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Impact of Women Education on Environmental Sustainability in Oil Producing Communities in Bonny Local Government Area, Rivers State

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Abstract

The study examines the impact of women education on environmental sustainability in Oil producing communities Bonny local government area in Rivers State. Three specific objectives and three research questions. Descriptive research design was adopted in the study. The study was carried out in Rivers state. The population of the study was all women in Bonny Local Government Area of Rivers State. The sample size of the study was 127 literate women in Bonny local government Area. Purposive sampling and convenient sampling were combined in the sample selection of the study. Research instrument used for the study was a self-designed questionnaire structured in a four-point rating scale. The instrument was designed into three clusters obtaining information on each of the research questions posed in the study. The instrument was validated by experts in Adult and Community Education, Rivers State University. The reliability of the instrument was established using Cronbach Alpha which gave reliability coefficient of 0.77, 0.89 and 0.82. The study found that women education has significant positive impact in ensuring sustainability in waste management, sustainable agricultural activities and sustainable environmental conservation in oil producing areas. The study recommended that government should set up environmental organisations with arms in every oil producing communities, whose sole aim is to ensure the negative impact of oil exploration is reduced in the communities.

Keywords: Impact, Women Education, Environmental Sustainability, Oil Producing

I. INTRODUCTION

Women education is one major priority to community development, owing to the dynamic potential of an informed, skilled and knowledgeable women. A community with considerable number of women who are exposed to environmental dynamism, may likely enhance environmental sustainability practices from home to public. Women's education can be regarded as a kind of knowledge given to women for enhancing their self-respect and self-dignity (Adamu, n.d). This knowledge can be in form of formal, non-formal and informal education, it can also be in form of adult education, community development, workshops, seminars, conferences and training. According to Aja-Okorie (2013) women education refers to the process of providing women with knowledge and skills, empowering them economically, politically, and socially, and addressing gender-based discrimination in society. In the same vein, Saini (2018) posits that women education could be seen as the process of providing educational opportunities specifically for women, aimed at empowering them, reducing inequalities, and improving their societal status and quality of life. Therefore, women's

education encompasses the learning opportunities and training specifically designed for women, addressing their unique needs and sometimes used to combat identified environmental challenges and harmful practices

Environmental sustainability is a critical phenomenon in Africa particularly where oil exploration activities is common. While most oil producing communities are primarily sandwiched with seemingly unsurmountable environmental degradation, various threats to live and biodiversity looms. Environmental sustainability responsible management of resources to ensure that ecological systems remain healthy and viable for future generations. It encompasses a holistic approach that integrates environmental, social, and economic dimensions, aiming to balance human needs with the planet's capacity to support life (Saha, Ahmad, Abbasi, & Khan, 2010).

Environmental sustainability refers to the responsible management of resources to maintain ecosystem health, ensuring that natural systems can support future generations while addressing current environmental challenges (Arielle, 2012). Patterson (2024) described "environmental sustainability refers to the responsible management of natural resources to fulfill current needs without compromising the ability of future generations to meet theirs. It aims to balance ecological, economic and social goals, such as reducing carbon emissions, promoting renewable energy and ensuring equitable resource access"**.** Also, Roefie (2013) noted that environmental sustainability is a dynamic equilibrium ensuring vital environmental functions remain available for future generations, balancing production with natural resources and minimizing pollution impacts. In other words, for an environment to be sustainable, when harnessed to meet the present needs, it has to remain useful and balance for future users. This suggests that the elements of the environment are strategically utilized in a way that it will stand the test of time.

The significance of maintaining sustainable environment is crucial to ensuring that human operates within the ecological borders. By prioritizing sustainability, societies can achieve a harmonious balance between ecological integrity and economic viability, ultimately leading to a more sustainable future. Sustainable agricultural practices, like Conservation Agriculture, improve soil health and reduce chemical pollution, promoting biodiversity and ecosystem resilience (Kassam & Brammer, 2013). Also, transitioning to low-carbon economies can prevent severe health and environmental impacts, emphasizing the need for immediate action to avoid escalating costs in the future (Ekins & Zenghelis, 2021). Generally, environmental sustainability can enhance corporate accountability, supports macroeconomic growth, and

fosters value creation through improved stakeholder relationships and responsible management practices carried out within the environment. In the face of the multitude benefits of sustainable environment, individuals who are appropriately exposed would tend to cooperate with the sustainability of the environment. This again makes women education programmes necessary for environmental sustainability since they are of direct influence to their various immediate families.

