

ENVIRONMENTAL COST AND FIRM VALUE

Environmental Costs and Firm Value of Listed Firms in Nigeria: Evidence from Net Asset Per Share

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Abstract

This paper discusses the existence of environmental costs in defining value of firms listed in Nigeria applying Net Asset Per Share (NAPS) as the fundamental valuation measure. The research is inspired by ongoing discussion in the environmental accounting academic literature: one school of thought argues that environmental commitments incur costs that undermine competitiveness, another that environmental commitments lead to improved reputation, stakeholder support, and long-run value, and a third finds ambivalent or nonlinear outcomes. The study based on a purposive sample of 25 listed firms observed during 2012-2018 operationalizes environmental costs such as Research and Development Cost (RDC), Community Development Cost (CDC) and Employee Health and Safety Cost (EHSC). The article results in the statistically significant joint effect of the environmental costs on the NAPS, which is obtained with the help of the panel-data procedures, reported in the dissertation, which are descriptive statistics, correlation analysis, unit-root and cointegration diagnostics, Granger-causality tests, the Hausman test, and the random-effects estimation. More particularly, CDC is positively and significantly related to NAPS and EHSC is positively related, though not significantly. The diagnostic evidence also indicates that NAPS and the environmental-cost series commove, on long-run basis and Granger-causality results show that CDC is the sole environmental-cost proxy that predicts NAPS. The paper maintains that the Nigerian marketplace seems to more readily reward observable community involvement than internally focused spending and nonetheless appreciates environmental costs as a source of value. The results add value to the body of literature by offering multi-sector evidence in Nigeria and by dividing environmental cost into three tangible items as opposed to taking one aggregate measure.

Keywords: environmental costs; firm value; net asset per share; community development cost; research and development cost; Nigeria; panel data

1 Introduction

Environmental expenditure and corporate value are a relationship that has not been finalized in accounting and finance studies. One of the schools of thought regards environmental commitments as an extra compliance cost that can undermine profitability, cash flow and market valuation (Walley and Whitehead, 1994; Palmer, Oates and Portney, 1995). The second tradition posits that environmental responsibility may provide innovation, efficiency and legitimacy and reputational gains that enhance market performance over the long term (Porter and Van der Linde, 1995; Konar and Cohen, 2001). A third literature finds mixed or nonlinear effects and implies that environmental costs could lower performance in the short-term, and reinforce performance in the long-term, or only under specific institutional circumstances (Cordeiro and Sarkis, 1997; Wagner, 2001).

Such discussions are particularly significant in the case of emerging economies where companies tend to be less regulated by enforcement rules, less coordinated stakeholder pressure, and less

consistent in disclosure. In Nigeria, the expectations of the investors, regulators, host communities, employees, and the civil society are on the rise among listed firms. In this regard, the environmental expenditure is not simply a compliance challenge; it is associated with the community relations, social license to conduct business, employee welfare, and the quality of the financial reporting (Deegan, 2002; Bassey, Effiong, and Eton, 2013; Omodero and Ihendinihu, 2016).

The paper upon which this article is based conducted research on the environmental costs on both the firm value and financial performance scales. The original work took three proxies of environmental cost which are Research and Development Cost (RDC), Community Development Cost (CDC) and Employee Health and Safety Cost (EHSC) and six dependent variables. This article derives and intensifies the best firm-value finding, which is the Net Asset Per Share (NAPS). NAPS is particularly applicable since it reflects the accounting value per share that is available and thus acts as an interface between corporate reporting performance and investor disclosure (Helfert, 1991; Pratt et al., 2000).

There are three reasons as to why this must be given attention. To begin with, some articles in the Nigerian literature are based on single-sector evidence, which restricts external validity (Ifurueze et al., 2013; Okafor, 2018; Oyedokun et al., 2019). Second, a lot of research considers environmental cost as a one-dimensional aggregate, which hides the fact that firm value reacts more to external community spending, internally oriented staff welfare, or internally oriented innovation spending (Makori and Jagongo, 2013; Pandey and Kumar, 2016). Third, in the overarching paper, only NAPS has a statistically significant environmental-cost model making it the most appropriate dependent variable to develop an article.

