

# **Environmental Cost Disclosure And Financial Performance Of Listed Oil And Gas Companies In Nigeria.**

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## **ABSTRACT**

*This study evaluates the impact of environmental cost disclosure on the financial performance of oil and gas companies. The study used an ex-post facto research design and secondary data from companies' annual audited financial reports and the Department of Petroleum Resources (DPR) from 2008 to 2019. The study included 13 oil and gas companies listed on the Nigerian Stock Exchange and used a panel regression technique to estimate the study parameters. The results showed that waste management costs are positively and significantly related to the ROA of oil and gas companies in Nigeria. In addition, the study found that pollution control costs have a significant and negative impact on ROA. Consequently, the study concluded that environmental costs significantly impacted the financial performance of listed oil and gas companies during that period. Based on these findings, the study recommends that the management of oil and gas companies in Nigeria develops a positive disposition toward waste management cost practice to restore and guarantee an increased return on equity, and stable and smooth operations, which will, in turn, improve return on assets, among others. All cited companies should be made more aware of the importance and need to disclose environmental costs to achieve greater voluntary disclosure.*

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## **I. Introduction:**

Consumers worldwide are becoming increasingly aware of sustainability reporting and conscious of how it impacts their society and environments (Ning et al., 2021). Climate change, ozone depletion, overexploitation of natural resources, air pollution, and dangerous wastes are on the rise, threatening the planet and the stability of the economic system. Industry players should not distort our living environments due to their economic activities. Nahiba (2017) emphasised the need for sustainability of the environment, which, according to him, has resulted in international bodies setting environmental standards. Companies have great responsibility to operate their business socially and responsibly. According to Nguyen et al. (2021), the reason is that their business operations affect society and determine the extent that consumers associate with such business entity. The result of these economic activities of oil companies, according to Edna Ateboh and Raimi (2018) and Edna Ateboh and Raimi (2018) is cumulative environmental difficulties with severe consequences for the livelihood of the local people. While government actions in developed and developing economies have somewhat mitigated many ecological problems, businesses play a critical role in achieving environmentally sustainable development (Braam et al., 2016). The fact that companies are the primary source of environmental issues is a legitimate justification for this obligation. According to Schnurr and Walker (2019), most companies have financial, technological, and institutional influences that could assist their host communities, but their responses seem mostly passive. In Nigeria, the oil and gas sector is one of the industries that has generated a lot of public outrage regarding environmental concerns. Although these companies are significant sources of revenue for the country, their actions are often associated with severe health implications and environmental

degradation, which have caused distressing social disputes and troubled some multinational companies' economic activities (Uwaoma & Ordu, 2016).

There is a high level of pollution and degradation in society due to the business operations of oil and gas companies, which significantly impact the host communities' natural resources. Ifurueze et al. (2013) studied the impact of environmental cost on corporate performance. They concluded that environmentally friendly companies attract more investors and, by extension, build more investors' confidence. Their finding is consistent with FABIAN and EMEKA (2022) and (Herbert et al., 2020). According to Herbert et al. (2020) in their "Sustainability Reporting and Performance of Listed Upstream Oil and Gas Firms in Nigeria," environmental problems arise from the interactions between the environment and economic activities. They argued that there is a direct relationship between these interactions and the environmental impact. The communities' farmland is affected by these companies' business operations. In addition, in these host communities, people who depend on farming for their survival and livelihood can no longer use their natural resources for agriculture because of chemical reactions that have affected the soil and water. Sometimes, this degradation leads to erosion when buildings are built without proper drainage, resulting in floods taking over houses, farmlands, and roads in their day-to-day activities. These environmental problems typically make life difficult for the inhabitants of host communities. To compensate the host communities, the companies provide for corporate social responsibility, which comprises the construction of good roads, piped water, electricity, scholarships to some citizens of the communities, etc., treatment of emissions, donations, waste disposal, and employee training and development. All these provisions are the environmental costs of oil and gas companies. Many host communities in Nigeria have criticised oil and gas companies for not doing enough to alleviate the sufferings occasioned by their oil explorations. This argument is consistent with that of Braam et al. (2016). They posited that many oil companies had been criticised for aiding environmental problems like climate change, waste production, and lagging corporate environmental responsibility. However, the host communities are still grieving over the companies, and they sometimes find it challenging to give them an enabling working environment. The need for environmental disclosures in financial reports grew as users became more mindful of the effects of corporate practices on the environment and realised that organisational effectiveness is based on more than just profitability. Accordingly, Yusuf et al. (2016) state that companies face pressure to demonstrate environmental responsibility. In response to these pressures, companies have disclosed the environmental impact of their activities. Community demands are increasing, and companies must provide more information on environmental issues. The company's attempts to protect the host community are expected to be published in annual reports, allowing the public to observe the company's efforts to protect the environment.