Waste management is a critical aspect of environmental sustainability and resource conservation. According to Singh (2024), waste management involves controlling waste generation, collection, processing, and disposal. Methods include incineration, pyrolysis, composting, vermicomposting, and recycling, following the 3 Rs rule: reduce, reuse, recycle. Inappropriate and careless disposal of waste materials, such as rubbish, recyclables, or hazardous substances within the environment could be toxic and attracts harmful organisms to the environment. Improper waste management confines a range of actions, from tossing rubbish on the side of the road, to dumping toxic chemicals into water bodies. This is capable of making environment unsafe for the population especially, children who are more vulnerable. Women generally prioritize the health and safety of their children. By leveraging on this, exposing women on health dangers of improper handling of waste around the communities and homes could be instrumental to sustainable waste management. As indicated by Rehr, Miller, and Foos (2015), one of the primary benefits of environmental sustainability is the enhancement of public health, particularly for vulnerable populations such as children. Rehr et al. emphasize that integrating children's environmental health indicators into sustainability strategies can bridge existing gaps in achieving a balance among environmental, economic, and social goals (Rehr et al., 2015).

Educated women are often more aware of environmental issues, including the impacts of waste management. They can advocate for sustainable practices within their families and communities. Education empowers women with the knowledge and skills necessary to effectively manage waste, leading to improved environmental outcomes at both household and community levels. One significant aspect of women's education is its impact on pro-environmental behavior. Asteria et al. (2020) highlight that higher education and financial literacy can significantly enhance women's engagement in waste management practices, particularly in recycling and sorting waste. According to Ahmadi, (2018), educated women are more likely to engage in household waste separation, which is crucial for maximizing recycling efforts and improving the quality of recycled materials. This suggests that educational

programs targeting women can lead to substantial improvements in waste management practices. As supported by Omeje et al., (2020) who suggest that women education can significantly enhance awareness and action towards waste reduction since they have daily interaction with waste.

The role of women education on environmental sustainability also extend to enhancing environmental conservation. Unfortunately, man is gradually losing a healthy environment due to excessive exploitation and exploration activities. Environment, in its natural un-interfered conditions, the environment of any region is in the state of dynamic equilibrium (Singh, 2014). This is what the author called the balance of nature. Organisms are dependent on the environment to fulfill their needs; man is also constantly interacting with the environment in order to fulfill his needs. Therefore, lack of conservation in the environment will mean that future generation of organisms and human may lack means of holistic survival. Maintaining the natural resources of the environment and their careful use is called conservation (Singh, 2014). Women education can play a pivotal role in ensuring the environment is duly conserved. This is sure because women seem to take a forefront in activities that degrades the environment in search for economic opportunities. Hence, educating women not only empowers them with the knowledge necessary to understand environmental issues but also equips them with the skills to take action in their communities. Educated women are more likely to engage in conservation activities and advocate for sustainable practices within their families and communities. This is supported by findings from Dobson et al., (2021) which indicate that women, particularly those who are well-educated, are more likely to contribute to environmental conservation efforts through donations and active participation.

Women education can not also be downplayed in sustainable agricultural practices. In many rural areas especially in Rivers State, women are major participants in agricultural production activities. Therefore, enlightening women to sustainable practices in agriculture could go a long way in fostering agricultural productivity, promoting food security and environmental sustainability. Educated women are more likely to adopt innovative agricultural practices, engage in sustainable resource management, and contribute to the overall resilience of agricultural systems (Raji & Nnodim, 2020). According to Maligalig et al. (2019), education and training programs can significantly enhance women's bargaining power within households, which is crucial for making informed decisions regarding agricultural practices and resource allocation. This empowerment is essential for fostering sustainable agricultural practices, as

women often manage significant portions of agricultural production, particularly in developing countries (Yu & Osabohien, 2023). Training and educational initiatives aimed at women farmers can lead to increased productivity and better management of agricultural resources (Muhaimin et al., 2023). This is particularly important in regions where women are responsible for food production and household nutrition. By equipping women with knowledge about sustainable farming techniques, such as crop rotation and organic farming, educational programs can enhance their ability to contribute to food security and environmental conservation.

In the myriads of studies reviewed, it is clear that women education could be a useful tool for implementation of environmental sustainability practices. However, giving consideration to oil producing communities that may have been polluted with oil spillage and other degrading activities, it is essential that this study is carried out in the study area.