It is on this backdrop that the article poses a narrow question: does RDC, CDC and EHSC have any impact on NAPS among listed firms in Nigeria? The study is valuable in repackaging the paper into a leaner firm-value paper, foresight on a multi-sector Nigerian sample, and demonstrating that varying kinds of environment spending have different valuation signatures. The following paragraphs review the theoretical and empirical background, outline the method and findings and discuss why community-related environmental spending seems to be more rewarded than research-oriented spending in the evidence presented in the article about Nigeria.

2 Literature review and theoretical framework

3 Environmental cost and firm value

Environmental cost is generally referred to as the aggregate of costs related to the prevention, control, remediation, or internalization of the environmental impact of business operation (USEPA, 1995; Pramanik, 2002). The dissertation operationalizes this concept based on three proxies that reappear in previous literature: RDC, CDC, and EHSC. This decision can be justified by the fact that these items are more regularly reported on in corporate reports than the broader measure of the extent of ecological harm, and they are represented on the visible stakeholder agendas of innovation, host-community welfare, and worker safety (Oti et al., 2012; Ifurueze et al., 2013; Beld, 2014).

CDC takes a snapshot of expenditure on roads, schools, medical institutions, scholarships, and other similar community-supportive activities. Where companies are highly dependent on local acceptance, CDC may serve as investment in stability, legitimacy and reputational capital. In the dissertation, RDC is considered an environmental-cost proxy since innovation can minimize waste and enhance process

efficiency, a product redesign, and eco-efficiency. EHSC captures training, welfare, medical, and safety expenditure on the employees of the firm, who are also key stakeholders in the environmental performance of the firm.

NAPS, EPS and PER represent firm value in the dissertation. This paper will focus on NAPS since it captures the accounting value of every ordinary share and thus not as vulnerable compared to market multiples to sensitive sentiment, thin trading or noisy. In spite of the fact that EPS and PER will always be useful, the dissertation states that both environmental-cost models were not significant, but the NAPS model was. This trend implies that environmental expenditures can be identified better using accounting-based value than using short term earnings or price multiples.

4 Theoretical foundations

The first significant basis of the study is the stakeholder theory. [Freeman \(1984, 1995\)](#) suggests that companies generate value in the form of a web of relationships that encompasses shareholders, employees, communities, regulators, suppliers and customers. [Gray et al. \(1996\)](#) also note the importance of disclosure as a way of controlling such relationships. Based on this reasoning, environmental spending is not marginal to the corporate value, but rather it is a strategic response to stakeholder demands. CDC can minimize the conflict and enhance host-community reception, whereas EHSC can enhance employee commitment and internal legitimacy.

A second explanation is found in the legitimacy theory. [Dowling and Pfeffer \(1975\)](#) and [Deegan \(2002\)](#) argue that organizations need to perform within the norms and expectations of the society where they are operating in case they want to continue to be supported and sustained. Companies whose environmental actions are at odds with social norms threaten a disconnect between legitimacy. The legitimacy issues in Nigeria where environmental controversy has the potential to interrupt business and influence the social license to operate are economically relevant and not symbolic. The paper thus considers community development and environmental reporting as means by which listed companies maintain congruence with social expectations.

The third anchor is the triple bottom line view of [Elkington \(1994\)](#). That view is a broadening of performance evaluation beyond profit to social and environmental performance. In the current article, the triple bottom line is applicable since it clarifies the reason why environmental expenditure could continue to add value despite increasing the short-run costs. A company investing in community building, better working conditions, and more environmentally friendly innovation could enhance the long-run quality of assets and durability despite the dampening effect on earnings in the short term.

5 Empirical review and hypothesis development

Various results can be found in the empirical literature that was reviewed in the paper. [Oti et al. \(2012\)](#) discover that environmental responsibilities relate to the higher returns on investment of the chosen manufacturing firms in Nigeria. According to [Ifurueze et al. \(2013\)](#), EHSC is positively related to the improvement in the return on total assets in oil companies in Nigeria, whereas community and waste-management spending has a negative correlation with the same. [Bassey et al. \(2013\)](#) discovered that environmental accounting relates to profitability in the oil and gas industry, but the design fails to determine the direction and the importance of the relationship. [Makori and Jagongo \(2013\)](#) show both positive and negative results of listed companies in India, with a negative correlation existing between environmental accounting and EPS. As demonstrated by [Beld \(2014\)](#),

the R&D expenditure positively correlates with ROA, but not with indicators of a market. Omodero and Ihendinihu (2016) conclude that personnel benefit cost increases profit after tax in Nigeria whereas environmental maintenance cost does not. Jones, Ihendinihu, and Azubike (2017) discovered that the costs of social responsibility have a substantial impact on the net asset book value, and Omaliko, Nweze, and Nwadiolor (2020) conclude that social and environmental disclosures have considerable impact on the performance of non-financial firms in Nigeria.

