

Determinants of Carbon Emission Disclosure and Reduction in Corporate Real Estate Companies in Nigeria

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Abstract

Carbon emission in developing countries has been on the increase in the last few years, from a 33 percent in 1990 to 40 percent in 1997, when the international climate change mitigation treaty of Kyoto Protocol was agreed on, to 55 percent of today's total global carbon emission. Hence the difficult to manage global warming without the participation of developing nations take tougher actions than presently is the case, even if the developed economies reduce their emissions to zero by 2030. The need for climate change mitigation in the context of carbon emission reduction through measurement and disclosure has become a sine-qua-non for climate change mitigation in the developing economies. The study detects four determinant factors for carbon emission reduction in the corporate real estate sector of a developing country to include; social factor, economic factor, the financial market factor and the institutional factor. These factors are supported by the agency theory, stakeholder's theory, Signaling theory and the Legitimacy theory. The application of the result is that policies, programs and incentives to enhance climate change mitigation in developing countries could be built around these factors to encourage private sector participation. The study is limited to the real estate sectors, and other sectors may have diverse degrees of sensitivity, so it may be necessary for policies makers to determine the factor-mix of suitable for other sectors and countries.

Keywords: Carbon Disclosure, Corporate Real Estate, Legitimacy theory, Agency theory, Stakeholder theory, Signaling Theory, Nigeria.

1.0 Introduction

Anthropogenic sources of carbon dioxide (CO₂) emit about 8 billion tons of each year. While carbon emission from real estate sector is growing and a concern among develop countries such as United States, and the United Kingdom. Since the Industrial Revolution in 1750 human activities contributed to excessive CO₂ and other greenhouse gasses (GHG) in the atmosphere. Consequently, the 1997 Kyoto Protocol, Global Initiative for Gas Flaring Reduction and 2007 Bali Declaration were global conferences in pursuit for the protection of the environment. Carbon emission disclosure and reduction is made so that investors will be able to make informed decision on the status of the company. Information on the strategies, targets and projects initiated by companies toward carbon reduction when appropriately disclosed to stakeholders, enhances its understanding on the performance of the company. Within the free market system with the aid of GHG information disclosure stakeholders are able appraise the performance of the company management on environmental sustainability and apply necessary controls. The assessment given by shareholders will depend on how they assume information disclosure affects environmental performance of the company. But where disclosure does not have significant influence on the company's carbon reduction performance the assessment will be inadequate and unfair.

The implementations of the outcomes of global summits vary, while most developed countries has adopted environmental measurement and disclosure options; developing countries are yet to articulate policies for the climate change mitigation and carbon emission reduction (Uwuigbe & Uadiale, 2011). The essence of the Kyoto protocol is to enable climate change mitigation policies and programs, through the reduction in the use of fossil fuels; this will have significant economic effect on fossil fuel producing nations. Nigeria with a high gas deposit and the eighth oil producer in the world, and her annual budget would be immensely affected by a decrease in the use of fossil energy; with oil income accounting for up to 80%, and more than 90% of the foreign exchange proceeds evolve from the oil sector. Nigeria as a part of the Non-Annex I countries in the Kyoto-Protocol, is not committed to mandatory carbon reduction, but will do well to initiate programs for carbon emission measurement and disclosure to handle the climate change (Paehler, 2007). A number of studies have looked at identifying determinant factors for carbon measurement and disclosure in the property sector, but some of the results are not applicable to property sector of a developing country. Thus, the purpose of this research is to

ascertain the determinant factors that influence carbon emission reduction through measurement and disclosure in the real estate sector in Nigeria.

2.0 Literature Review

Developed countries like United Kingdom, European Union, Sydney and others are already taking measures toward reducing carbon emission. However the need for the participation of the developing countries is critical in the quest for emission reduction in the plan for growth and development. This is seen in India, China, Colombia, Ethiopia, Indonesia, Malaysia, Philippines, Nigeria, South Africa and others through developing policies and programs for sustainable development with emission reduction. The involvement of developing countries is essential in climate change mitigation considering the rate of increase in their emission profile. Carbon emission in developing countries has been on the increase in the last few years, from a 33 percent in 1990 to 40 percent in 1997, when the international climate change mitigation treaty of Kyoto Protocol was agreed on, to 55 percent of today's total global carbon emission. From the foregoing we can assume that future carbon emission will continue to increase, as carbon emissions from developing countries move up to about 70 percent of global emission, with the attendant implication of climatic disasters. It means the contribution of developing countries is necessary if any form of mitigation program to have any hope of succeeding, even if the developed countries are able to reduce their emissions to zero by 2030. It is in the developing country's best interest that they play key-role now given the hazards that wait (Romani, Rydger, & Stern, 2012).

