

THE EXTENT OF ENVIRONMENTAL MANAGEMENT SYSTEM IMPLEMENTATION IN THE UK CONSTRUCTION INDUSTRY

AMINATUZUHARIAH M ABDULLAH

Department of Architecture, Faculty of Built Environment, Universiti Teknologi Malaysia

UTM Skudai, Johor, 81310, Malaysia

e-mail : min.abdullah@yahoo.co.uk

Abstract

This paper highlights the importance of an Environmental Management System (EMS) as a tool and a systematic way to mitigate environmental problems in construction industry. The benefits of implementing EMS are discussed thus confirming that they exceeded the cost of implementing it. It is believed that the implementation of EMS in organisations in producing sustainable projects will require active roles and participation by the construction professionals themselves.

In order to investigate the extent of EMS implementation in the UK construction industry and obtaining views on these subjects, a questionnaire survey involving 32 clients and client representatives was undertaken. The findings presented in this paper indicate that the implementation of EMS is not popular amongst the professionals in the UK. This implies that greater actions are needed to raise awareness amongst clients and professionals to enhance the quality of sustainable projects in the future.

Keywords : Environmental Management System, Construction Industry, Sustainable projects.

1. An Introduction to the Environmental Management System (EMS)

EMS is a system to aid companies that intent on improving their environmental responsibilities to set up an individual management system and furnish evidence to interested parties that it has done so (Ends, 1992a). EMS standards such as British for EMS BS7750 (1994), the EU eco-management and audit scheme (1993) and the international standard ISO 14000 have been developed to provide organizations with a framework to implement the EMS within their organization.

The EMS should be designed to enable the organization to maximize its beneficial effects and to minimize its adverse effects. In the case of adverse effects emphasis should placed on presentation, rather than on detection and amelioration after occurrence. Clear standards like BS 7750 require that policies be substantiated with publicized targets and objectives thereby focusing and enhancing the credibility of the reports (Ends, 1992b).

2. Benefits of Implementing EMS

There are many benefits of implementing EMS as listed by CIRIA 1993 in its Environmental Handbook for Building and Civil Engineering Projects. Table 1 shows the costs and benefit of EMS implementation. It confirms that the benefits of implementing EMS are more than the cost of implementing it.

Table 1: The costs and benefits of EMS implementation

Benefits	Costs
<ul style="list-style-type: none"> • Avoidance of fines, clean up and loss of production costs due to non-compliance • Improved health and safety of employees • Meeting and exceeding requirement of parent companies • Reduced waste, transportation and disposal costs • Reduced raw material costs • Increased operational efficiency • Reduced risk of liability • Positive company image • Reduced on site storage space • Improved environment • Identification of future risk • Reassurance to external stakeholders 	<ul style="list-style-type: none"> • Staff organization/training costs • Installation and running costs of monitoring systems to be used • Capital and running costs of any process re-engineering undertaken as a result of the audit • Material/Process equipment costs resulting from process change • External consultancy fees • Report production costs • Temporal costs • Indirect capital costs

3. Research Methodology

This research was conducted with the aim of investigating the extent of EMS implementation in the U.K. construction industry. A pilot questionnaire was drafted and discussed with two local construction companies. Having validated the recommendations from the interviewees, the amended questionnaires were posted to related construction companies throughout the U.K.

4. Questionnaire Response

Sixty questionnaires were sent out to various consultants and major contractors in the United Kingdom who have experience in the design work including in the Design and Build projects. Out of sixty questionnaires sent, thirty three companies responded to the questionnaires.

4.1 Analysis of the Result

4.1.1 Question 1: Company's Experience. The design and construction related experience of the organizations participating in this survey ranged from 4 years to over 100 years. 54.2 Per cent of the respondents have been in the construction more than 25 years, and 30 per cent have obtained more than 50 years experience in design and construction. Only 24.2 per cent (which are the small size architect's companies) have experience less than 10 years.

Most of the engineers or Quantity Surveyor consultants have an experience in the range of 26 to 50 years whilst 15 per cent of the contractors' companies have experience of more than 50 years.

4.1.2 Question no. 2: Company's Turn Over. It was found that 13.3 per cent of the architect's companies (which have experience less than 10 years or a little longer than that) have below 10 million pounds per year. 18.8 per cent of the other consultants have between 11 million pounds to 50 million pounds. 15.6 per cent of the contractors have turn-over more than 500 million with one of the leading contractor's firm has more than 2 billion pounds annually.

It can be concluded that organizations which have longer period of experience, are making more profit than the small companies. All the contractors with experience of more than 100 years have the biggest share in the market. In addition to that they can easily obtain many jobs due to their reputation and many kind of resources that the small companies shall not be able to compete.

4.1.3 Question no. 3: Type of Services Offered. The respondents ranged from small size companies to larger size companies. There are 24.2 per cent of the architect's firms who only offer architectural services. These are mainly small companies together with a few medium size companies. 30.2 per cent of the architectural consultants offer a few range of services such as architectural design, civil engineering, town planning and design and build services. A few architects offer services like landscape architecture and one big architect's company also offers services such as interior design, mechanical and electrical engineering, quantity surveying and structural engineering.