Environmental management systems (EMS) have emerged as a means of systematically applying business management to environmental costs to enhance a firm's long-term financial performance and develop processes and procedures that can concurrently improve competitiveness and environmental performance. The commitment of organisations to environmental issues affecting the community is vital for enhanced financial performance. Raza et al. (2020) have argued that host communities want to be more involved in companies operating in their territory. According to them, such involvement guarantees support, patronage, and mutual understanding between the company and the community. The expectations of managers by stakeholders are increasing; organisations are expected to change their operations with the change in the environment to influence financial performance positively. Financial performance matches operations undertaken against resources in each period. If the consequent impact is positive, the entity is making good financial performance; otherwise, it is negative. A company's performance results from its overall strategy, innovation, quality, market position, and long-term perspective. Hence, organisations constantly seek new and improved products, processes, and structures to reduce production costs, satisfy customer demands, and generate greater profits. Improvements in finance have had positive direct effects on the economy. Performance measures how a firm utilises its resources to generate profits. According to (Gatimbu & Wabwire 2016), it can be determined using profitability and liquidity measures. Broadly, financial performance refers to the degree to which financial objectives are met. It measures the result of a firm's policies and operations in economic terms (Yahaya et al., 2015)). Financial performance usually measures the effectiveness or efficiency of a company's operation. It measures the profitability of companies using return on equity, assets, investment, and market value, using earnings per share. Many benefits are derived from information concerning an entity's financial performance. It helps users understand the returns generated from its economic resources, indicating how management has efficiently and effectively used them. It also shows the entity's capacity to generate cash flow from its operations instead of raising additional resources from investors and creditors. Financial performance refers to how well a company is doing or has met its set objectives. Every financial manager's fundamental duty is to maximise the stakeholder's wealth and increase the firm's value, which is possible and achievable when the firm's financial performance is improved. Environmental accounting is a broad term for using natural resources at national and enterprise levels. It reports the adverse effects of societal and organisational activities on the natural physical space, including land, water, air, fauna, flora, and all non-renewable natural resources.

Environmental accounting can be expressed in a global, national, and corporate context. In contrast to global and national environmental accounting, corporate environmental accounting is further subdivided into environmental management accounting and environmental reporting and disclosure (Christensen, 1998). Most business activities have environmental impacts with attendant costs, like waste generation. Environmental management accounting uses standard accounting methods to identify, analyse, manage, and reduce these costs to benefit the business and the environment. Environmental management accounting can also identify other issues such as non-compliance, negative public relations, and health and safety problems. The management accounting process also enables the company to identify activities that have the most significant environmental impacts and costs. It also enables managers to set goals and priorities for managing these activities and reducing their impact. Environmental management accounting enables accountants to develop their services beyond traditional core activities. The two accounting skills mainly applicable to management accounting are costing and investment appraisal of projects. The environmental costs of products and services must be understood and allocated to manage them and set prices appropriately. Accountants must ensure that all relevant environmental costs are considered in the project proposals. Environmental Financial Accounting aims at the external reporting of environmental and financial benefits in the corporate environment or published annual reports. The EFA is partly governed by accounting standards issued by different professional bodies. For instance, traditional corporate financial statements usually include environmental remediation and liability issues linked to a company's activities.