Industrial processes, agricultural activities, deforestation and burning of fossil fuel for energy add majorly to greenhouse emission. The increased in human population has also affected the GHGs emission, with increased demand. Also a significant amount of carbon emission is being produced by the occupants of real estate properties. A study in China has proven that residential real estates in urban areas have become a significant contributor to carbon emission (Buchs & Schnepf, 2013). Similarly studies carried out by developed countries in order to understand and mitigate the emission of carbon from households include, the study of Zhuang, Jiang, and Zhao (2011) at Shijiazhuang City that submitted a number of variables responsible for carbon emission in real estate properties as; the number of family member, occupation, annual income, energy consumption from household appliances as the driving factors of the increment of carbon footprint. In a related work, a significant relationship between the income level of the residential estate occupants and their carbon dioxide emissions was determined. Sharaai, Mokhtar, Jin, and Azali (2015) with other factor for residential real estate impact on carbon emission to include household size, household income, energy consumption and transportation. In Nigeria as an oil-producing state, with established gas reserves are projected at about 174 trillion cubic feet (cf), statistics demonstrates that Nigerian economy is rich in gas; with about 5.78mm cf of it produced per day (John, 2011), the need to adapt to green technologies and sustainable practice even in its real estate investment is key to carbon emission reduction and climate change. Uwuigbe and Uadiale (2011) in a study on the degree of corporate environmental disclosure in Nigeria, with corporate annual reports from 2004 to 2008, the results showed a significant variation in degree of disclosure among sectors, with the overall environmental disclosure below critical mass. On the other hand, John (2011) results show that environmental measurement and disclosure is limited by the absence of standard disclosure requirement, enforcement framework, provision of environmental cost and political will. So there is the need to identify factors which will motivate corporate carbon disclosure in developing economies. Uwuigbe, Uwuigbe, and Ben-Caleb (2012) in a study with listed companies in Nigeria on the effect of corporate visibility on degree of environmental disclosure, a significant association was found. The results infer that corporate size of a company has a significant effect on the degree of environmental disclosure a company is willing to make in their reports which agrees with legitimacy theory, as they seek to breach legitimacy gap with the community.

The Nigerian government established the National Environmental Standard and Regulatory Enforcement Agency (NESREA) and Federal Environmental Protection Agency (FEPA) and to monitor the effect of industrial activities on the environment (Ebimobowei, 2011). But there is, currently, no regulatory requirement for Nigerian firms to disclose their environment-related risk and there is no rating system for the categorization of firms' corporate environmental performance in Nigeria, which would have given the public an overall perception of firms' environmental behavior. Despite the fact that there may be a potential correlation between more disclosure and improvement in corporate performance, the fact that environmental reporting is largely non-existent and unregulated in Nigeria, means it is not clear what drives firms that dare disclose their environmental information voluntarily (Akanno, Che, Radda, & Uzodinma, 2015).

The world's prosperity is calculated at \$48 billion of which roughly half is in real estate investments and properties (Lynch & Gemini, 2007). Real estate properties are the most popular form of asset held by organizations and individuals. The place of real estate in the economic development and growth of any nation

cannot be overstated, but this comes at a cost. Assets are not known to be without environmental impact on the environment (Babawale & Oyalowo, 2011; Lorenz, 2006; Pivo, 2005, 2007). The property industry is an significant source of negative ecological effects adding considerably harmful gas pollutants, strong waste generation and energy use (Babawale & Oyalowo, 2011; Lorenz, 2006).

3.0 Theoretical Framework

The theoretical framework (Figure 1) was developed based on the four theories, namely. (a) The Signal theory, legitimacy theory, Agency theory and Stakeholders theory. In developing the framework, various factors proxies for these theories and how their affect voluntary carbon disclosures are considered.