Almost all engineers, quantity surveying and contractors' companies are multi-disciplined companies who offer a range of services as mentioned before.

All these type of services have their own environmental impact on the environment. The multi-disciplined companies usually have more environmental impact towards environment. Hence, all the constructions related professionals have their role to play in minimizing these impacts.

4.1.4 Question no. 4: Specialist Knowledge. When the company has had the commitment and vision towards environmental sustainability, it has to recruit the specialist who has the special knowledge on how to deal with the environmental impact for both organization and building projects' benefit.

From the survey, 75.8 % of the respondents said that they do have in-house member of the staff who has a special knowledge of how to tackle the environmental problems in their projects. This finding is encouraging since it is important to have this knowledge to create more awareness within the staff and to gain more commitment from the top management towards environmental improvement.

However, 24.2 % of the organizations did not have the specialist who can deal with the environmental impacts. From this percentage, 6 % are from the small-size architectural companies, 6 % from the architectural big companies and 12.2 % from the other consultants and contractors' firms.

4.1.5 Question : 5 - Awareness/ Implementation of an EMS. It is hoped that with the availability of an environmental specialist within the staff member in one organization, the company is more aware about the EMS. However, when the respondents were asked about their awareness and implementation of such system for example; BS 7750, EC's Eco-mass or their own EMS within the organization, 75.8 % of the respondents do not implement such system at all even though 42.5 % are aware about such system.

27.3% of the respondents say that they will possibly implement an EMS in the near future. Only 9.1% are currently implementing BS 7750 standard and 15.2% claimed that they have their own EMS system. 6% of the organization do not aware of any environmental management system at all.

4.1.6 Question 6 : Environmental Policy. Environmental policy is among the first document that the company has to formulate to show its commitment towards quality and sustainable environment. With the environmental policy, the company recognize its role to play in environmental protection and realizes the areas where positive contribution can be made. Both policy for the company and its services were asked because these will show the extent of the company's commitment. Usually the company should always begin any new management system for the benefit of the organization first before extending it to its activities or services.

Table 2 : Availability of Environmental policy for company and projects

Availability of the Policy	Architect (%)	Engineer and Q.S. (%)	Contractors (%)	Total (%)
a) Yes	36.3	21.2	15.2	72.7
b) Yes				
a) Yes	3.03	3.03	3.03	9.1
b) No				
a) No	3.03	3.03	0	6.1
b) Yes				
a) No	12.1	0	0	12.1
b) No				

- Key: a) Environmental policy for company
b) Environmental policy for projects

Table 2 shows 36.3% of the architectural consultants had both environmental policies for their company and the projects. The total of 72.7% companies were found to have both policies. 9.1% of the companies have policy for their companies only whereas 12.1% have no environmental policy at all.

4.1.7 Question 7: Other Environmental Assessment Tools. In implementing any EMS, the company or the design team should compile manuals called "Register of Regulations and Effects". One of the important manual is somewhat similar to an EIA with an analysis of the environmental effects of the organization/project globally, locally and to the future occupants.

There are many methods of assessing the environmental impact of buildings. One example is Environmental Impact Assessment by Building Research Establishment Environmental Assessment Method (BREEAM) which can be used for the existing buildings.

The question was asked to check the awareness of the consultants contractors about the various methods of assessment tools available in the market. With the implementation of some of these assessment tools shows some of their commitment towards sustainable development.

Table 3 shows the overall responds of the participants. It shows that both BREEAM and BSRIA Code of Practice are popular among the architect's consultants. 60% of the companies had been using the mentioned assessment tools for their project. 12.4% of the companies used other environmental assessment tools such as BRE Tool Kits, Starpoint Energy Rating and Association for Environment Conscious Building (AECB) Policy. It seemed that most of the small-size architect's companies were conscious about the tools and practicing it because of their ethical attitudes towards environment. However, almost one third of the companies had never used any kind of tools to assess the environmental impact of their projects. This consists of 12.2% architect consultants, 9.2% engineers and 6% contractors. Surprisingly one of the large company had never used such tools even though it claimed to have the specialist to deal with the environmental issues.

Table 3 : The usage of an environmental assessment tools

Environmental Assessment Tool	Architect (%)	Engineer & Q.S. (%)	Contractor (%)	Total (%)
BREEAM	9.2	6.2	4.9	20.3
BSRIA	0	9.2	3.1	12.3
Both BREEAM and BSRIA	21.2	0	6.2	27.4
Others	12.2	0	3.1	12.4
None	12.2	9.2	6.2	27.6

This shows that the commitment towards the environmental improvement does not come from big companies with a lot of profit and resources. It depends to the attitudes of the top management. With their commitment, then some kind of responsibilities are shown in their companies or activities.

