' exposure to community environmental awareness programme influence their attitudinal change toward environmental conservation in Ogoniland	Equal variances assumed	.723	.396	-.165	362	.869	-.01582	.09597	-.20456	.17292
24	You now see illegal oil bunkering as a threat to community development due to your involvement in community environmental awareness programme	Equal variances assumed	2.391	.123	.746	362	.456	.07150	.09580	-.11689	.25989
25	You discourage people from involvement in illegal oil bunkering in your community after participating community environmental	Equal variances assumed	12.999	.000	2.482	362	.014	.22560	.09088	.04688	.40433

			Levene's Test for Equality of Variances		t-test for Equality of Means						
			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
										Lower	Upper
	awareness programme										
26	Your community members' exposure to community environmental awareness programme has promoted sustainable environmental practices among Ogoni community members.	Equal variances assumed	.260	.610	-4.391	362	.000	-.38587	.08788	-.55868	-.21306
27	Community members' exposure to community environmental awareness programme contribute to reduction of harmful environmental activities such as oil pollution and deforestation in Ogoniland.	Equal variances assumed	5.236	.023	-3.052	362	.002	-.28514	.09344	-.46890	-.10139
28	Your community members' exposure to community environmental awareness programme foster community engagement in environmental advocacy and policy influence.	Equal variances assumed	5.118	.024	.375	362	.708	.03587	.09572	-.15237	.22411

In Table 2.2, the Levene's test results are non-significant ($p > .05$), suggesting that the assumption of equal variances is satisfied. However, the t-test results are inconsistent across all assessed items. In particular, questions 20 ($p = .014$), 22 ($p < .001$), 25 ($p = .014$), 26 ($p < .001$), and 27 ($p = .002$) showed significant differences. This suggests that the opinions of CBO members in Gokana and Khana regarding how environmental adult education raises awareness of environmental issues, discourages illegal oil bunkering, encourages sustainable environmental practices, and helps reduce harmful environmental activities are very different. The amount and direction of these views differ between the two LGAs, as shown by the positive and negative mean discrepancies. Items 23 ($p = .869$), 24 ($p = .456$), and 28 ($p = .708$), on the other hand, showed no significant differences, indicating that respondents in both LGAs had similar opinions about attitudinal change toward conservation, the idea that illegal oil bunkering poses a threat to community development, and community involvement in environmental advocacy. The t-test result is partially rejected, as there are notable variations in

several important indicators. This suggests that, while some characteristics of awareness and participation remain similar, environmental adult education has had varied impacts on adults' awareness of the environmental effects of illicit oil bunkering in Gokana and Khana LGAs.

DISCUSSION OF FINDINGS

Factors Contributing to Continuous Illegal Oil Bunkering in Ogoni land Despite Government Interventions

The findings reveal the complexity of the issues rooted in both structural flaws and socioeconomic challenges. Gokana had the greatest number of alternative livelihoods. This suggests that limited access to sustainable income drives residents to illicit oil activities. UNEP's Environmental Assessment of Ogoni land supports this, highlighting how environmental degradation and lost livelihoods drive people toward illegal refining as a means of survival (UNEP, 2011). In Khana, loss of livelihood and the need for quick cash were also the main motivators. PIND (2022) and Raimi (2023) show that economic desperation and the promise of quick financial rewards remain powerful. Community dynamics, political influence, and economic motivation stand out in these oil-producing LGAs. Regarding ownership and influence, Khana had the lowest mean sense of ownership. Gokana had the lowest rank in terms of elite sponsorship or political influence. Both are still in the "strongly agree" bracket, but economic issues seem more important. Prior research indicates that political patronage and elite sponsorship are crucial in defending networks associated with oil theft. Corruption among state and security personnel, as well as weak law enforcement, were highly rated in both LGAs. Respondents widely acknowledged that the illegal oil sector is sustained by institutional flaws and weak enforcement systems.

Amnesty International (2014) findings align with this. They show fragmented enforcement and collusion between security forces and oil thieves as a key enabler. Additionally, the lack of local community involvement in oil industry governance is a significant issue. Respondents cited exclusion from decision-making as a primary motivation for engaging in unlawful activity. Previous research by Ozougwu *et al.,* (2023) suggests that exclusion may lead communities to justify or participate in oil theft as a form of resistance. Economic and structural factors together drive illicit oil bunkering in Ogoni land. Poverty, unemployment, unsTable livelihoods, weak institutions, and systemic corruption all interact to support this activity. The similar responses across both LGAs show government efforts have largely failed to address the root causes. Earlier research similarly finds that military or law enforcement efforts alone cannot stop illegal oil bunkering. A more comprehensive strategy is needed. This should encompass environmental restoration, community engagement, transparent governance, and inclusive economic development (Amnesty International, 2014; UNEP, 2011; PIND, 2022).