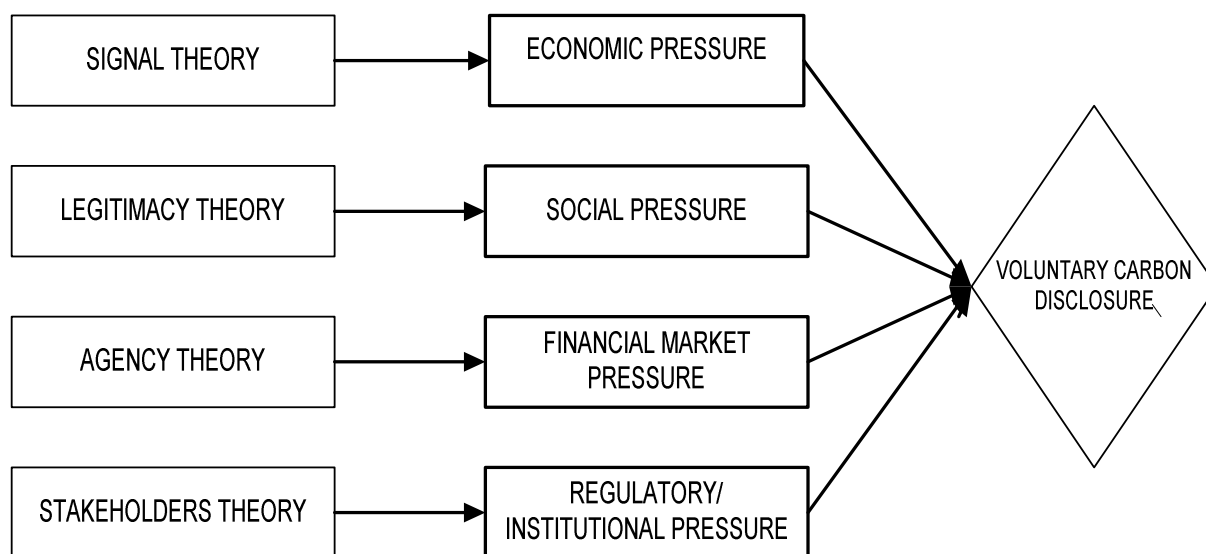


Figure 1: The theoretical Framework for the study.

3.1 Stakeholder Theory

Stakeholder theory shows that the goal of the company is to support a wider social interest beyond financial value development for investors alone. It is one of the main important considerations of companies in the community. The original idea was that managers have an ethical responsibility to consider and properly balance the desires of all stakeholders. Evan & Freeman, (1993) stated that stakeholder's theory is to redefines the goal of the firm; since the aim of the company is to be a vehicle for managing stakeholders interests". Stakeholder theory conveys the idea that companies are reliant upon stakeholders for accomplishment, and stakeholders have some stakes in the company. Stakeholder theory is introductory to ethics in business studies (Carroll & Buchholtz, 2006; Jennings & Happel, 2002). Furthermore, Schneider (2002) declare that stakeholder idea expands the idea of ownership of the company beyond that of the conventional legal or financial owners of the company, who become a stakeholder by participation in the investment or other means that result in value ownership. Questions on whether stakeholders signify an extensive type of those who suffer by or change the business (Evan & Freeman, 1993), or are only "those individuals and constituencies that play a role to 'the firms' wealth-creating potential and activities" (Post, Preston, & Sachs, 2002).

It can then be suggested that companies in a nation-state with a custom for a high level of openness divulge more carbon information. The stakeholder's effect is represented by the Institutional factors.

3.2 Legitimacy theory

Legitimacy theory declares that organizations perform comprehensive disclosure as a reaction to social pressure in order to legitimize their long run activities and perform their "social contract" willingly (Luft Mobus, 2005; Solomon & Lewis, 2002). One aspect impacting a company's reaction to legitimize its actions in the area of climate change mitigation is the level of expectation and apprehension in a community about global warming. As establishments are dependent on community's expectations, if legitimacy gap happens, it could have irreversible

financial effects on the companies, loss of trade and clients or even cutoff of operation. While Guthrie and Parker (1989), are of the viewpoint that legitimacy concept indicates that organizations usually create likeness between the public principles of their functions and social standards. Disclosure of information is regarded as an effective strategy to connect company's actions and control viewpoints no specific ecological, public and other business problems. Given the newest attention on how organizations handle and evaluate their GHG, it is sensible to expect that companies will try to legitimize their activities by voluntary disclosure.