Statement of the Problem

The problem of environmental depletion has become very common in African communities especially in oil producing communities. Industrial wastes have the potential to contribute strong acid to a water body and may cause dented effects on environmental resources. This has been observed by the researcher in the study area, which is saturated with anthropogenic activities by companies prospecting for oil and gas in the area. The study area is an island, where is possibility of improper disposal of both domestic and industrial waste in the water bodies that degrades the environment. The question is, why does environmental pollution linger despite various efforts to put an end to it?, Does it mean that the initiatives have not targeted the right population?. Hence, the study intends to investigate the role of women education on environmental sustainability in oil producing communities in Bonny Local Government Area, Rivers State

Purpose of the study

The purpose of the study was to investigate the impact of women education on environmental sustainability in oil producing communities in Bonny Local Government Area, Rivers State. In specifics, the study sought to;

1. determine the impact of women education on sustainable waste management in oil producing communities in Bonny Local Government Area, Rivers State
2. determine the impact of women education on sustainable environmental conservation in oil producing communities in Bonny Local Government Area, Rivers State

3. determine the impact of women education on sustainable agricultural activities in oil producing communities in Bonny Local Government Area, Rivers State

Research Questions

The following research questions guided the study

1. What are the impact of women education on sustainable waste management in oil producing communities in Bonny Local Government Area, Rivers State?
2. What are the impact of women education on sustainable environmental conservation in oil producing communities in Bonny Local Government Area, Rivers State?
3. What are the impact of women education on sustainable agricultural activities in oil producing communities in Bonny Local Government Area, Rivers State?

II. METHODOLOGY

The study was carried out in Bonny Local Government Area of Rivers State. Bonny, a medium sized urban area in the Niger Delta region, with a rich historical and cultural past emerged as one of the nation's fastest growing urban centers. The most significant factor responsible for this growth is the location of oil and gas export facilities on the island (Owei, 2004). A descriptive survey research design was adopted in the study. This research design is necessary in this kind of study, as it is concerned with obtaining responses on the subject matter. The population of the study was all women in Bonny Local Government Area of Rivers State. The sample size of the study was 127 literate women in Bonny local government Area. Purposive sampling and convenient sampling were combined in the sample selection of the study. Purposive sampling was used to engage only literate women in the study, additionally, convenient sampling technique was used to involve women who are willing to participate in the study through Bonny Women Forum and other community-based organisations. The instrument used for data collection was a four-point rating scale questionnaire titled "Role of Women Education on Environmental Sustainability in Oil Producing Communities". The instrument was designed in three sections, section A-C elicited responses on each of the research questions. The items were structured towards providing responses from the respondents on each of the research questions. The instrument was validated by one expert in Adult Education and Community Development, and one other expert in measurement and evaluation, all in Rivers State University. The internal consistency of the instrument was established using Cronbach Alpha which yielded a reliability coefficient values of 0.77, 0.89 and 0.82 for each of the three clusters. Mean and Standard Deviation was used as a statistical

tool to analyse the data gathered for the study. The criterion mean was 2.50, i.e. items with mean values equal to or greater than 2.50 were termed "Agree" while items with mean values less than 2.50 were termed "Disagree".

III. RESULT

Research Question 1: What are the impact of women education on sustainable waste management in oil producing communities in Bonny Local Government Area, Rivers State?

Table 1: Mean Responses on the Impact of Women Education on Sustainable Waste Management in Oil Producing Communities in Bonny Local Government Area, Rivers State

		Women=127		
S/N	**Items**	**Mean**	**S.D.**	**Rmk**
1	Women education could enhance connection with organizations focused on waste management, providing them women with innovative practices for managing waste in oil producing areas	3.56	0.83	Agree
2	Creating awareness on proper disposal of domestic and industrial waste could help in sustainable management of waste in oil producing communities.	3.71	0.74	Agree
3	Educating women about the environmental impact of waste helps them understand the importance of waste reduction	3.76	1.09	Agree
4	Women education can inspire innovative practices of managing domestic and industrial waste in oil producing communities	3.39	0.44	Agree
5	Community based education could help inform women on the harmful means of waste disposal within the community.	3.79	0.82	Agree
6	Educated women often become community leaders in waste management initiatives.	3.07	0.71	Agree
7	Adult education for women could enforce awareness campaign for local clean up especially in oil producing communities.	3.34	0.92	Agree
8	Vocational training in waste management can equip women with skills in recycling, composting, and upcycling, enabling them to generate income.	3.40	0.73	Agree
9	Women education on sustainable waste management leads to more responsible consumption and waste practices at home.	3.61	0.98	Agree
	Grand Mean & S.D.	**3.51**	**0.81**	

