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Implementation of Environmental Management Systems by Real Estate Developers in Ghana

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ABSTRACT:- With the fact that the construction sector can play a major role in addressing climate change through the reduction of energy use, carbon emissions and pollution etc, the study explored the factors driving the adoption of the GS ISO 14001 Environmental Management Systems among Real Estate Developers selected from members of the Ghana Real Estate developers Association (GREDA). The research was approached by a literature review and a questionnaire survey. Drawing on a total of 30 questionnaires administered to some selected Real Estate Developers in the Greater Accra Region of Ghana, it was identified that the two major factors driving the adoption of the GS ISO 14001 Environmental Management System are creation of cost savings, in terms of waste management, and identification of future environmental liabilities. The study also found that organisations operating under the ISO recognition raise their credibility status in terms of the services they provide, as well as enhance their corporate image, and marketability. Based on the analysis and discussions, the research proposed that awareness creation through the EPA is required to encourage Real Estate Developers in Ghana to obtain and implement the GS ISO 14001 Environmental Management System (EMS) certification.
Keywords:- Environmental Management, Ghana, Real Estate Developers

I. INTRODUCTION

Construction is a significant segment of the economy of Ghana. One major part of the construction industry is the Real Estate Business. Ghana Real Estate Developers Association (GREDA) is an Association of Real Estate Developers established under the Laws of Ghana under the Company Code, Act 179, of 1963 as a Private Company limited by guarantee to provide a central organisation for real estate developers. GREDA is a united front in making recommendations to government on ways of promoting real estate development and in seeking solutions to the practical problems in the property market. As part of their responsibilities GREDA seeks to promote the development of residential estates and to increase the stock of housing units thereby ensuring adequate provision of affordable housing for all classes of the population. One challenge that has come out with their work invloves the issue of environmental sustainability. There are indications of serious challenges in the integration of environmental management considerations in the activities of real estate developers . According to Boyefio (2008), there is evidence of a general lack of awareness of organisations in the construction industry of the need to include environmental management considerations in their construction activities. The costly implementation process and complicated documentation process are some of the major barriers found to be discouraging companies from seeking environmental certification (Shen and Tam, 2002). There also seem to be lack of central information hub on the issue for companies. Another problem that has been identified is the lack of understanding of what sustainable procurement could be and how to insert environmental management requirements in a contract (Boyefio, 2008). Cooper et al. (2000) also emphasised that lack of understanding of how to incorporate green into buying is one big issue. Companies in different industries have differing drivers, barriers and practices with regard to sustainable issues (Zhu and Sarkis, 2005). This research aimed at finding the drivers, barriers and benefits of implementation of the GS ISO 14001 Environmental Manmagement System by Real Estate Developers in Ghana. The selection of real estate developers was based on the fact that it is a growing new industry in the Ghanaian construction industry and often involves large stretches of undeveloped agricultural and forest lands.

II. PREVIOUS RESEARCH

2.1 Historical Development Of Greda And Its Activities Over The Current Years

There has always been the need to construct residential buildings however, until the 1980s, there was no formal association of estate developers in the country. GREDA, was formed some 25 years ago and currently has some 400 registered members (Amegayibor, 2013). After a series of meetings between the Ministry of Works and Housing and invited Estate Developers, GREDA was formally inaugurated on 28th October, 1988 with some 34 members. GREDA is registered under the laws of Ghana (Act 179 of the Companies Code of 1963) as a Private Company limited by guarantee. As of the 2011, membership of GREDA stood at 69 (Nkyi and Dinye, 2013). The objectives for the association include:

- *to provide a central organization for real estate developers;*
- *to provide a united front in making recommendations to the government on ways of promoting real estate development and in seeking solutions to the practical problems in the property market;*
- *to promote the development of residential estate, to increase the stock of housing units thereby ensuring*
- *adequate provision of affordable housing for all classes of the population;*
- *to pool resources together towards greater economies of scale in real estate development and also ensure that products of members conform to national building standards and planning laws;*
- *in the spirit of the search for appropriate technology, the Association shall promote the use of local inputs and finance research into the suitability of local building materials in the country;*
- *to liaise with financial institutions in developing an effective mortgage house ownership scheme for prospective owners and also impress on the institutions the need for long-term financing in real estate development; and*
- *to establish links with real estate institutions and allied bodies at home and abroad with the aim of promoting the development of the industry (GREDA, 2014).*