3.3 Signaling theory

The difficult of information lopsidedness is explained in the Signaling theory. The issue of information asymmetry arises when information available to the company management and the investors are unevenly distributed (Healy & Palepu, 2001). So information disclosure is majorly meant to reduce asymmetry information. In signaling theory companies disclosure to show their good performance and distinguish themselves to the public and reduce information asymmetry, thereby enhance their reputation and public opinion (Akerlof, 1970; Levin, 2001; Morris, 1987; Ross, 1977; Toms, 2002). The signaling process enables companies to show that their product is of better quality to customers to increase the price of the commodity, and reduce unevenness information and negative decision making problem Morris (1987). Such information disclosure is understood by customers to mean that the business is doing well. The level of this disclosure will depend on the relationship between the investors and the management, and the level of monitoring that investor imposes on the company executives (Jensen & Meckling, 1976). So the higher the level of monitoring a firm receives, the greater the level of disclosure it (Stanny & Ely, 2008). Business executives make information disclosure to enhance the company's reputation and to reduce lopsidedness in information distribution (Toms, 2002). Many disclosure options are open to company managements to inform the public on their achievements. Bhattacharya and Dittmar (2004) reveal that, companies that are performing well choose between the free or the costly disclosure options to signal to the stakeholders.

Economic pressure is considered a proxy for Signaling theory, the results of the economic factor on disclosure is on internal operating costs and profitability. Economic cost associated to carbon emission gives incentives to company managements to reduce emissions and improve energy use and then signal a good performance to stakeholders.

3.4 Agency Theory

The effect of organization's responsibility to investors and financial debt holders led to investors request for disclosure to enable them evaluate the risk and return of the company to facilitate investment decision. The managers disclose only due to proprietary costs and uncertainty (Dye, 1985). So the decision to disclose is based on the management judgment on the cost and benefits (Cormier & Magnan, 1999). So, the decision for disclosure is judged to increase the amount of investment from investors. This argument is supported by evidence (Francis, Khurana, Martin, & Pereira, 2006; Frankel, McNichols, & Wilson, 1995; Lang & Lundholm, 1993) these studies submit that companies with high external funding are more likely to make a voluntary disclosure. So there is a positive relationship between information disclosure and external funding of companies. Financial market pressure from investors and financial debt owners to whom management is directly responsible to is a proxy for agency theory. As failure of information disclosure could result in information asymmetry between management and investment providers; thereby increasing the company's cost of investment (Cormier et al; 2005).

4.0 Determinants for Carbon Disclosure in Corporate Real Estate Companies

4.1 Social pressures

Social pressures are demands made by the society on corporations on what the public expect the business to do as a corporate citizen of the community. Legitimacy theory postulates that there is a social principle that determines the existence of the corporations in the community (Deegan & Rankin, 1997) and the society and company are bound to a social agreement (Solomon & Lewis, 2002). The public expects companies to make reductions in carbon emission and disclose carbon information because of the influence on climate change. If an organization disregards these community demands and does not take actions in response, it will give an impression to people that its management is not aware of, or does not care about the environment, and does not have plans to reduce the risks of pollutants. This will affect customer's choice which is a matter of concern for businesses, and a good reputation is useful for an enterprise's long existence and attaining abilities to get profit. Reacting to the expectation of the community through emphases on the customers' needs and meeting their

expectation is beneficiary for building good image and reputation for the company. Social groups may punish non-disclosing organizations by starving them of their right to continue their business through suspending support and allocation of resources. This dynamic influences managers to disclose, thereby legitimizing their long-term operative sustainability (Cho & Patten, 2007; Luft Mobus, 2005). With the enhanced attention that sustainability has become a top issue for both organization and society, sustainability issues can result in an image advantages at the organization level. Reputation advantages have been advocated to be a driver of sustainability reporting by scholars; Lützkendorf and Lorenz (2007) and Fuerst and McAllister (2008). In a study Newell (2009) investigated property companies' strategies no sustainability reporting, the results show that circulating carbon disclosure reports, real estate companies are able to document their good environmental and social awareness and performance. It also suggests that the most property organizations increase their ecological efficiency and are able to gain important media and community exposure, with marketing opportunities. Moreover sustainable property companies received extra benefits through addition in foremost global sustainability indices.

4.2 Financial Market Factor Pressure

Investors are an essential stakeholder in the business industry. A company could not be available without the assistance of stakeholders. For any organizations, finance is a limited source and vital for the existence and development of the company. And so in the decision making process of any company the investors are major stakeholders. The status of the company with respect to climate change mitigation practice is a major consideration for investors. In order to get the assistance of investors, businesses are willing to reveal appropriate information, in particular, especially positive information. Real estate companies are under pressure from a wide range of stakeholders to implement sustainable schemes and to demonstrate that they are reducing the sector's carbon footprint.