Environmental financial accounting deals with accounting for and reporting on environmental transactions and events that affect or are likely to affect an enterprise's financial position and performance. Laws and regulations promoting a cleaner environment have led corporations to take actions related to the environment, which are costly and result in substantial financial consequences for companies. However, companies have not been sufficiently pressed to report this information to various stakeholders, meaning that many interested groups are not obtaining information relevant to their decision-making needs. Invariably, environmental issues can dramatically impact a company's financial position and its chances of long-term success. Today, this new variable should be considered in financial accounting and reporting, as well as in modern economic analysis, because it substantially influences the risk and opportunities of companies and, in extreme situations, business continuity. Examples of environmentally induced financial impacts on companies include environmental charges, fees, fines, sanctions, site abandonment costs, the lower value of polluting production devices, and environmental liabilities (Moisescu & Mihai, 2006). Studies on environmental and social cost disclosure have employed different variables and reached different and sometimes conflicting conclusions. Though many studies have been done on environmental costs, Menassa (2010) believes that developing countries have not yet given the subject the attention it deserves; hence this study focuses on oil and gas companies operating in Nigeria.

Hypotheses were formulated to guide the study.

H<sub>01</sub>. There is no relationship between waste management costs and the return on assets of oil and gas companies in Nigeria.

H<sub>02</sub>. There is no relationship between pollution control costs and the return on assets of oil and gas companies in Nigeria.

## **II. Review of Empirical Literature:**

The meaning of environmental costs, Al-Dhaimesh (2019), Rakos and Antohe (2014), its dimensions (Agbiogwu et al., 2016; Ofogbe et al., 2021); (Ezeagba et al., 2017), and impact, Al-Waeli et al. (2020), Miladiazari et al. (2021), are well documented in the literature.

Zamil and Hassan (2019) evaluated the impact of environmental reporting on the financial performance of Fortune 500 firms from 2013 to 2017. The collected data were analysed using descriptive statistics, correlations, and regression analyses. The study concluded that multinational organisations should be involved in many environmental or sustainability activities, as these events improve and increase the customer base, eventually growing profits. (Ezejiofor & Emeneka, 2022) assessed the effect of sustainability accounting measures on the performance of corporate organisations in Nigeria, using the ex-post facto research design. Data for the study, which were analysed using regression analysis, were collected from annual reports and accounts of companies in Nigeria. The dependent variable is environmental cost, and the predictor variable is profit. The study found that environmental costs do not positively impact the revenue of corporate organisations in Nigeria and that environmental costs positively impact the profit generation of corporate organisations in Nigeria.

Ogoun and Ekpulu (2020) investigated the effect of environmental reporting and disclosure by listed firms operating within the manufacturing sector in Nigeria on their operational performance. This study employed panel research design to ascertain how environmental reporting enhances firms' operational performance in Nigeria. The study also employed the Hausman test to select the appropriate (fixed-effect model) model and found a positive relationship between environmental disclosure and operational performance.

Onyebuenyi and Ofoegbu (2022) embarked on a research project on the environmental reporting and financial performance of oil and gas companies in sub-Saharan Africa. The empirical result shows that environmental reporting significantly influences financial performance. Bassey et al. (2013) critically analysed the extent of implementation of environmental cost management and its impact on the output of oil and gas companies in Nigeria from 2001 to 2010. This study used multiple regression analysis as an analytical technique. It revealed a significant relationship between the parameters influencing environmental cost management and the output of oil and gas produced in Nigeria. Wibowo (2012) examined the impact of corporate social responsibility disclosure and profitability using a sample of 25 firms from the SRI-KEHATI Index covering 2005 to 2010. The findings show that social performance has a positive impact on firm profitability and that company profitability has a positive effect on the social performance of firms.