GREDA activities involve transforming the natural resources to the physical capitals such as houses and roads which are vital to our society (Myers, 2005). The environment that people live in is a constructed one. For example buildings, roads, rail, power stations, and telecoms networks are all part of the economy's infrastructure, of which buildings are the major product of the real estate industry (Metcalf, 2014). Ahadzie (2009) mentioned that, there is no doubt that the Ghanaian construction industry including real estate development, holds the key to the development of the nation. GREDA activities comprises of built infrastructure such as buildings, offices, schools, houses, hospitals and roads (Lawson, 2013). Ofori (2012) suggests that Construction adds to the national socio-economic development by providing significant employment opportunities at non-skilled and skilled levels. Away from that, the industry provides the infrastructure and facilities required for other sectors of the economy to flourish such as; schools for education and training, factories and shops for commercial and business activities, housing for basic human needs, hospitals for health care, buildings for the national communications network and so on. It contributes to national socio-economic development by providing the buildings which are used in the manufacturing of all goods in the economy. Housing meets one of the most basic needs of people by providing shelter from the physical elements and thus the items built offer social and welfare benefits. The way we construct our buildings must however not degrade our environment. That is the main reason why real estate developers must adopt an internationally recognised environmental management system to augment efforts to protect the environment by the Environmental Protection Agency (EPA) while increasing our infrastructure stock.

2.2 Overview Of Environmental Management Systems

According to the GS ISO14001, an environmental management system is "the part of the overall management system that include the organizational structure, planning activities, responsibilities, practices, procedures, processes, and resource for developing, implementing, achieving, reviewing and maintaining the environmental policy". It involves the cycle of Plan, Do, Check And Act" as shown in figure 1.

Figure 1 GS ISO 14001 Implementation Cycle For Continuous Improvement

The GS ISO 14001 EMS is built with the core elements basically from proven management systems such as the ISO 9000 series (Lin, 1995). The GS ISO 14001 standard has five major sections, compared to 20 clauses of the ISO 9001 standard. The five sections in the environmental standard, according to Aboulnaga (1998) are:

- Environmental policy: The environmental policy relates to the current and potential environmental impact of a firm's products and services, consumed material, pollution prevention and waste reduction;

- Planning: it includes identifying the controllable environmental aspects, legal requirements applicable to its operations, objectives and targets for various environmental aspects, and an environmental management program to achieve its objectives;
- Implementation and operation: Implementation and operation includes the following: Roles, responsibilities and authorities of employees, reviewing performance of the environmental system; training, awareness and competence; controlled documentation of core elements and reference to related environmental documents; operational control and emergency preparedness for handling accidents;
- Checking and corrective action: Checking and corrective action includes monitoring and measurements for continuous improvement, tracking performance with its objectives and targets, calibration and maintenance of monitoring equipment, taking corrective or preventive action, keeping records and EMS audits; amd
- Management review: Management review entails review of the EMS by management for its continuing suitability and effectiveness.

2.3 Factors Driving The Adoption Of The Environmental Management System

The adoption of Environmental Management Systems (EMS) as a framework for integrating corporate environmental protection policies, programs, and practices is mounting among both domestic and multi- national companies around the world. The factors driving the adoption of environmental management system among real estate developers are discussed below:

Institutional sociology: this theory proposes that firms respond to institutional pressures. The institutional sociology framework emphasizes the importance of regulatory, normative and cognitive factors that affect firms' decisions to adopt a specific organization practice, above and beyond the technical efficiency of the practice. Institutional theory places particular emphasis on legitimation processes and the tendency for institutionalized organizational structures and procedures to be taken for granted, regardless of their efficiency implications (Hoffman & Ventresca, 2002).

Desire to improve efficiency and reduce cost: Proponents claim that implementation of environmental management system can save companies money by improving efficiency and reducing the costs of energy, materials, fines, and penalties.

Increased investor confidence: The development and certification of Environmental Management System can increase investor confidence in a company and give it international competitive advantages (Kirkpatrick and Pouliot, 1996).

Growing concerns among corporate stakeholders: Concerns about environmental impacts of companies activities within and outside of the firm is driving more corporations to adopt EMS and to certify them (Morrow & Rondinelli, 2002).

Desire to satisfy customer pressures: Clark (1999) points out that many multinational companies adopt EMS to and to certify that their suppliers operate in an environmentally and socially responsible ways.