Field Survey, 2023

The analysis in table 1 above showed the mean responses of the respondents on the impact of women education on sustainable waste management in oil producing communities in Bonny Local Government Area, Rivers State. The table showed that items 1-9 have the mean value of 3.56, 3.71, 3.76, 3.39, 3.79, 3.07, 3.34, 3.40, and 3.61 respectively. The mean values obtained showed that majority of the respondents agreed that items 1, 2, 3, 4, 5, 6, 7, 8, and 9 are impact of women education on sustainable waste management in oil producing communities in Bonny Local Government Area, Rivers State. The grand mean of 3.51 further affirmed that majority

of respondents agree with the stated items in table 1. The standard deviation 0.65 revealed how close the responses are to the mean.

Research Question 2: What are the impact of women education on sustainable environmental conservation in oil producing communities in Bonny Local Government Area, Rivers State?

Table 2: Mean Responses on the Impact of Women Education on Sustainable Environmental Conservation in Oil Producing Communities in Bonny Local Government Area, Rivers State

		Women=127		
S/N	**Items**	**Mean**	**S.D.**	**Rmk**
10	Women education could empower women to advocate for sustainable environmental practices, thereby leading to conservation of environmental resources	3.54	0.49	Agree
11	Environmental awareness creation aids comprehension of environmental consequences of oil exploration leading to development of innovative indigenous practices to curb its effect	3.32	0.65	Agree
12	Attainment of formal education among can lead community advocacy and initiatives to enforce oil companies' environmental responsibilities	3.08	0.84	Agree
13	Training in environmental resource management allows women to contribute in the protection of water, soil and biodiversity.	3.21	0.70	Agree
14	Women education equips women with the ability and knowledge to use natural resources responsibly without destroying for the next generation	3.42	0.72	Agree
15	Women education could help maintain an environment that is healthy and comfortable for family sustenance.	3.50	0.41	Agree
16	Educated women can implement sustainable practices in their households, such as waste reduction, water conservation, and waste reuse	3.23	0.76	Agree
17	Educational programs can equip women with leadership skills, enabling them to take active impact in environmental conservation	3.31	0.64	Agree
	Grand Mean & S.D.	**3.33**	**0.65**	

Source: Field Survey, 2024

Table 2 shown above presents the mean responses of impact of women education on sustainable environmental conservation in oil producing communities in Bonny Local Government Area, Rivers State. Based on the criterion mean value of 2.50, it was revealed that item 10-17, were indicated as "agreed". This indicates that majority of the respondents agreed that item 10, 11, 12, 13, 14, 15, 16, and 17 are impact of women education on sustainable environmental conservation in oil producing communities in Bonny Local Government Area, Rivers State

Research Question 3: What are the impact of women education on sustainable agricultural activities in oil producing communities in Bonny Local Government Area, Rivers State?

Table 3: Mean Responses on the Impact of Women Education on Sustainable Agricultural Activities in Oil Producing Communities in Bonny Local Government Area, Rivers State

		Women=127		
S/N	**Items**	**Mean**	**S.D.**	**Rmk**
18	Education equips women with essential skills in sustainable farming techniques, such as organic farming, agroecology, and permaculture, which can enhance productivity while minimizing environmental impact	3.10	0.89	Agree
19	Educated women can better manage natural resources, including water, soil, and biodiversity, leading to more sustainable agricultural practices that mitigate the effects of oil extraction on the environment.	3.36	0.56	Agree
20	Women are more likely to diversify their agricultural practices, incorporating crops that are resilient to climate change and environmental degradation,	3.24	0.67	Agree
21	Education fosters an understanding of the nutritional benefits of diverse crops, promoting food security and better health outcomes for families, especially in areas affected by oil pollution.	3.34	0.65	Agree
22	Educated women often take on leadership impact in their communities, advocating for sustainable agricultural practices and engaging in cooperative farming initiatives	3.42	0.58	Agree
23	Through extension education, women can become trainers and mentors on sustainable agricultural practices in oil producing communities	3.21	0.68	Agree
24	Education can help women understand the importance of integrating conservation practices into agriculture, such as agroforestry,	3.29	0.68	Agree
25	Educated women can implement climate-smart agricultural practices, helping their communities adapt to changing environmental conditions leading long-term food security	3.67	0.40	Agree
	Grand Mean & S.D.	**3.33**	**0.64**	