Hassel et al. (2005) investigated the effect of environmental information on the market value of listed companies in Sweden using a residual income valuation model. The results revealed that environmental responsibility, as disclosed by the sampled companies, has value relevance because it is expected to affect the future earnings of listed companies. Kurawa and Shuaibu (2022) empirically assessed the impact of environmental disclosure on the performance of listed cement and brewery companies in Nigeria. The result indicates that quantitative environmental disclosure (EDQN) positively affects ROA and EPS. On the other hand, qualitative environmental disclosure (EDQL) positively affects ROA and EPS. Ihenyen and Ikegima (2022) studied the effect of environmental management accounting on the corporate performance of quoted Nigerian consumer goods firms. The research design was ex post facto and used time series data. The study tested hypotheses using regression analysis with the aid of SPSS. It concluded, among other things, that regular and continuous environmental evaluations will improve organisations' sales and income while ensuring that environmental requirements and needs are met. Nyirenda et al. (2013) examined the impact of environmental management practices on the financial performance of a South African mining firm using multiple regressions. The results revealed no significant relationship between these variables. Amacha and Dastane (2017) examined the relationship between sustainability practices and firm performance in the Malaysian oil and gas sector. The result shows that most oil and gas companies in Malaysia performed poorly regarding sustainability disclosure. Obara et al. (2017) examined the effect of accounting for waste management expenditures on the profitability of oil and gas companies in Nigeria. The study relied on three companies in Nigeria and employed regression analysis to test the formulated hypotheses. The study's results showed that waste management has a significant and positive impact on the ROA, ROE, and operating profit of oil and gas companies in Nigeria and recommended that companies be socially responsible to their host communities. At the same time, the government, on its part, should ensure compliance with relevant laws regulating waste management and environmental pollution in Nigeria.

Emmanuel and Ifeanyi-chukwu (2021), in their study on Environmental accounting disclosures and financial performance, investigated the relationship between environmental accounting disclosures and the financial performance of food and beverage companies in Nigeria. The secondary data were analysed using Pearson's correlation statistical technique and multiple regression with the aid of SPSS. The findings revealed a significant relationship between environmental accounting disclosures and the return on equity of selected companies. It also showed a negative relationship between environmental accounting disclosures, the return on capital employed, and the selected companies' net profit margin. Falope et al. (2019) conducted a study to ascertain the degree to which pollution control costs affect the return on assets of a given firm. The study adopted an ex-post facto research design and tested the hypotheses using linear regression analysis. The result revealed that environmental pollution prevention costs, environmental protection costs, and environmental recycling disclosure affect firms' return on assets. Nwaiwu and Oluka (2018) empirically examined the effects of environmental cost disclosure and financial performance measures of oil and gas companies in Nigeria. Their study used time series data from the Central Bank and analysed the data using Pearson product-moment coefficient of correlation and multiple linear regression analysis. The econometric results revealed that environmental cost disclosures significantly affect financial performance. Nkwoji (2021), Malarvizhi, and Ranjanni (2016) examined whether there is any significant relationship between corporate environmental disclosure (CED) and the firm performance of selected companies listed on the Bombay Stock Exchange (BSE), India. They use a content analysis methodology by developing an environmental disclosure index (EDI) and formulating hypotheses to test the association between firm performance and the level of environmental disclosure. The primary data were collected using a questionnaire. The results showed no relationship between environmental disclosure and firm performance. Joseph et al. (2017) examined the corporate environmental reporting and financial performance of listed manufacturing firms in Nigeria. They found that both erosion control reporting and air pollution reporting significantly affected firms' financial performance. Aifuwa (2020) studied the effects of sustainability accounting and reporting on the financial performance of firms in Nigeria's brewery sector. The findings revealed that sustainability reporting has a positive and significant effect on the financial performance of the firms studied and recommended that companies in Nigeria invest more in sustainability activities. Gatimbu and Wabwire (2016) assessed the effect of corporate environmental disclosure

on the financial performance of listed firms in the Security Exchange in Nairobi. This study used secondary longitudinal data and revealed that environmental disclosure positively affects financial performance.