There are two possibilities therefore proposed by literature. Environmental spending can add value to a firm by increasing legitimacy, developing a trusting stakeholder base and fostering innovation; however, there are also types of spending that are similar to short-run cost centers, whose benefits are realized only in the long term. Due to the mixed results in NAPS, EPS, and PER in the dissertation, the most justifiable level of article hypothesis is the purposeful one: net asset per share of listed firms in Nigeria is substantially influenced by environmental costs.

6 Methodology

The article is based on the panel-data design. The total number of companies that were listed on the Nigerian Stock Exchange was 144 of which the researchers adopted a sample of 25 companies whose data were needed in 2012-2018 using purposive sampling technique. This is because 2012 marks the introduction of International Reporting Standards in Nigeria, hence there is need for Firm's comparison in the global market. However, sample was a representation of six sectors covered by this paper and they are from firms in conglomerates, construction, consumer goods, healthcare, industrial goods and oil and gas sectors in Nigeria.

Published annual reports and accounts and the Fact Book of the Nigerian Stock Exchange were used in the collection of secondary data. NAPS was calculated as the net assets divided by the outstanding stock. RDC, CDC, and EHSC were the most important independent variables. Due to the difference in the magnitudes in which the variables were measured, the dissertation logarithmically scaled the environmental-cost variables to minimize heteroskedasticity and enhance comparability.

The econometric specification reported in the paper is:

$$\text{NAPS}_{it} = \beta_0 + \beta_1 \log \text{RDC}_{it} + \beta_2 \log \text{CDC}_{it} + \beta_3 \log \text{EHSC}_{it} + e_{it} \quad (1)$$

The paper initially analyzed the series using descriptive statistics and correlation analysis. It then used panel unit-root tests, Johansen cointegration tests and pairwise Granger-causality tests prior to estimating panel models. The Hausman test was used to decide between fixed and random effects that would be best used in the NAPS equation. The random-effects model was chosen in the dissertation since the Hausman chi-square statistic was not significant.

No new data or new estimation is presented in this article other than those that are presented in the dissertation. Rather, it reformats the reported approach and results in a journal style narrative around the best firm-value outcome. Such a method maintains integrity to the original evidence and enhances consistency, readability and journal publication appropriateness.

Table 1. Distribution of the purposive sample across sectors.

Sector	Number of firms	Illustrative firms named in the dissertation
Conglomerate	4	Unilever Nigeria Plc; Chellarams Nigeria Plc; AG Leventis Nigeria Plc; PZ Cussons Nigeria Plc
Construction	1	Julius Berger Nigeria Plc
Consumer goods	7	Cadbury Nigeria Plc; Nestlé Nigeria Plc; Flour Mills Nigeria Plc; Honeywell Flour; Guinness Nigeria Plc; Vitafoam Nigeria Plc; Nigerian Breweries
Healthcare	4	May & Baker Nigeria Plc; Fidson Health Plc; Glaxo Nigeria Plc; Neimeth International Pharmaceuticals Plc
Industrial goods	5	Cutix Nigeria Plc; Dangote Sugar Nigeria Plc; Lafarge Africa Plc; CAP Plc; Dangote Cement Plc
Oil and gas	4	Conoil Nigeria Plc; Total Nigeria Plc; Forte Oil Plc; Mobil Oil Plc

Note: Source: Compiled from the dissertation sample table (2012–2018 panel, 25 firms).

Table 2. Core variables and measurement.

Variable	Type	Operational definition used in the dissertation	Expected sign
NAPS	Dependent	Net assets divided by number of shares outstanding	+
logRDC	Independent	Log of research and development costs, defined as cost of research/studies and product improvement	+
logCDC	Independent	Log of community development costs, including roads, schools, healthcare facilities, scholarships, and related local projects	+
logEHSC	Independent	Log of employee health and safety costs, including staff training, welfare, and medicals	+

Note: Source: Reorganized from the dissertation's operational-measurement tables.