Table 1: Summary Of Factors Driving The Adoption Of The Environmental Management System

FACTORS	AUTHORS
Institutional sociology	Hoffman & Ventresca, (2002)
Desire to improve efficiency and reduce cost	Aboulnaga (1998)
Increased investor confidence	Konar & Cohen, 1997; Russo & Fouts, (1997); King & Lenox, (2001)
Growing concerns among corporate stakeholders	Kirkpatrick and Pouliot, (1996)
Desire to satisfy customer pressures	Clark (1999)

2.4 Barriers To The Implementation Of Environmental Management Systems

The barriers to the implementation of environmental management systems among real estate developers are discussed below:

Lack of understanding of the standard: According to the critics of ISO 14000 the main drawback is lack of understanding of the comprehensive document, ambiguous scope of the standard (Ayarkwa, et al., 2010). Many organisations are unsure how some aspects of the standard could be interpreted by the auditors (Zutshi & Sohal, 2002).

Cost concerns: it is believed that the developing and implementation of an environmental management system will cost both time and money(Ayarkwa, et al., 2010).

Reluctance to change traditional practices: Many companies are reluctant to change from traditional practices until a clear benefit of the change is perceived (Ayarkwa, et al., 2010). They reason that adopting a system that would not put money in their pockets is useless.

Shortage of personnel: Tan, et al. (1998) identified drawbacks of ISO14000 adoption to include short term cost in employing environmental consultants, setting up management structures and organizing training for employees. There are few expects available to be consulted on the matter of ISO 14001 implementation. Even when one finds a consultant, Ayarkwa, et al. (2010) insinuated that time spent on ISO 14001 EMS implementation is long varrying from six months to two years depending on the size and complexity of operation.

Table 2: Barriers In Implementation Of International Organizational Standards

BARRIERS	AUTHORS
lack of understanding of the broad, ambiguous scope of the standard	Zutshi & Sohal (2002)
Cost concerns increased cost of implementation; lack of knowledge relating to ISO 14000; reluctance to change traditional; practices and shortage of personnel.	Ayarkwa, et al. (2010)
Shortage of personnel	Tan, et al. (1998)

2.5 Benefits Of Adopting Environmental Management Systems

A growing concern is whether the adoption and implementation of EMS brings material benefits to companies. EMS has many objectives and benefits. Zabihollah and Szendi, (2000) discussed benefits of obtaining ISO 14000 certification by public organizations. It was identified that Organisations are able to: Document the internal environmental management systems including goals, policies, and procedures, Satisfy the requirements under ISO 14000 to enter and effectively compete in the global market place, Show commitment and compliance with environmental laws and regulations, Enhance company image as a good environmental citizen by acting voluntarily in advance of environmental regulations, Demonstrate commitment to environmental concerns, Comply with governmental and authoritative agencies requirements to register to ISO 14000 standards, Train workers to discern effects of environmental actions, Implement adequate and effective environmental auditing, Safeguard the environment, Identify and assess the present and potential environmental risk, obligations, and costs, Establish sound accounting and reporting systems to measure, recognize, and disclose environmental costs and obligations, Provide information to manage environmental contingencies.

III. RESEARCH METHOD

The study adopted quantitative research method. Thus, close-ended questionnaires were designed to gather information in order to gauge practitioners' perception about the issues of the study. The close-ended questionnaires were easier for respondents to answer and it also helped the researcher to analyse the data easily. The questions provided multiple choice options which gave the respondents the opportunity to present their ideas by way of selecting from the options provided. In order to refine the developed questionnaire, visits were made to some of the Private Real Estate developers and the Environmental Protection Agency to obtain their inputs before the questionnaires were finally administered. This procedure provided proper understanding into the research work and other relevant information required for the study.

Purposive Sampling: This approach was used to sample respondents who have basic and concrete ideas about the issue under consideration. For this study, the first section of the research dealt with Real Estate Developers selected in Accra, registered under GREDA. Again, stakeholders like the Environmental Protection Agency were chosen because of their experiences in environmental issues.

Sample Size Determination: Since it was almost impossible to administer questionnaires to all the Private Real Estate Developers, a representative sample size was necessary to be obtained. The Kish formula developed by Leslie Kish (1965) was applied, with (N) representing the population size. The formula states that:

$n= k/ (1+k/N)$

Where n= required sample size

N=total population size

$k = s^2/v^2$

v is the standard error of sampling distribution assumed to be 0.05

S is the maximum standard deviation in the population sample

(Tolerance of 0.5 at a confidence interval of 95%)
S=P (1-P) =0.5(1-0.5) =0.25
P= the proportion of element that belongs to the defined class.
Using the Kish formula, the minimum sample size was determined from a population of 400 registered private real estate developers as follows:
n= k (1+k/N)
But $k = s^2/v^2$
$k=0.25^2/0.05^2$
k=25
n=25/ (1+25/400)
n=23.5
Twenty-four (24) registered Private Real Estate Developers were required to be sampled from the above calculation. However, according to Israel (2013), 30% is added to the estimated sample size to take care of possible nonresponses, making it 32 (1.3x 24 ≈ 32). In conclusion, a total number of 32 questionnaires were sent, out of which 25 were retrieved which represent 78.13% response rate.