Oraka and Egbunike (2016) determined the effect of the environmental disclosure theme on the total asset turnover, cash flow ratio, current ratio, return on equity, and return on assets of Nigerian consumer goods manufacturing companies. The study discovered a significant difference in the environmental disclosure themes of consumer goods manufacturing firms. Magara et al. (2015), in a study “effect of environmental accounting on company financial performance in Kenya,” examined the impact of environmental accounting on the financial performance of 16 firms in Kenya. The findings revealed that environmental accounting is significantly positively related to financial performance. Angelia and Suryaningsih (2015) examined the effect of environmental performance on financial performance using 17 companies listed on the Indonesian stock exchange. The results showed that environmental performance significantly affected ROA and ROE. Rakiv et al. (2016) examined the relationship between company profitability and the extent of environmental accounting reporting disclosures in annual reports. The research found a significant positive relationship between company profitability and the environmental accounting reporting index. Agbiogwu et al. (2016) examined the impact of environmental and social costs on the performance of Nigerian manufacturing companies. The study revealed that environmental and social costs significantly impact the net profit margin, earnings per share, and return on capital employed. Nor et al. (2016) investigated the existence of environmental disclosure and financial performance among the top 100 companies by market capitalisation in Malaysia in 2011. The analysis revealed mixed results between environmental disclosure practices in Malaysia and financial performance. Okoye and Asika (2013) appraised the impact of sustainability environmental accounting on corporate performance. The data were analysed and tested using the Pearson Product Moment Correlation Co-efficient. The study discovered that sustainable environmental accounting significantly impacts corporate productivity to enhance corporate growth. It also established a relationship between sustainable environmental accounting and the economic performance of a corporate organisation. Therefore, it recommends that sustainable environmental cost accounting, committed to improving organisational performance and effectively contributing to firms’ development, be enforced persistently. This result collaborates with the conclusion of a similar study by Adediran and Alade (2013). They studied “The Impact of Environmental Accounting on Corporate Performance in Nigeria”. The study concluded that environmental accounting has a significant on corporate performance.

**Model specifications and Data Analysis:**

This study used return on assets (ROA) as a proxy for the dependent variable (financial performance). It also used waste management and pollution control costs as proxies for the independent variable. The unit root test for stationarity was performed using the Augmented Dickey-Fuller (ADF) unit root test, which is usually employed in the analysis of random variables to determine the order of integration of a series. The test assumed that the series  $Y_t$  is a random walk

$$Y_t = b_1 y_{t-1} + \varepsilon_t$$

$$Y_t - Y_{t-1} = b_1 Y_{t-1} - Y_{t-1} + \varepsilon_t, \quad \Delta Y_t = \rho Y_{t-1} + \varepsilon_t,$$

Where  $b_1 Y_{t-1} - Y_{t-1} = (b_1 - 1) Y_{t-1}$  let  $(b_1 - 1) = \rho$ , we have  $\rho Y_{t-1}$  and  $Y_t - Y_{t-1} = \Delta Y_t$

**The null hypothesis is tested as thus**

For a pure random walk, we have 
$$\Delta Y_t = \rho Y_{t-1} + \sum_{i=1}^{\rho} \sigma_i \Delta Y_{t-1} + \varepsilon_t$$

**H0**  $\rho = 0$ , therefore,  $r = 1$  against the alternative that  $H0_1 \rho < 0$  and  $r < 1$ .

The general regression model is mathematically expressed thus.

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \varepsilon_{it}$$

Where Y denotes the dependent variable

$\beta_1$ , is the partial regression coefficients for the population

The independent variable is denoted by  $X_{it}$ ,  $\beta_0$  is the intercept, and  $\varepsilon_{it}$  represents the stochastic error term.

**III.The Result:**

**Panel Data Model Estimation of the relationship between waste management cost and return on assets of Oil Gas companies in Nigeria.**

	Pooled OLS		Fixed Effect Model		Random Effect Model		Model Selection		Remark
	Co-eff	Prob	Co-eff	Prob	Co-eff	Prob	Chow	Hausman	
<b>C</b>	-0.104	0.714	-0.120	0.703	-0.104	0.736	(0.9963,0.9924) > 0.005	0.8109> 0.005	
<b>INWMC</b>	1.59E-08	0.000	1.62E-08	0.001	1.59E-08	0.001			
<b>R<sup>2</sup></b>	0.206		0.244		0.206				<b>Pooled OLS</b>
<b>AdjR<sup>2</sup></b>	0.192		0.042		0.192				
<b>F-stat</b>	14.511		1.211		14.511				
<b>Prob (F-stat)</b>	0.000		0.306		0.000				
<b>AIC</b>	2.940		3.270						
<b>SIC</b>	3.011		3.732						
<b>D-Wats stat</b>	0.764		0.710		0.764				

\*\* denotes significance at the 5% level, and \*\*\* denotes significance at the 1% level.