4.1.8 Question 8 : Availability of an Environmental Management Programmer and a Set of Procedures (manual). Environment management programmer, or 'action plans', represents the heart of the EMS. The programmer describes what the organization is actually going to do to mitigate its environmental effects. Action plans must be documented and that managerial responsibilities and time-scales are explicit.

Table 4 : Availability of an environmental manual

Availability of Environmental Manual	Architects (%)	Engineers and Q.S. (%)	Contractor (%)	Total (%)
Manual for company	9.1	0	3.0	12.1
Manual for projects	0	6.1	0	6.1
Both manuals	18.2	18.2	15.2	51.6
None	27.2	3.0	0	30.2

This document is known as the "Environmental Manual" . It has step by step procedures of how to improve the environment either for the company or projects (manual varies from project to project).

It was found that half of the surveyed firms had both environmental manuals for the company and projects (see Table 4). 30.2% (which were mostly of the small architect's companies) did not have any manuals at all. They admitted even though they have an environmental policy, they did not write such manuals in details. 12.1% mentioned that they had an environmental manuals for their companies only.

4.1.9 Question 9 : Environmental Manual's Review. At intervals probably not exceeding one year, managers responsible for the EMS should assess the overall performance of the management programmers and manuals. If the circumstances of the organization have changed significantly, for example in respect of its activities, products and services, the programmers and manuals may need to be modified to ensure that it continues to reflect the needs of organization. The review must consider the recommendations arising from staffs and audit reports, and how to implement them if accepted. This review should also revise objectives and targets, and the action plans as appropriate (Taylor, 1994).

It was found from the survey that 60.6% of the companies understood the importance of reviewing their manuals' contents. 39.4% had never done any review at all thus did not upgrade the contents thus again showing their lack of responsibilities towards environment.

4.1.10 Question 10 : Reasons for Introducing an Environmental Policy or an EMS. This question is to check which is the most popular reason(s) that lead to the introduction of an environmental policy or an EMS. Table 5 shows the percentage of reasons given by the participants.

It is found from Table 5 that most of the participants were aware of many reasons of why the introduction of environmental policy and EMS system were necessary to ensure continual environmental improvement. 21.2% agreed the four reasons highlighted above. 9.1 per cent wrote other reasons such as to receive credibility, and to ensure sustainability in the environment.

Table 5 : Reasons for Introducing an Environmental Policy or an EMS

Reason(s)	Percentage of agreement	Key to table 5 <i>a : Client Pressure</i> <i>b : To gain competitive advantage</i> <i>c : To contribute to the environmental improvement</i> <i>d : To increase building life cycle and to reduce long-run energy costs</i> <i>e : Others</i>
a	13.0	
b	23.0	
c	38.0	
d	22.0	
e	4.0	

However, when looking at the popularity of the reason(s), Table 5 shows that 'to contribute to the environmental improvement' appears to have more overall percentage (38%) than any other reasons. This shows that so far the implementation of this system or part of it was mainly due to the ethical attitudes of the companies.

The companies still did not realize of many other benefits from EMS that had been highlighted before. This can be seen from their poor response on item (b), which is gaining a competitive advantage. Only 23% of the companies agreed to this reason.

The main incentive which drive the implementation of any new management philosophy is the demand for it by clients. In this survey, clients' pressure had obtained 13 per cent only. This shows that the clients are still ignorance about the benefit of having an EMS from the design stage of the projects.

The low percentage in item (d) i.e. "To increase building life cycle and to reduce long-run energy costs", reflected that the architect or environmental engineer have not tried to educate the client of this benefit while receiving the project's brief from the client.

4.2 Conclusions

This research indicated that companies involved in the survey are proving to be slow in their commitment to environmental improvement and are allocating insufficient resources to the scheme. Only 24% of the companies have an EMS in their companies and 27% will implement an EMS in the near future.

It has been understood that much will be gained by the clients if they look beyond the short-term goal of project completion to the scheme in use (CIRIA, 1995). Too much emphasis is given to short term considerations at the expense of flexibility and long life. Maintenance should be viewed as a fundamentally beneficial aspect of ensuring a long and satisfactory product life rather than as a necessary evil.

References

- Aminatuzuhariah M Abdullah, (1996), The Extent of EMS in Design Offices for Construction Industry in the United Kingdom, MSc Dissertation, University of Glamorgan Wales, U.K.
- British Standards Institution, 'BS 57750' (1994), Specification for EMS, BSI Milton Keynes.
- Construction Industry Research and Information Association (1993), Environmental Issues in Construction, A review of issues and initiative relevant to the building, construction and related industry, CIRIA Special Publications 93 and 94.
- Construction Industry Research and Information Association (1995), A Client's Guide to Greener Construction, CIRIA Special Publication 120.
- Ends, (1992a), BS 7750, Sets the Environmental Standardization Bandwagon Rolling, Ends Report 207-1998.
- Ends, (1992b), Good Start for BS 7750, Ends Report, 212,4.
- Taylor, (1994), Environmental Management Handbook, Pitman Publishing.