The market's reaction to an ecological product would be determined by a mix of factors such as awareness and commitment, the overall state of the economic system and the buying power of people, and the accessibility to solutions. Some companies are currently unclear on how much of their carbon disclosure initiatives would be compensated by the market. This means, there is a concern on the outcome of carbon information disclosure and the economic viability of low carbon economy and profit for low carbon commodities (Boardman, 2004).

4.3 Economic Pressure

Companies are motivated to disclosure on carbon information by economic pressures. The effect of economic variables on carbon mitigation is associated to operating expenses and profits, while the financial market effect is related to company's external funding. The willingness of most developers and tenants to participate in the development and transaction on sustainable products and buildings are increased by the introduction of various forms of incentives by governments of various countries. There is a change in the market environment from that of free carbon emission to that with a growing economic consequence for emission; this can be evidenced by the introduction of emission trading program in the European Union. Similarly authorities in most developing countries are imposing various carbon charges, fees, or taxation, which results in increased operating expenses (Chapple, Clarkson, & Gold, 2013; Matsumura, Prakash, & Vera-Muñoz, 2011). And these expenses is internalized by organizations and considered in operating decisions. In this economic condition, the motivation for carbon measurement and disclosure is the need to survive the economic situation. Companies are motivated to engage programs to cut down energy use and expense and hence carbon exposure, and are proactively in disclosing "good news" to show their "green" kind of business, thus helping the firm's image.

4.4 Institutional Pressure

There are studies showing that companies use disclosure to reduce the possible effect of regulating threats and other negative impact on their operations (Solomon and Lewis, 2002; Peters and Romi, 2009). Companies that are in an environmentally sensitive sector are more motivated to reduce emission in carbon (Reid and Toffel, 2009), and this pressure, in turn, persuade more innovation (Porter and Linde, 1995). According to prior research, institutional ownership has an affirmative significant connection with reports. Businesses undertaking disclosures are shown to be more attractive in the sight of institutional stakeholders (Coffey & Fryxell, 1991); this finding was also verified by Graves and Waddock (1994). Other research has also confirmed this positive connection which assures us that this is an international trend not just limited to the western world (Fauzi, Mahoney, & Abdul Rahman, 2007; Saleh, Zulkifli, & Muhamad, 2010). The link seems to have much to do with the fact that due to the size of the institutional investors, they cannot quit investment schemes very easily. By making an investment into socially responsible companies, institutional investors improve their possibilities to

prevent bad investment in conditions of public reputation and economic returns, as these two seem to be also relevant (Cox, Brammer, & Millington, 2004), them to make choices that do not maximize the investor's capital or help to increase the monitoring quality or reduce benefits from withholding information that may consequently result in enhancing the quality of reporting.

5.0 Conclusion

Due to the effect of climate change on the economy most countries are making effort to mitigate through emission measurement and disclosure. These efforts are based on the understanding of the determinant factors for corporate carbon emission disclosure in various sectors, which will enable incentives and programs to encourage participation and meeting national targets. This study submits that economic factor, social factor, institutional factor and the financial market factors are deterministic to voluntary carbon measurement and disclosure among the real estate companies. These factors were underpinned with legitimacy, signaling, stakeholders and agency theories.

The economic impact on carbon minimization and disclosure on the operational outgoings and profitability of the company, so the concern for reducing productivity becomes a driving factor toward carbon reduction, carbon measurement and divulging carbon information which focuses on the success of carbon mitigation. While social pressures are brought by the expectation and awareness of host community on businesses on what the public expect the business to do as a corporate citizen of the community Legitimacy theory postulates that organizations exist within the bounds of social value and there is a 'social contract' between the organization and the community. Financial market factors effect of organization responsibility to investors and financial debt holders led investors to demand information to assess the actual value of the firm to enable their investment judgment and institutional ownership has an affirmative significant connection with reports. But Institutional factor argues that businesses undertaking disclosures are shown to be more attractive in the sight of institutional stakeholders. These determinants are buttressed by the agency theory, stakeholder's theory, Signaling theory and the Legitimacy theory.

The application of the study is that policies and incentives to enhance climate change mitigation in developing countries could be built around these factors to encourage private sector participation. The study is of the view that while these factors may not achieve the same level of success in other sectors of the economy, it may be necessary for policies makers to determine which mix of factors will suitable for a particular sector.

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