Source: Field Survey, 2024

The analysis in table 3 above showed the mean responses of the respondents on the impact of women education on sustainable waste management in oil producing communities in Bonny Local Government Area, Rivers State. The table showed that items 18-25 have the mean value of 3.10, 3.36, 3.24, 3.34, 3.42, 3.21, 3.29, 3.40, and 3.67 respectively. The mean values obtained showed that majority of the respondents agreed that items 18, 19, 20, 21, 22, 23, 24, and 25 are impact of women education on sustainable waste management in oil producing communities in Bonny Local Government Area, Rivers State.

Discussion of findings

Findings from research question 1 has presented in table 1 showed the impact of women education on sustainable waste management in oil producing communities in Bonny local government Areas of Rivers State. The findings showed that women education could enhance connection with organizations focused on waste management, providing them women with innovative practices for managing waste in oil producing areas; creating awareness on proper disposal of domestic and industrial waste could help in sustainable management of waste in oil producing communities; educating women about the environmental impact of waste helps them understand the importance of waste reduction and women education can inspire innovative practices of managing domestic and industrial waste in oil producing communities amongst others. This finding is related to Asteria et al. (2020) who highlighted that higher education and financial literacy can significantly enhance women's engagement in waste management practices, particularly in recycling and sorting waste. In line with the findings, Omeje et al., (2020) suggested that women education can significantly enhance awareness and action towards waste reduction since they have daily interaction with waste.

Findings from research question 2 has seen in table 2 revealed the various impact of women education on sustainable environmental conservation in oil producing communities in Bonny Local Government Area, Rivers State. The findings showed that women education could empower women to advocate for sustainable environmental practices, thereby leading to conservation of environmental resources, environmental awareness creation aids comprehension of environmental consequences of oil exploration leading to development of innovative indigenous practices to curb its effect, attainment of formal education among can lead community advocacy and initiatives to enforce oil companies' environmental responsibilities and training in environmental resource management allows women to contribute in the protection of water, soil and biodiversity**.** This finding is consistent with Singh (2014) who posits that enlightening women on the need for maintaining the natural resources of the environment is useful in enhancing the sustainable practices (Singh, 2014). Still supporting this, Dobson et al., (2021) found that women, particularly those who are well-educated, are more likely to contribute to environmental conservation efforts through donations and active participation.

Lastly, the findings from research question 3 on the impact of women education on sustainable agricultural activities showed that **e**ducation equips women with essential skills in sustainable farming techniques, such as organic farming, agroecology, and permaculture, which can

enhance productivity while minimizing environmental impact; educated women can better manage natural resources, including water, soil, and biodiversity, leading to more sustainable agricultural practices that mitigate the effects of oil extraction on the environment; women are more likely to diversify their agricultural practices, incorporating crops that are resilient to climate change and environmental degradation amongst others. The finding corroborates Maligalig et al. (2019), who observed that education and training programs can significantly enhance women's bargaining power within households, which is crucial for making informed decisions regarding agricultural practices and resource allocation. This empowerment is essential for fostering sustainable agricultural practices, as women often manage significant portions of agricultural production, particularly in developing countries (Yu & Osabohien, 2023)

IV. CONCLUSION

Based on the findings of the study, it was concluded that despite the environmental hazards posed by exploration activities, women education is a key means of ensuring environmental sustainability in oil producing areas. The study specifically concluded that women education has significant positive impact to play in ensuring sustainability in waste management, sustainable agricultural activities and sustainable environmental conservation in oil producing areas.

V. RECOMMENDATIONS

Based on the finding, it was recommended that;

1. Nongovernmental organization should focus mainly on training inhabitants of oil producing communities especially women on proven methods of handling domestic and industrial waste. By this training, women would be properly informed on the strategies that could be used to handle waste from oil industries in their vicinity.
2. Government should launch environmental preservation and protection education programme across oil producing communities in the nation. This programme should be targeted at equipping women with environmental sustainability skill. This is when women are equipped with these skills, it will be easier to influence their family with the information
3. Agricultural extension programmes should be carried out in oil producing communities. The programme should be geared towards equipping women farmers with skills to farm sustainably, even in the face of oil pollution.

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