Level of Environmental Awareness Among Ogoni Community Members Regarding Impacts of Illegal Oil Bunkering in Ogoni land

Community environmental awareness around oil contamination is high and shaped by lived experience. The results indicate that CDC members in both the Gokana and Khana LGAs have high levels of environmental awareness. This is consistent with major evaluations and empirical research on oil contamination in Ogoni land and the wider Niger Delta. The obvious, everyday effects of environmental harm have been widely documented in the literature. Respondents strongly agreed that illegal oil bunkering causes soil pollution, loss of fisheries and bush meat, soot-related air pollution, decreased farm yields, land degradation, and health issues. The UNEP environmental assessment of Ogoni land (2011) offers one of the most convincing explanations for these beliefs. Respondents acknowledged land degradation and lengthy repair timelines. This matches UNEP's evidence of widespread pollution of soil, groundwater, and vegetation, as well as warnings about public health hazards. The UNEP's reports of ongoing contamination and ecosystem degradation are directly reflected in Gokana heightened awareness of soil contamination and biodiversity loss. These are current and practical issues, not just theoretical ones. Existing research also supports the economic and livelihood impacts of this awareness. Research by Osuagwu and Olaifa (2018) found that oil-related disturbances reduce fish catches and soil fertility. This undermines household food and economic security. The study suggests that oil spills harm agriculture and fisheries. Osuagwu and Olaifa (2018) found that crop yields and fishing livelihoods in both LGAs have been impacted. This aligns with the broad consensus in both LGAs. Together, this data helps explain why respondents, especially those in Gokana, strongly link oil contamination to lower harvests and lost livelihoods.

Health concerns stemming from environmental degradation are well understood within these communities. Further expanding on the awareness topic, science also supports the health aspect of awareness. Environmental-health studies demonstrating elevated levels of particulate matter, hydrocarbons, and other pollutants from artisanal refining support respondents' awareness that soot and refining emissions pose a health risk. These exposures have been connected to reproductive damage, oxidative stress, and respiratory illnesses (Suku, Abah & Nwoke, 2023). These hazards are real, and the experiences of the community are consistent with the findings of epidemiological and toxicological research. Programmatic efforts on cleanup and engagement have shown only a moderate impact on community awareness. Finally, the findings reflect

mixed results from programmatic efforts, indicating a moderate level of awareness of cleanup and engagement programmes. Amnesty International's (2012) reports and the PIND Foundation's (2022) studies highlight persistent shortcomings in awareness-raising, compensation, and repair efforts. Even though outreach and cleanup efforts have been implemented in some communities, their limited success helps to explain why there is a high level of knowledge but little active participation. Additionally, place-based variations reported in the literature are also reflected in the differences between LGA respondents, who emphasize observable impacts on soil and biodiversity, and Ikwerre respondents, who emphasize agricultural and fishing losses (Osuagwu & Olaifa, 2018), and conservation efforts. The program's emphasis on moral framing appears to have increased the perceived social cost of illegal activities while reducing their acceptability. Notably, subtle differences emerged by LGA. Khana participants emphasized the importance of moral responsibility and accountability through crime reporting, while Gokana respondents highlighted the need for greater support of alternative livelihoods and a heightened awareness of health hazards. These distinctions align with research suggesting that contextual factors such as economic opportunities, civic mobilization history, and trust in authorities' influence how education translates into action. Communities facing greater economic pressures tend to prioritize alternative livelihood advocacy, whereas those with higher institutional trust may focus on crime reporting.

The results show that value-based EAE has a strong influence on moral responsibility, attitudes, and behaviours related to environmental stewardship. Although sustained behavioral change often requires complementary livelihood initiatives and strengthened governance, our findings align with the broader research, indicating that adult environmental education can generate meaningful shifts in self-reported attitudes and intentions. The conclusion is clear: value-based EAE is a vital tool for cultivating moral awareness and positive environmental attitudes.

CONCLUSION

Recommendations

The following recommendations were made based on the findings and conclusion of the study:

1. The establishment of job programmes, skill-acquisition facilities, and sustainable livelihood prospects in Ogoni land should be given top priority by the government, oil corporations, and development partners. Reducing the underlying determinants of oil bunkering would also require bolstering institutional frameworks. Open monitoring systems are needed to prevent corruption.
2. To maintain information and convert awareness into long-term behavioral practices, ongoing community-based sensitization programmes should be scaled up. These initiatives should use local languages, theater, town hall meetings, and school-based clubs.

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