Table 3. Selected empirical studies synthesized from the dissertation review.

Study	Context and design	Main finding relevant to firm value/performance
Oti et al. (2012)	Selected Nigerian manufacturing firms; OLS	Environmental responsibilities are associated with improved ROI.
Ifurueze et al. (2013)	Oil companies in the Niger Delta; multiple regression	EHSC improves return on total assets, while CDC and waste-management cost are negative.
Makori & Jagongo (2013)	Listed firms in India; multiple regression	Environmental accounting shows mixed effects, including a negative relationship with EPS.
Beld (2014)	Listed firms in the Netherlands; multivariate regression	R&D investment improves ROA, though market effects are weaker.
Omodero & Ihendinihu (2016)	Quoted firms in Nigeria; time-series regression	Personnel benefit cost improves PAT, while environmental maintenance cost is negative.
Jones et al. (2017)	Quoted Nigerian firms; panel regression	Social responsibility costs significantly affect net asset book value.
Pandey & Kumar (2016)	Selected listed firms in India; regression	Environmental expenditure shows no clear significant relationship with financial performance.

Study	Context and design	Main finding relevant to firm value/performance
Omaliko et al. (2020)	112 Nigerian non-financial firms; panel regression	Social and environmental disclosures significantly influence firm performance.

Note: Source: Author's synthesis from the dissertation's empirical-review chapter.

7 Results

The distribution of the 25 firms that were used in the analysis in terms of the sector is shown in Table 1. The consumer goods companies were the most numerous, and then the industrial goods and four-firm groupings in conglomerates, healthcare and oil and gas. The design can capture the cross-sectional and temporal change in environmental expenditure because the panel covers seven years.

Table 4 descriptive statistics indicate that NAPS and the environmental-cost variables have significant dispersion. NAPS ranges from 47.00 to 37,857.00, while logCDC ranges from 0.390 to 5.972. All the four series do not pass normality tests, which is no surprise in accounting panels that include firms of extremely different size, industry, and reporting patterns. Correlation matrix, however, indicates a weak positive bivariate relationship between NAPS and all three environmental-cost proxies.

The results of the diagnostic support the position of the panel estimation. The paper states that logRDC, logCDC, and logEHSC are level, and NAPS of order one. Johansen tests show that NAPS and the environmental-cost series are commovement in the long run in four cointegrating equations. Granger-causality results indicate that CDC Granger-causes NAPS, but not RDC and EHSC. The fact that this result is significant is that it implies that the community-development aspect has predictive value to the accounting-based firm value.

The Hausman test justifies random effects to be used on the equation of NAPS. In the random-effects regression, CDC is positive and statistically significant ($\beta = 376.2590$, $p = 0.0301$), RDC is negative and statistically significant ($\beta = -548.7887$, $p = 0.0036$), and EHSC is positive but insignificant ($\beta = 110.6586$, $p = 0.6838$). The model F-statistic is significant ($p = 0.002455$), but the explanatory power is small ($R^2 = 0.0803$). The low R^2 implies that the significant portion of the firm's value is still predetermined by the factors that are not included in the model, i.e. leverage, sector structure, macroeconomic shocks, and overall quality of firms, yet the environmental-cost block of NAPS is still jointly applicable.

The suggested paper interpretation is that the value-relevant environmental costs to NAPS are the ones that convey the same signal, but not every environmental cost will do so. The accounting-based firm value, the research-oriented spending, and the expenditure on employee health and safety, seem to be supported by community development, discounted in the short run, and statistically non-distinct relative to NAPS in this specific model.

Table 4. Descriptive statistics for NAPS and environmental-cost variables.

Statistic	NAPS	logRDC	logCDC	logEHSC
Mean	4058.971	3.9740	3.8686	4.0887
Median	1290.000	3.9744	3.8089	4.1222
Maximum	37857.00	5.6240	5.9723	5.0625
Minimum	47.00	0.6021	0.3905	3.0026
Std. dev.	7467.984	0.6854	0.6557	0.5459

Statistic	NAPS	logRDC	logCDC	logEHSC
Jarque-Bera	739.2694	55.2571	105.9752	8.6499
Probability	0.0000	0.0000	0.0000	0.0132
Observations	175	175	175	175

Note: Source: Reported in the dissertation from E-Views 9.0 computations.