IV. RESULTS AND DISCUSSION

Awareness of the GS ISO Environmental Management Systems

An attempt was made to ascertain whether respondents had knowledge of the GS ISO Environmental Management System. The table below indicates the responses from the 25 respondents:

Table 3: Awareness of the GS ISO Environmental Management Systems among Staff of Companies

		Frequency	Percent
Valid	Yes	9	36
	No	14	56
	Unsure	2	8
	Total	25	100.0

Source: Field survey, 2014

It can be seen from table 3 that most of the respondents (i.e. 56% of the respondents) are not aware of the existence of the GS ISO Environmental Management System among staff in the various companies. 36% of the respondents have knowledge about the GS ISO Environmental Management System. Furthermore, 8% of the respondents were not sure about what the GS ISO Environmental Management System entails.

Table 4: Public Authorities (EPA and Assemblies) influence on Environmental Management Practices of company

	Response	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	65	65.0	65.0	65.0
	No	21	21.0	21.0	86.0
	No idea	14	14.0	14.0	100.0
	Total	100	100.0	100.0	

Source: Field survey, 2014

The analysis indicates that 65% of the companies acknowledged the influence of public authorities such as EPA and Municipalities on company's environmental practices. 21% of the various companies were of the view that public authorities influence on their environmental practice is minimal. Lastly, 14% had no idea about public authorities' influence on their environmental practices.

Factors Driving the Adoption Environmental Management Practices Among Private Real Estate Developers in Ghana

The study identified the factors driving the adoption of Environmental Management Systems among real estate developers. These factors have been ranked and presented in the table 5.

Table 5: Statistical Table Representing the Factors Driving the Adoption Environmental Management Practices among Real Estate Developers in Ghana

No.	Factors	Valid	Mean	Std. Deviation	Ranking
1	Prevention or control pollution	25	2.52	0.510	**3rd**
2	Improvement of efforts to achieve regulatory compliance	25	2.24	0.523	**5th**
3	Identification of future environ-mental liabilities	25	2.56	0.507	**2nd**
4	Improved our relations with regulatory authorities	25	2.16	0.624	**7th**
5	Cost savings in terms of waste management	25	2.64	0.490	**1st**
6	Improve company's profile/ image	25	2.24	0.597	**6th**
7	Better performance, regulatory compliance and economic performance	25	2.48	0.510	**4th**

Form table 5, cost savings in terms of waste management recorded the highest mean value (mean=2.64), which earned it the first (1st) position. This was followed by identification of future environmental liabilities, with a mean value of 2.56. The third (3rd) position was earned by prevention or control our pollution (mean = 2.52). The variables which recorded equal mean values were separated in terms of positions with their respective standard deviations. In this regard, the variable with the smaller standard deviation is ranked higher. For example, both improvement of efforts to achieve regulatory compliance and improvement of company's profile/image obtained equal mean value (mean= 2.24), however they obtained different standard deviation values, i.e. 0.523 and 0.597 respectively. Therefore, improvement of efforts to achieve regulatory compliance was ranked fifth (5th), which then followed by improvement of company's profile/image.

Barriers to the Development of Environmental Management Practices In the Ghanaian Construction Industry

Table 6 presents a summary of the barriers to the adoption of environmental management systems among real estate developers:

Table 6: Statistical Table Presenting Barriers to the Development of Environmental Management Practices in the Ghanaian Construction Industry