Since the overall model (probability > F = 0.000) is less than 0.05, we reject the null hypothesis and accept the alternative, thus concluding that there is a significant relationship between waste management cost and return on assets of oil and gas companies in Nigeria. The coefficient of determination shows that a 20.60% variation in the independent variable (waste management cost) significantly affects the dependent variable (return on asset). In addition, using the panel data model, because all the regression model parameters are significant, there is a pooled effect relationship between waste management cost and return on asset significantly different from zero. This result is consistent with (Obara et al. 2017) findings on the effect of accounting for waste management expenditures on the profitability of oil and gas companies in Nigeria. Again, it collaborates with the conclusion reached by Alhassan (2019) in their study of the impact of environmental and social disclosure on the financial performance of oil and gas companies in Nigeria,

**Panel Data Model Estimation of the relationship between pollution control cost and return on asset of Oil Gas companies in Nigeria.**

	Pooled OLS		Fixed Effect Model		Random Effect Model		Model Selection		Remark
	Co-eff	Prob	Co-eff	Prob	Co-eff	Prob	Chow	Hausman	
<b>INROA</b>							(0.998, 0.995) > 0.005	0.8134 > 0.05	
	1.474	0.000	1.496	0.0000	1.474	0.000			
<b>INPCC</b>	-2.20E-07	0.011	-2.27E-07	0.0240	-2.20E-07	0.020			
<b>R<sup>2</sup></b>	0.109		0.148		0.110				<b>Random OLS</b>
<b>AdjR<sup>2</sup></b>	0.093		-0.080		0.093				
<b>F-stat</b>	6.845		0.650		6.845				
<b>Prob (F-stat)</b>	0.011		0.788		0.011				
<b>AIC</b>	3.055		3.390						
<b>SIC</b>	3.126		3.852						
<b>D-Wats stat</b>	1.005		0.962		1.005				

\*\* denotes significance at the 5% level, and \*\*\* denotes significance at 1%.

Given the overall model (Prob. > F = 0.011) is less than 0.05, the null hypothesis is rejected, and the alternate accepted, concluding that there is a significant relationship between pollution control cost and return on assets of oil and gas companies in Nigeria. The result implies a negative and significant relationship between pollution control costs and the ROA of oil and gas companies in Nigeria. The coefficient of determination shows that an 11% variation in the independent variable (pollution control cost) significantly affects the dependent variable (return on asset). The results corroborate Ezeagba et al.'s (2017) findings on the relationship between environmental accounting disclosures and the financial performance of food and beverage companies in Nigeria. However, the result is not in tandem with Murphy (2002), who found a positive relationship between pollution control cost and ROA.

**Panel unit root tests results** using theLm, Pesaran, Shin, Levin, Lin, and Chu test.

	Im, Pesaran, and Shin				Levin, Lin & Chu				
	Level	First Diff	Order integration	Remark	Level	First Differ	Second Differ	Order Integration	Remark
INROA	0.207***	3.744***	1(1)	Stationary	-4.679***			1(1)	Stationary
INPCC	-4.661***	-	1(0)	Stationary	-3.767***	-	-	1(0)	Stationary

**Source** Extract from Researcher's Computation Using Eviews version 10  
denotes no difference \*\*\* denotes significance at 1% level, \*\* denotes significance at 5% level, and \* denotes significance at 10% level.

#### IV. Recommendations:

Having analysed the effect of environmental costs on the financial performance of listed oil and gas companies in Nigeria, we recommend the followings:

The management of oil and gas companies in Nigeria should develop a positive disposition towards waste management practices to restore and guarantee stable and smooth operations, which will improve return on assets.

The management of oil and gas companies in Nigeria should integrate waste management costs into their practice, especially for customers and investors, to guarantee an increase in the return on equity of oil and gas companies in Nigeria.

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