Table 5. Correlation matrix for the NAPS model.

Variable	NAPS	logRDC	logCDC	logEHSC
NAPS	1.0000	0.1549	0.0306	0.1838
logRDC	0.1549	1.0000	0.2983	0.3782
logCDC	0.0306	0.2983	1.0000	0.4226
logEHSC	0.1838	0.3782	0.4226	1.0000

Note: Source: Reported in the dissertation from E-Views 9.0 computations.

Table 6. Diagnostic summary for the NAPS model.

Diagnostic	Reported outcome	Interpretive implication
Panel unit-root tests	logRDC, logCDC, and logEHSC are stationary at level; NAPS is integrated of order one	The explanatory variables are stable enough for panel modeling, while NAPS requires differencing before stationarity is achieved.
Johansen cointegration test	Trace and max-eigen tests indicate four cointegrating equations at the 5% level	NAPS and the environmental-cost series move together in the long run.
Granger causality	CDC Granger-causes NAPS; RDC and EHSC do not	Community development spending has predictive content for accounting-based firm value.
Hausman test	Chi-square = 2.8534, p = 0.4148	Random effects are preferred to fixed effects for the NAPS equation.

Note: Source: Condensed from the dissertation's reported diagnostic results.

Table 7. Random-effects regression results for environmental costs and NAPS.

Variable	Coefficient	Std. error	t-statistic	p-value
Constant	4331.834	2041.713	2.1217	0.0353
logRDC	-548.7887	185.9300	-2.9516	0.0036
logCDC	376.2590	172.0650	2.1867	0.0301
logEHSC	110.6586	271.2073	0.4080	0.6838
Model statistics	$R^2 = 0.0803$	Adj. $R^2 = 0.0642$	F = 4.9780	Prob(F) = 0.002455
Other diagnostics	DW = 0.7235	Cross-section rho = 0.9811	N = 175	Random effects selected

Note: Source: Reported in the dissertation from panel EGLS estimation.

8 Discussion

The most notable implication of the results is that the positive value association of the stakeholder-observable part of environmental spending, CDC is the most definite. This qualifies as both the

stakeholder theory and the legitimacy theory. In an environment where community relationships can influence operational survival, local acceptance, and reputational level, community development expenditure can assuage stakeholders and lower the risk premium incorporated in the asset-backed worth of the firm. The same way the Granger Causality finding goes: out of the three environmentally-cost proxies, CDC only has predictive information on NAPS.

The outcome of the RDC is more complicated. The negative significant coefficient cannot be interpreted to imply that innovation-oriented spending on the environment is necessarily harmful. The less arguable explanation is that the advantages of RDC might be delayed, risky, or not directly translated into NAPS in the seven years of the observation. This finding can be related to the previous research which differentiates short-run cost pressure and long-run innovation benefits (Parcharidis and Varsakelis, 2007; Porter and Van der Linde, 1995). That is, the Nigerian listed companies can be spending on R&D that will generate productivity and reputational benefit in the future that will not be reflected in the current accounting period.

EHSC is positive and non-significant in NAPS model. This does not mean that the welfare of employees is not important. Instead, it can reflect that its benefits are indirectly passed on in terms of morale, retention, productivity, reduced disruption or enhanced compliance as opposed to an immediate change in asset-backed value per share. Another possibility is that EHSC is not as consistently measured across firms, which decreases its accuracy in the panel equation. The larger dissertation found a greater relevance of environmental costs to the chosen financial-performance measures as compared to EPS or PER, a finding that supports the notion that some environmental-cost benefits can be realized through operational pathways than through direct valuation multiples.

Another implication has to do with measurement. Studies that reduce environmental cost to a single aggregate can readily conceal valuable internal variations. When the results of the article are broken down into components, it is evident that environmental spending is not uniformly valued. Community spending can be viewed as legitimacy-enhancing, research spending can be viewed as an undecided investment, and employee-safety spending can be internalized into quality of operations which has no immediate NAPS impact. It is this that makes disaggregation significant to researchers and standard setters.