No.	Barriers	Valid	Mean	Std. Dev.	Ranking
1	Inadequate legislative framework of environmental management system practices	25	2.08	0.812	**5th**
2	No factor to motivate organizations to introduce and certify EMS	25	2.04	0.750	**7th**
3	Lukewarm attitude by workers on site pertaining to environmental management	25	1.96	0.835	**13th**
4	Inadequate knowledge of environmental management system practices by government agencies /public service	25	2.04	0.735	**6th**
5	The unwillingness of construction professionals to accept the environmenta management practices	25	1.72	0.792	**16th**
6	Professionals inability to acquire basic knowledge in environmental managemen systems	25	2.08	0.702	**4th**
7	Misunderstanding among construction professionals on environmental managemen systems concepts	25	2.00	0.707	**8th**
8	Non-availability of environmental management systems training facilities fo construction professionals	25	2.16	0.746	**2nd**
9	Poor understanding of environmental management systems practices	25	2.12	0.726	**3rd**
10	Insufficient details and specification in contract documentation on environmenta management systems	25	1.96	0.705	**10th**
11	Difficulty in accessing information on environmental management systems theory in practices	25	2.00	0.770	**9th**
12	Wrong choice of environmental management systems approach	25	1.96	0.735	**11th**
13	Communication barriers among environmental management systems participants	25	1.96	0.805	**12th**
14	Poor definition of construction environmental management systems scope	25	1.84	0.688	**15th**
15	Lack of ethics and code of practice for environmental management system	25	2.17	0.816	**1st**
16	Ignorance of the benefits of environmental management systems practices	25	1.92	0.702	**14th**

From table 6, lack of ethics and code of practice for environmental management system obtained the highest mean value (men= 2.17) among the various factors, hence, attaining the first (1st) position. The second (2nd), third (3rd) and fourth (4th) positions were attained by non-availability of environmental management systems training facilities for construction professionals (mean=2.16), poor understanding of environmental management systems (mean= 2.12), and professionals' inability to acquire basic knowledge in environmental management systems (mean=2.08). The variable that obtained the least ranking is the unwillingness of construction professionals to accept the environmental management practices (mean= 1.72).

V. DISCUSSION

Drivers to the implementation of environmental management system: Pollution brings about hidden costs in the form of wasted resources and effort (Walker et al., 2008). Walker et al. (2008) argued that by embracing the concept of pollution prevention, waste and thus costs can be prevented. The data analysed on if company regularly

monitor waste generation indicated that majority of the respondent (51%) regularly monitor solid waste generation. However, in practical terms they had little to show as proof. Awareness that waste reduction can lead to cost reduction came out as the most crucial factor to the adoption of Environmental Management System by real estate developers in Ghana. Adoption of GS ISO 14001 would help real estate developers reduce their environmental incidents and liabilities, increase efficiency of operations by removing waste from production and distribution processes, increase awareness of environmental impacts of operations among all employees, and establish a strong image of corporate social responsibility (Morrow & Rondinelli, 2002)

Barriers to the implementation of the GS ISO 14001 Environmental Management System: In determining the most crucial barriers, Lack of ethics and code of practice for environmental management system emerged as most crucial. This however does not in itself indicate that environmental management systems are not available, but that, most real estate developers are not aware of their availability and existence. Poor understanding of Environmental Management Systems and Professionals inability to acquire basic knowledge in environmental management systems all suggest that a lot need to be done to educate real estate developers on how to obtain and implement the GS ISO 14001 environmental Management System. The unwillingness of construction professionals to accept the Environmental Management System could also be curtailed if these systems are made to become legally enforceable. Also, to change the attitude, training has been recommended by many researchers as an effective remedy against environmental illiteracy (Walker et al., 2008).

Benefits of adopting the GS ISO 14001 Environmental Management System: the research identified from literature that companies image could be enhanced if they voluntarily adopt the environmental standards. Also when companies implement an internationally recognised environmental management system they would better safeguard the environment, since they would be able to identify potential environmental risks, obligations, and costs and act accordingly. The introduction of the GS ISO 14001 Environmental Management System into the real estate industry would be a great stride in Ghana's environmental management. The most obvious benefit as discussed by Ayarkwa, et al. (2010) is cost savings in terms of operational cost savings, pollution prevention, and any violation cost that may arise.

VI. CONCLUSION

The level of awareness of the private real estate developers in Ghana is generally low and this could go a long way to prevent their role combating climate change in Ghana. The findings showed that, though there are legal requirements for any industrial activity to be registered with the EPA for the potential environmental effects to be assessed; implementation of the GS ISO 14001 could be a more effective way of greatly improving environmental performance within the Ghanaian construction industry. This raises concerns for further investigations into the role that EPA could play in the promotion of the GS ISO 14001 Environmental Management System. The expenses for introducing and operating the GS ISO 14001 Environmental Management Systems may be relatively high but the environmental outcomes are worthwhile. This research suggests that it should be mandatory for all small and large scale real estate developers to register their activities with the EPA (under EPA Act 490 of 1994 and LI 1652) and mandatorily adopt the GS ISO 14001. The adoption of the GS ISO 14001 by the real estate industry would be a major step in addressing climate change in Ghana.

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