8.1 Auxiliary evidence from EPS and PER

This article focused on NAPS, but the larger dissertation included estimates of environmental-cost models of EPS and PER. Such additional findings are helpful as they contribute to the demarcation of the claims of the article. The dissertation indicates that the EPS model was not statistically significant: RDC, CDC and EHSC had insignificant coefficients, the model F-statistic was insignificant, and the percentage of variation in EPS that the environmental-cost variables explained was only 0.04 percent. Similarly, the PER model was not statistically significant: CDC was positive and insignificant, RDC and EHSC were negative and insignificant, and the model only explained the variation of about 2.01 percent of the PER.

These auxiliary conclusions support two things. To start with, environmental expenses seem more visible in the accounting-based net asset value than in short-run earnings or market multiple measures. Second, the Nigerian evidence of the dissertation does not fit into a blanket statement that environmental expenditure will directly enhance all the valuation indicators. Instead, the effect is channel-specific and selective. Such a nuance lends, instead of diminishes, the overall conclusion of

the article since it demonstrates that the documented NAPS effect is not merely a by-product of indiscriminate over-interpretation.

Table 8. Auxiliary firm-value results reported in the broader paper.

Outcome	RDC coefficient (p)	CDC coefficient (p)	EHSC coefficient (p)	Model conclusion
EPS	-283.0383 (0.5376)	215.3345 (0.6442)	168.8204 (0.7891)	Not significant; environmental-cost block explains only 0.04% of EPS variation.
PER	-25.1895 (0.3616)	22.7526 (0.4357)	-48.2040 (0.1909)	Not significant; environmental-cost block explains about 2.01% of PER variation.

Note: Source: Summarized from the dissertation's EPS and PER random-effects models.

9 Policy and managerial implications

The implications of the results to corporate managers are that the strategy of environmental protection must not be viewed in such a limited manner as a compliance cost. Community development seems to aid the accounting-based firm value, likely due to enhancing the relationships with the stakeholders and decreasing the risk of a legitimate firm. Community-sensitive managers must thus consider CDC as strategic investment as opposed to a leftover charitable item. Simultaneously, the negative coefficient of the RDC warns managers that they have to be more explicit in their communication of the intention, timeframe, and predicted productivity improvement of the innovation-related spending in the event they wish the investors to perceive such spending positively.

To regulators and standard setters, the outcomes are encouraging better guidance on environmental reporting. A common limitation in the literature is the tendency to report the overall environmental spending without splitting it into its components. The findings of the dissertation demonstrate why such is problematic: when there are different types of environmental cost, the value outcomes are different. Greater level of disclosure- especially regarding community development, safety spending and environmental spending in the context of innovation would enhance comparability and analytical utility among investors and researchers.

10 Limitations and directions for future research

This article is a derivation of the paper that has its limitations. The sample is not entirely representative of all the listed firms in Nigeria as it is purposive. The statistics are based on the annual reports and accounts, which implies that the quality of measurements depends on disclosure practices of the firms and their internal classifications. The sample size of 25 firms, although multi-sector, is quite small. Besides, the panel dates to 2018 and thus fails to reflect the more recent development of sustainability reporting and environmental governance in Nigeria.

Future studies might consider expanding the panel to 2018, compare Nigerian companies with other in the west African markets and add more controls like leverage, company size, sales growth, and industry-specific risk. The accounting-based measures (e.g., NAPS) and market-based measures (e.g., the Q of Tobin or market-to-book ratios) could also be compared by the researchers to evaluate the dependence of the valuation channel on market depth and investor sophistication. Lastly, the timing of R&D benefits should be further refined, particularly in emerging markets where innovation spending can require more time to come back in the form of visible balance-sheet returns.

11 Conclusion

In this article, the strongest pieces of evidence of the paper about firm values have been re-cast into a narrow manuscript on NAPS. The research concludes that the environmental costs are important to the net asset per share of the listed companies in Nigeria, although not all the components are equally important. CDC is positively related to NAPS, and Granger-causes NAPS; RDC negatively related to NAPS, and EHSC positively related to NAPS, but not significantly. The aggregate of the evidence indicates that the environmental expenditure is value-relevant, but it has to be valued through a different channel depending on the nature of the spending.

The implication of this beyond environmental cost in Nigeria is that environmental cost should not be taken to be a highly discretionary or philanthropic expenditure. Environmental expenditure can facilitate firm value when it is explicitly linked to community stability, legitimacy, and security of the environment in which the firm operates. The article then advocates a more strategic and more transparent approach to environmental accounting and reporting of listed firms in Nigeria.

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